

TRANSPORTATION

luggage rack

Support at the rear of the vehicle, for attaching a trunk or for lashing down luggage using straps.

seat

Usually leather seat where the driver sits.

mirror

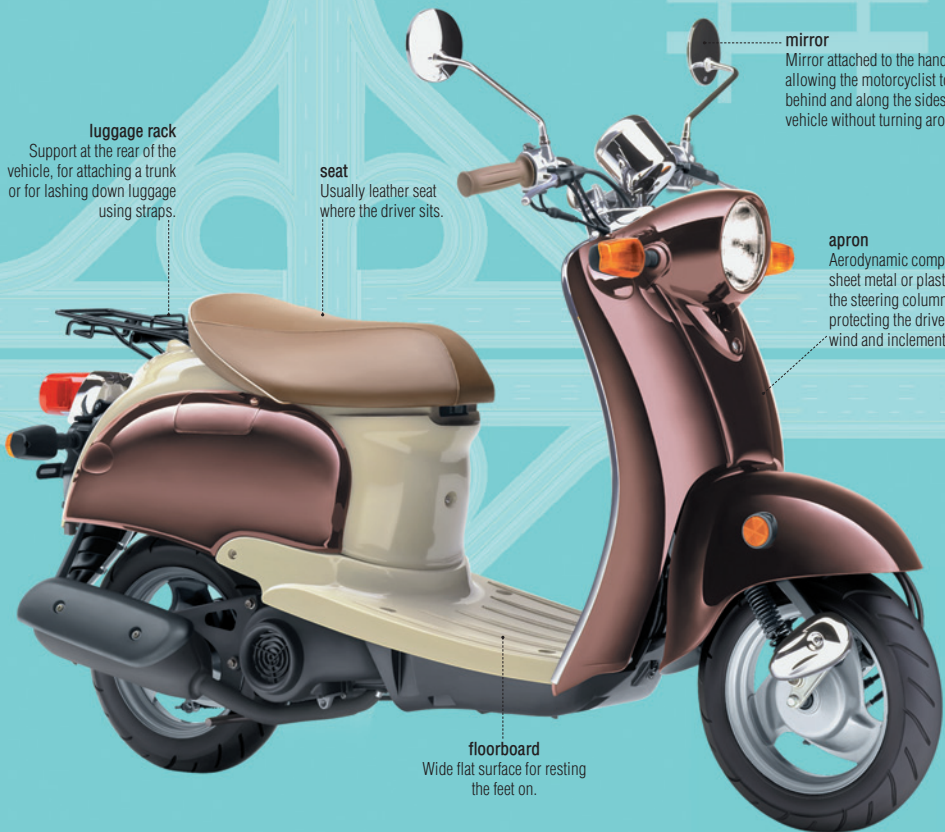
Mirror attached to the handgrip, allowing the motorcyclist to see behind and along the sides of the vehicle without turning around.

apron

Aerodynamic component in sheet metal or plastic, trimming the steering column and protecting the driver from the wind and inclement weather.

floorboard

Wide flat surface for resting the feet on.



TRANSPORTATION

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INTRODUCTION

EDITORIAL POLICY

The Visual Dictionary takes an inventory of the physical environment of a person who is part of today's technological age and who knows and uses a large number of specialized terms in a wide variety of fields.

Designed for the general public, it responds to the needs of anyone seeking the precise, correct terms for a wide range of personal or professional reasons: finding an unknown term, checking the meaning of a word, translation, advertising, teaching material, etc.

The target user has guided the choice of contents for *The Visual Dictionary*, which aims to bring together in 12 thematic books the technical terms required to express the contemporary world, in the specialized fields that shape our daily experience.

STRUCTURE

Each tome has three sections: the preliminary pages, including the table of contents; the body of the text (i.e. the detailed treatment of the theme); the index.

Information is presented moving from the most abstract to the most concrete: sub-theme, title, subtitle, illustration, terminology.

TERMINOLOGY

Each word in *The Visual Dictionary* has been carefully selected following examination of high-quality documentation, at the required level of specialization.

There may be cases where different terms are used to name the same item. In such instances, the word most frequently used by the most highly regarded authors has been chosen.

Words are usually referred to in the singular, even if the illustration shows a number of individual examples. The word designates the concept, not the actual illustration.

DEFINITIONS

Within the hierarchical format of *The Visual Dictionary's* presentation, the definitions fit together like a Russian doll. For example, the information within the definition for the term *insect* at the top of the page does not have to be repeated for each of the insects illustrated. Instead, the text concentrates on defining the distinguishing characteristics of each insect (the *louse* is a parasite, the female *yellow jacket* stings, and so forth).

Since the definition leaves out what is obvious from the illustration, the illustrations and definitions complement one another.

The vast majority of the terms in the *Visual Dictionary* are defined. Terms are not defined when the illustration makes the meaning absolutely clear, or when the illustration suggests the usual meaning of the word (for example, the numerous *handles*).

METHODS OF CONSULTATION

Users may gain access to the contents of *The Visual Dictionary* in a variety of ways:

- From the TABLE OF CONTENTS at the end of the preliminary pages, the user can locate by title the section that is of interest.
- With the INDEX, the user can consult *The Visual Dictionary* from a word, so as to see what it corresponds to, or to verify accuracy by examining the illustration that depicts it.
- The most original aspect of *The Visual Dictionary* is the fact that the illustrations enable the user to find a word even if he or she only has a vague idea of what it is. The dictionary is unique in this feature, as consultation of any other dictionary requires the user first to know the word.

TITLE

Its definition is found below. If the title refers to information that continues over several pages, after the first page it is shown in a shaded tone with no definition.

TERM

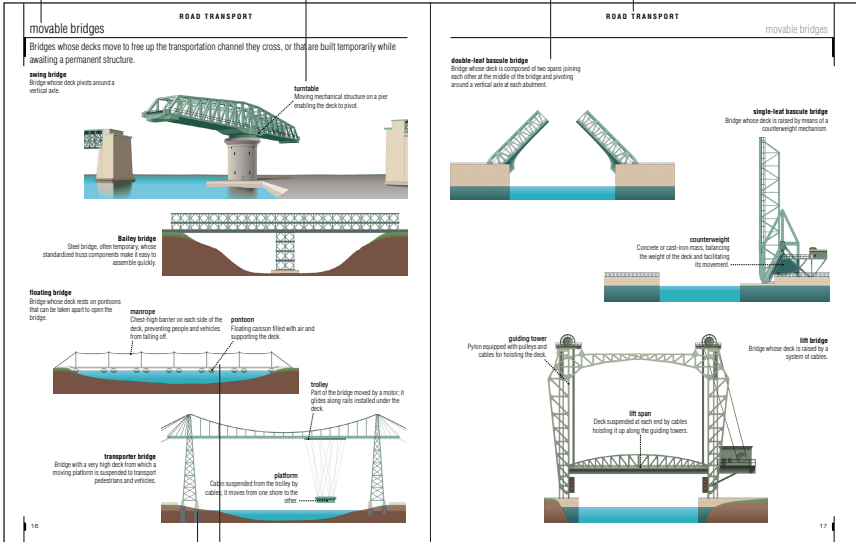
Each term appears in the index with a reference to the pages on which it appears.

DEFINITION

It explains the inherent qualities, function, or characteristics of the element depicted in the illustration.

SUB-THEME

These are shown at the end of the preliminary pages along with their definitions. They are then repeated on each page of a section, but without the definition.



ILLUSTRATION

It is an integral part of the visual definition for each of the terms that refer to it.

NARROW LINES

These link the word to the item indicated. Where too many lines would make reading difficult, they have been replaced by color codes with captions or, in rare cases, by numbers.

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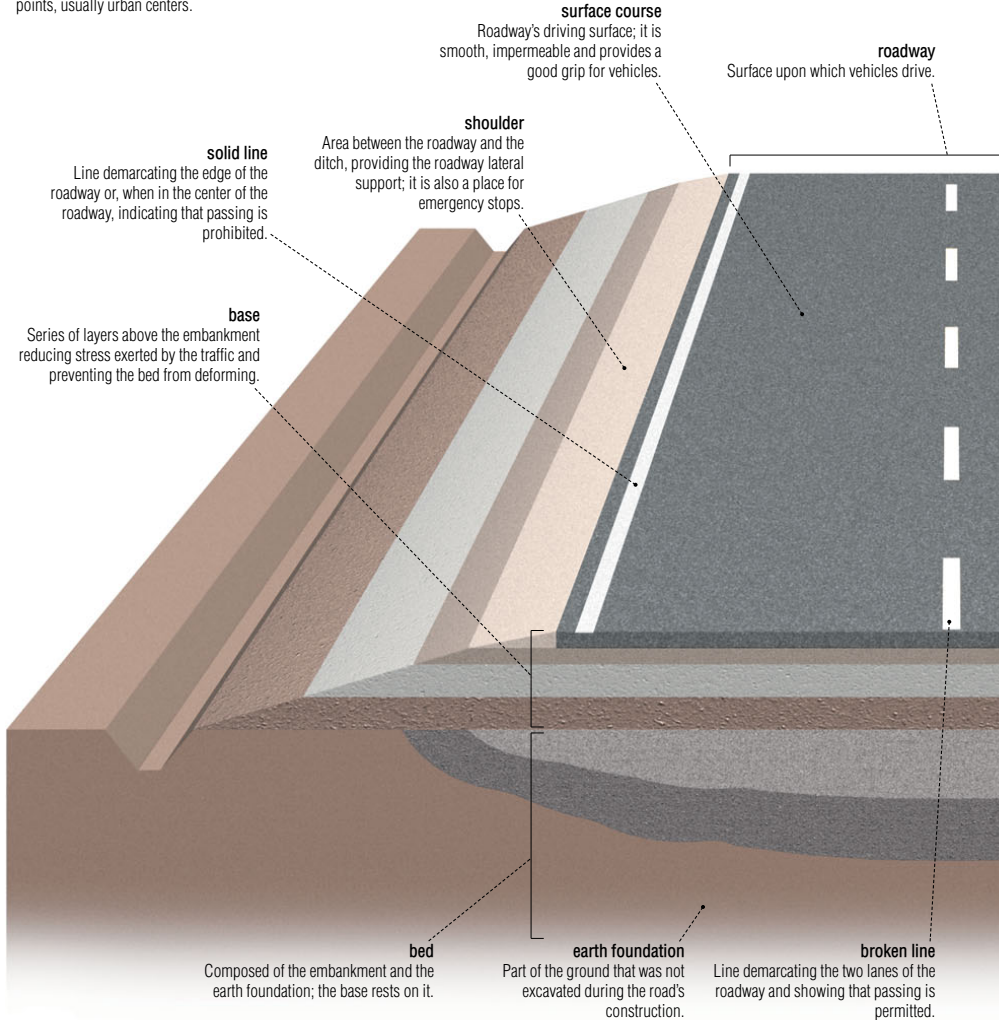
169 INDEX

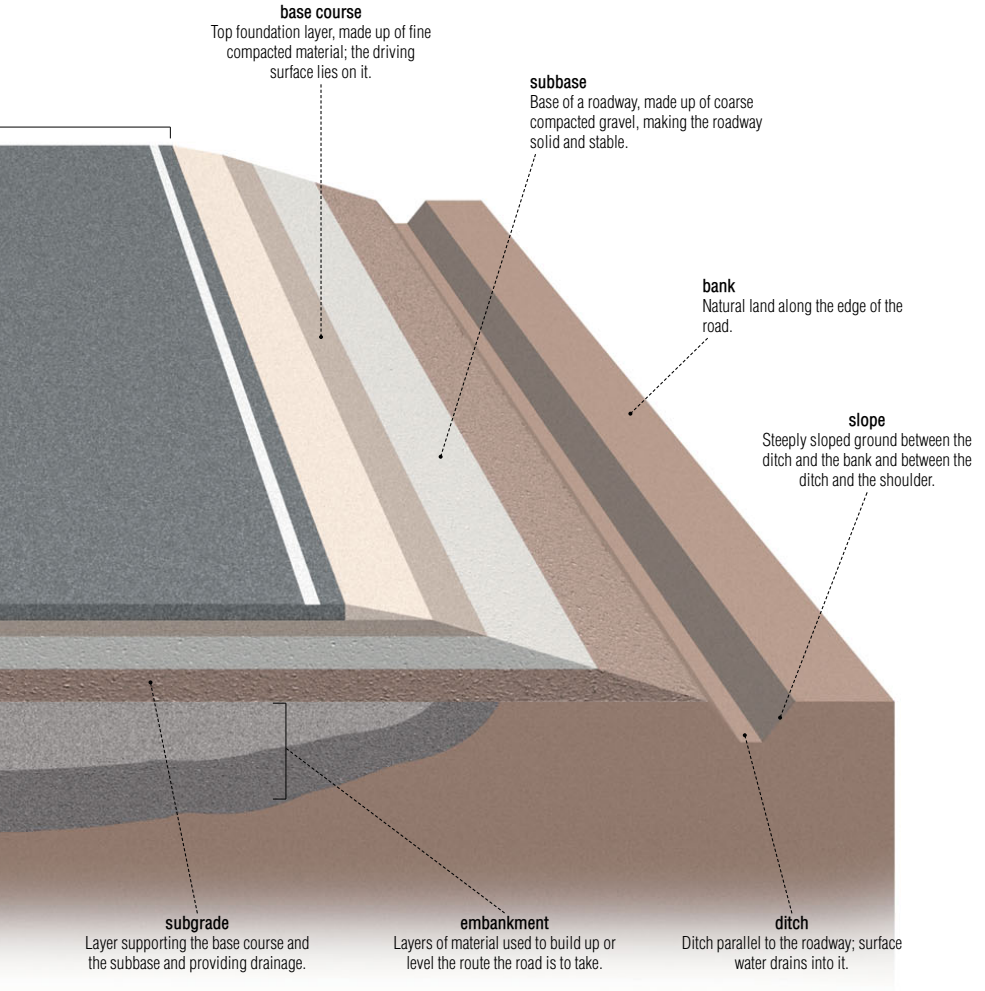
road system

Network of thoroughfares providing for the flow of traffic.

cross section of a road

Road: thoroughfare connecting two geographical points, usually urban centers.

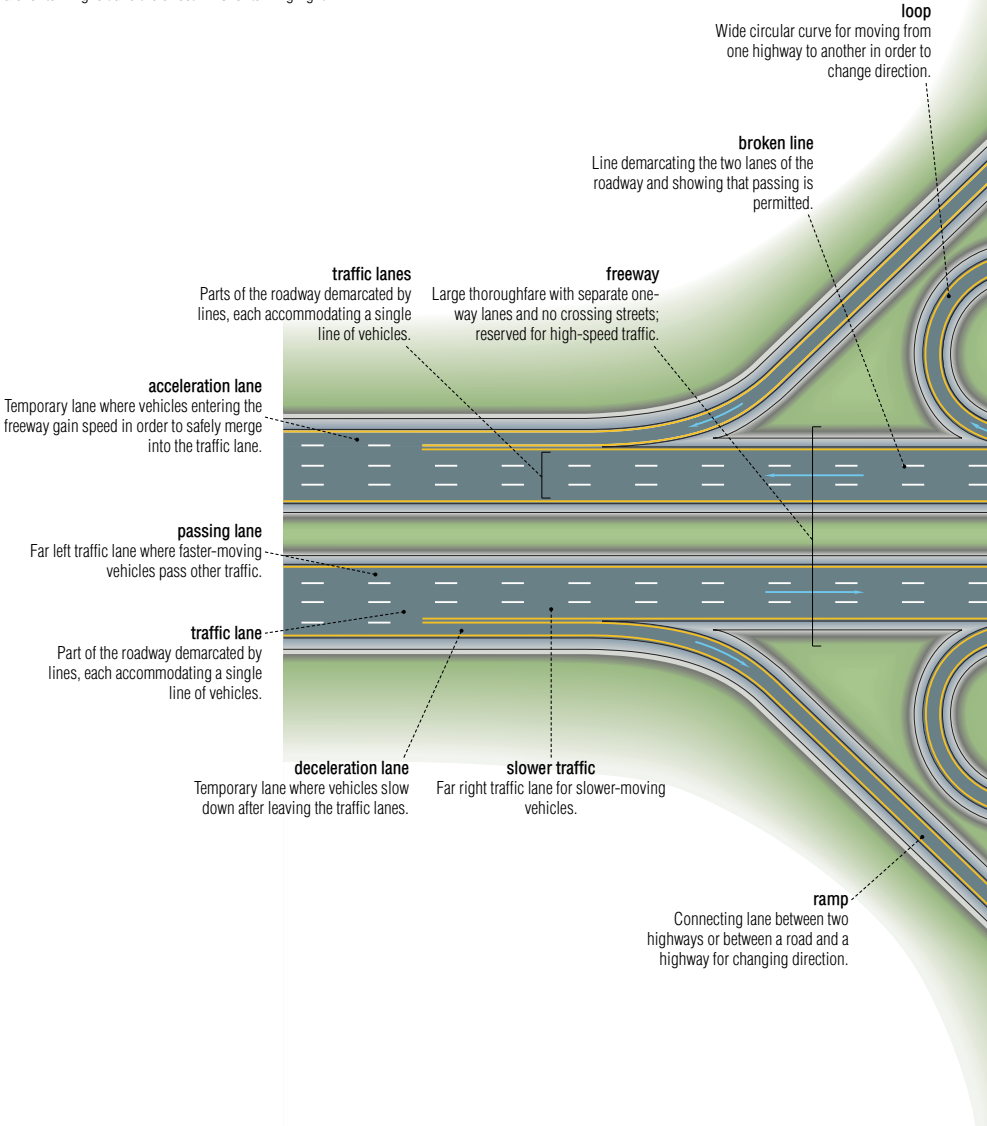


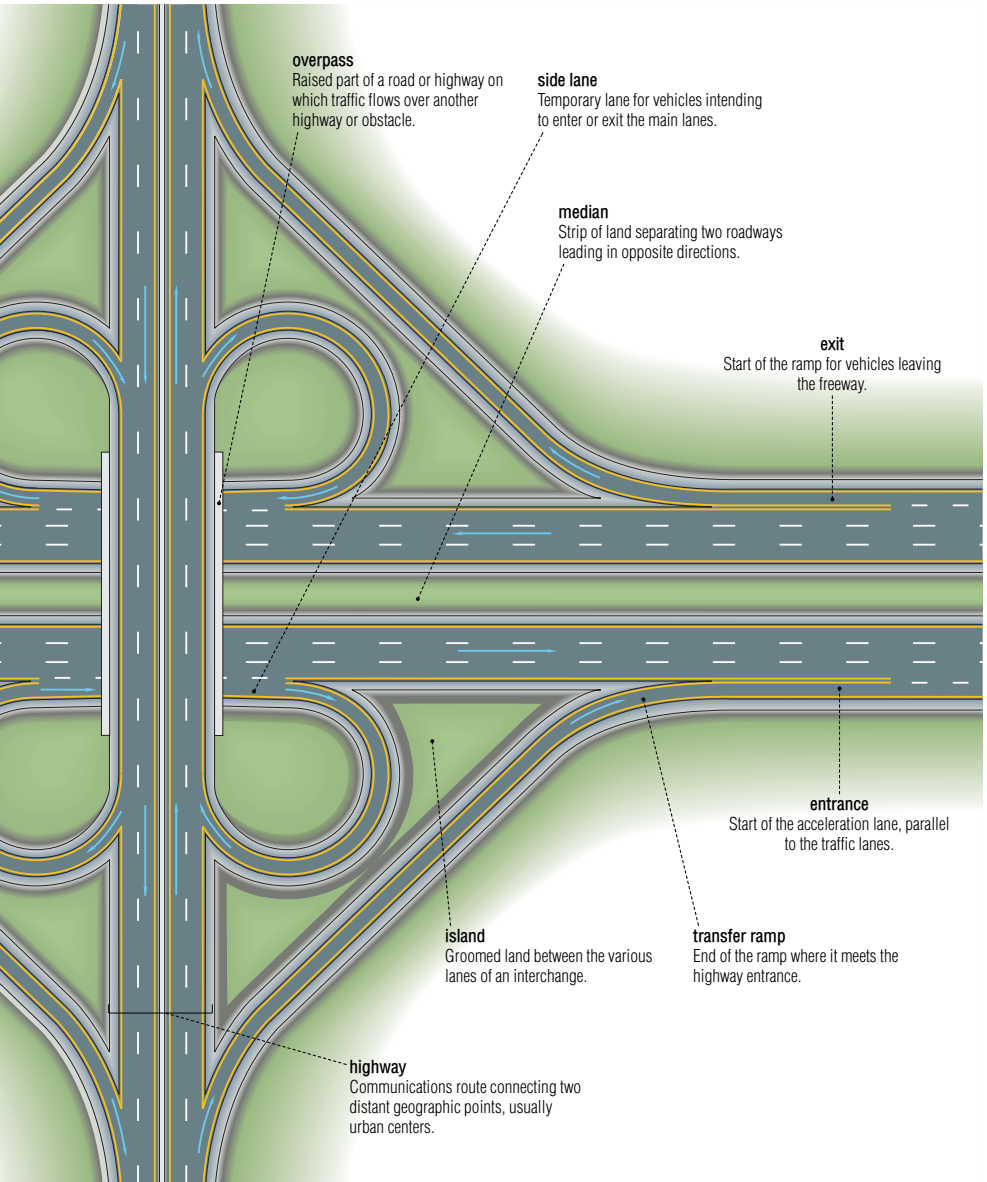


road system

cloverleaf

Interchange with four branches where the inside loops are for turning left and the direct links for turning right.



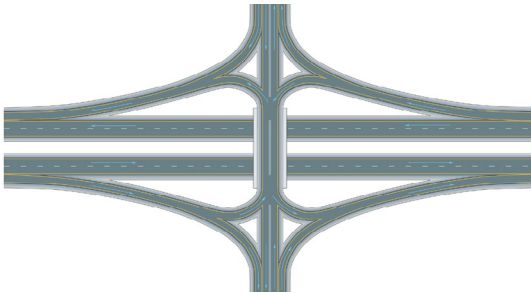
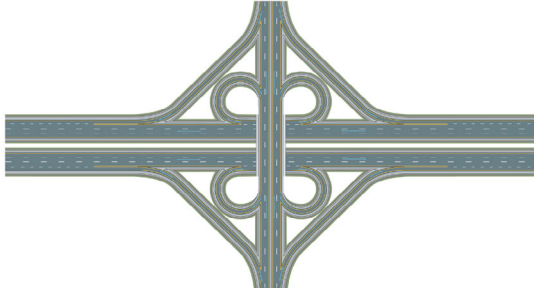


examples of interchanges

Interchange: structure linking roads or freeways so they do not intersect.

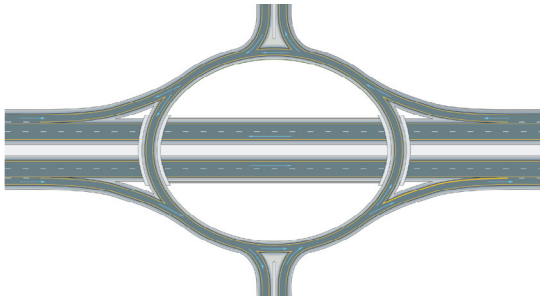
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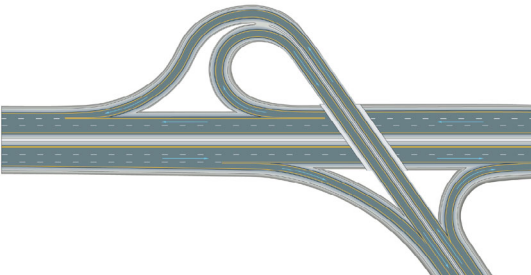
**diamond interchange**

Interchange connecting a road and a freeway, requiring traffic lights for left turns onto and off the road or overpass.

traffic circle
Interchange composed of four ramps joining each other to form a circular one-way thoroughfare.

**trumpet interchange**

Interchange connecting a road ending at a freeway, using only one loop.



Structures enabling traffic to clear an obstacle, such as a river, gorge or highway.

beam bridge

Bridge whose deck is composed of one or several beams, which are supported by piers across the open space.

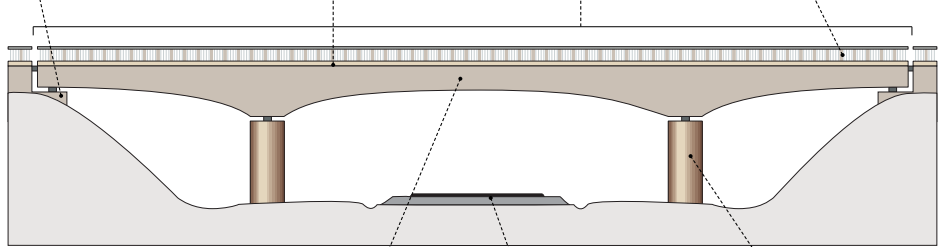
abutment

A pier's point of support on firm ground.

overpass
Raised part of a road or highway on which traffic flows over another highway or obstacle.

continuous beam
Extended load-bearing part supported by abutments and piers.

parapet
Chest-high barrier on each side of the deck, preventing people and vehicles from falling off.



deck
Set of components making up the structure that carries the bridge's traffic lanes.

underpass
Lowered part of a thoroughfare, enabling traffic to flow under another roadway or obstacle.

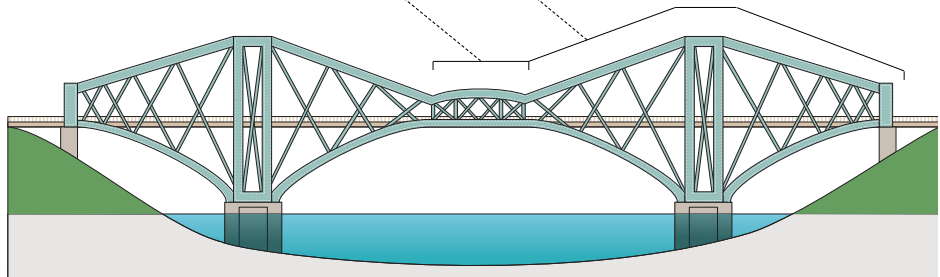
pier
Sturdy load-bearing component placed at intervals to support the bridge's beams.

cantilever bridge

Bridge whose two main spans extend toward each other and support a short suspended span, which bears less load.

suspended span
Short center span resting on the ends of the two cantilever spans.

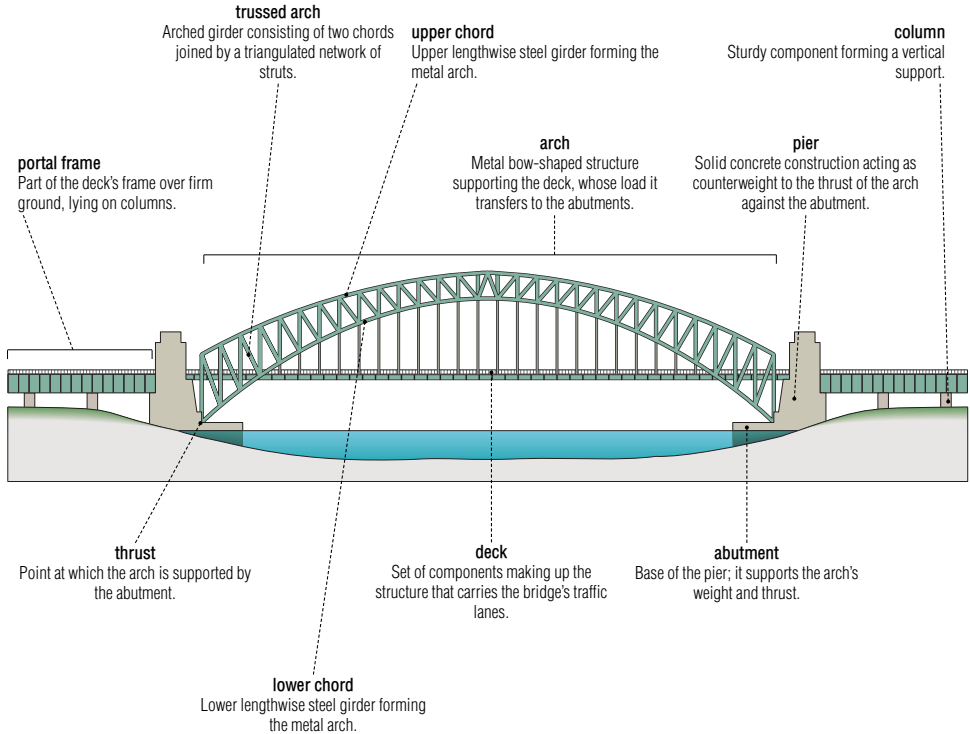
cantilever span
Span with a complex framework on each side of a central pillar, one end of the span rests on the ground and the other supports a suspended span.



fixed bridges

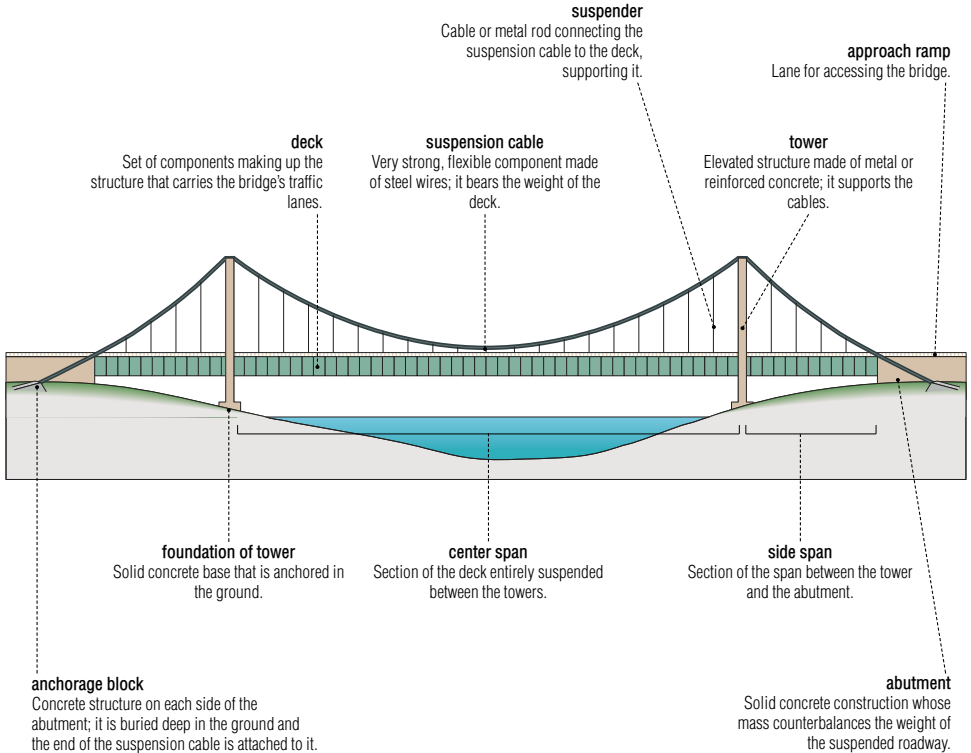
arch bridge

Bridge whose deck is supported by suspenders attached to an arch, which exerts diagonal thrust against the lateral supports.



suspension bridge

Bridge whose long deck is suspended from load-bearing cables, which are supported by the towers and anchored in the ground at both ends of the bridge.

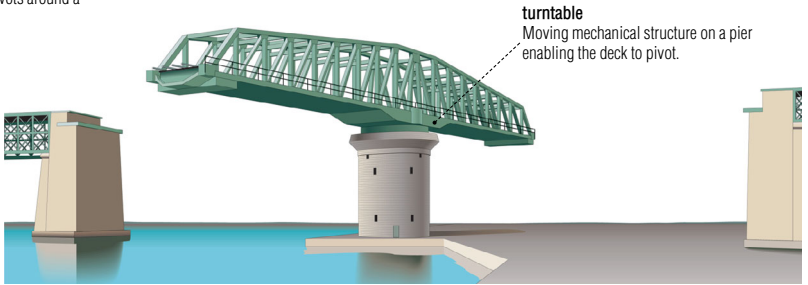


movable bridges

Bridges whose decks move to free up the transportation channel they cross, or that are built temporarily while awaiting a permanent structure.

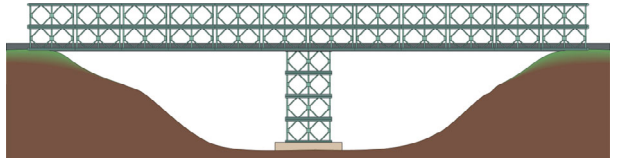
swing bridge

Bridge whose deck pivots around a vertical axle.



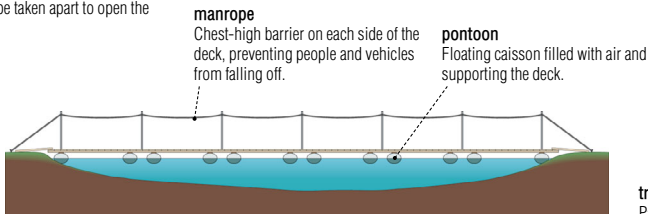
Bailey bridge

Steel bridge, often temporary, whose standardized truss components make it easy to assemble quickly.



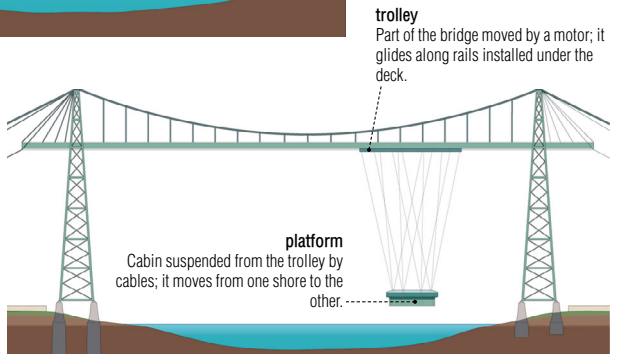
floating bridge

Bridge whose deck rests on pontoons that can be taken apart to open the bridge.



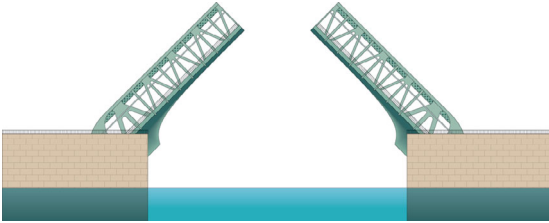
transporter bridge

Bridge with a very high deck from which a moving platform is suspended to transport pedestrians and vehicles.

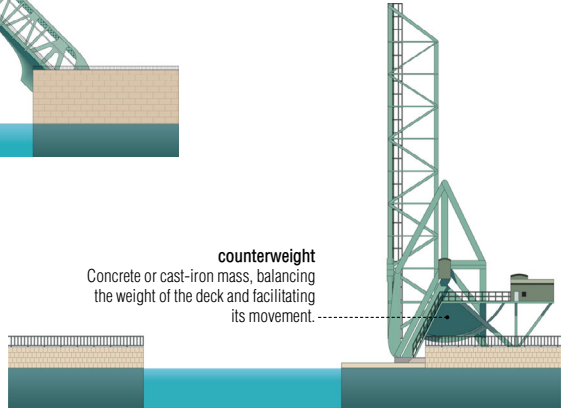


double-leaf bascule bridge

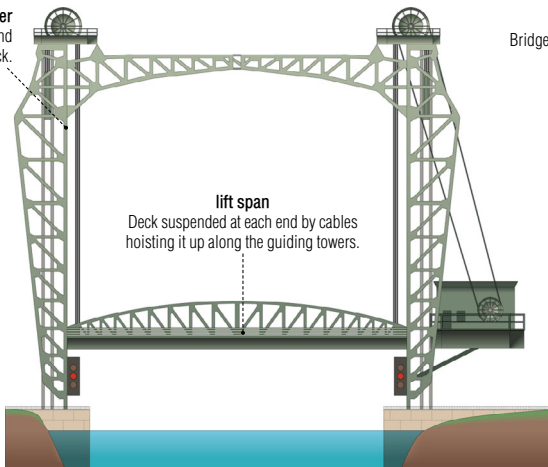
Bridge whose deck is composed of two spans joining each other at the middle of the bridge and pivoting around a vertical axle at each abutment.

**single-leaf bascule bridge**

Bridge whose deck is raised by means of a counterweight mechanism.



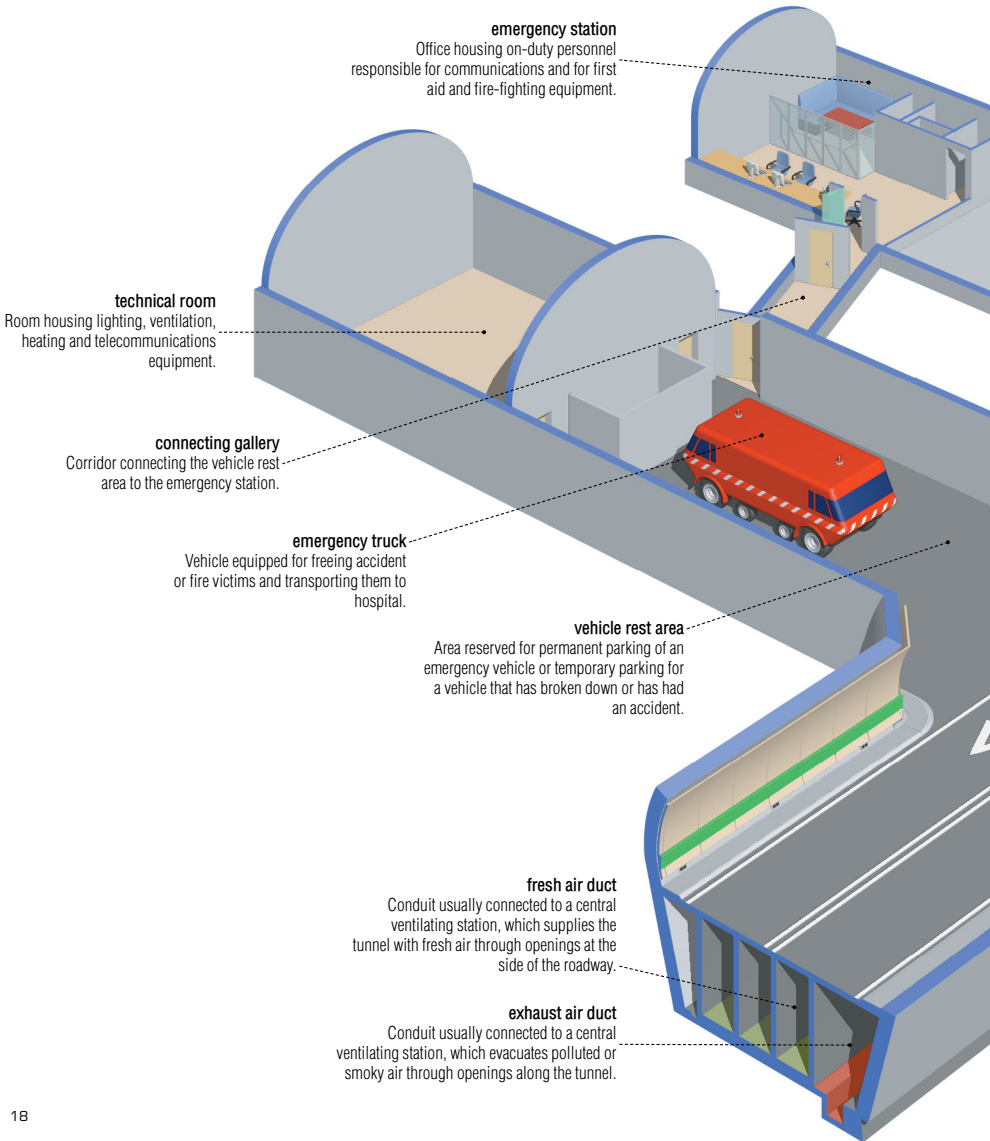
guiding tower
Pylon equipped with pulleys and cables for hoisting the deck.

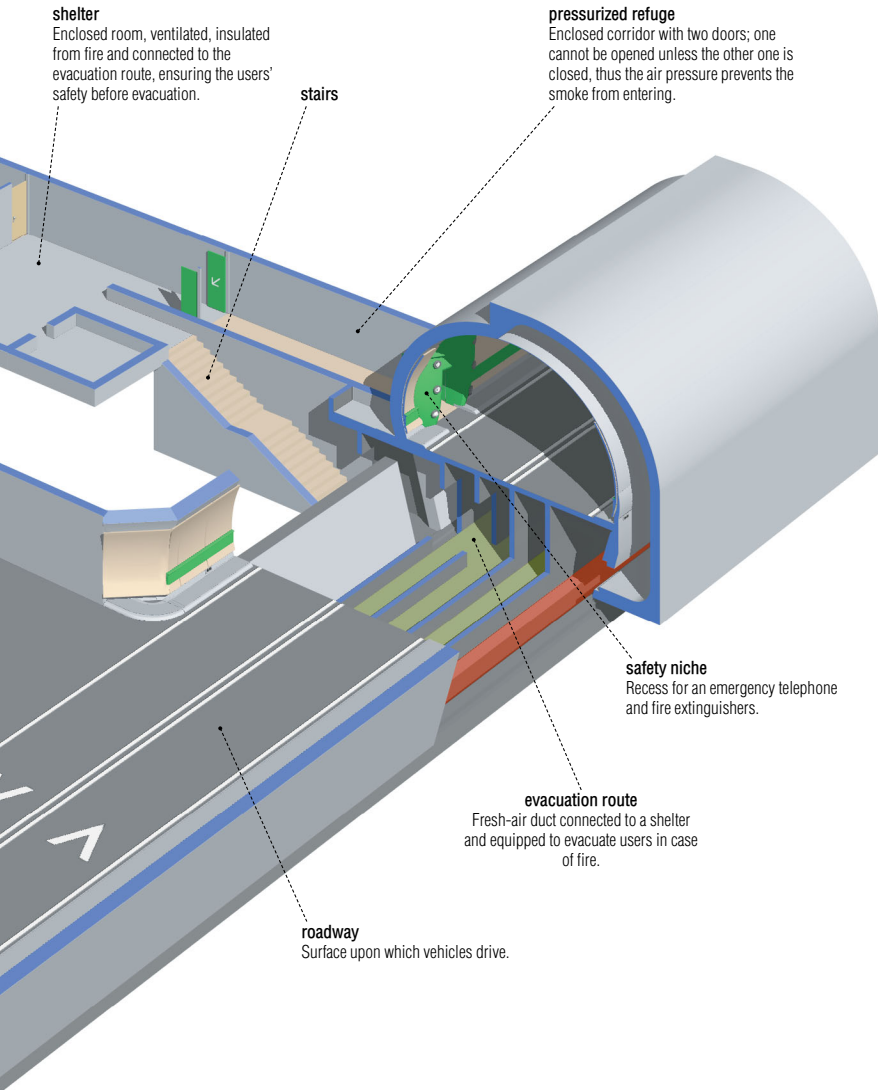
**lift bridge**

Bridge whose deck is raised by a system of cables.

road tunnel

Underground passage for a road under an obstacle, such as a river or a hill.

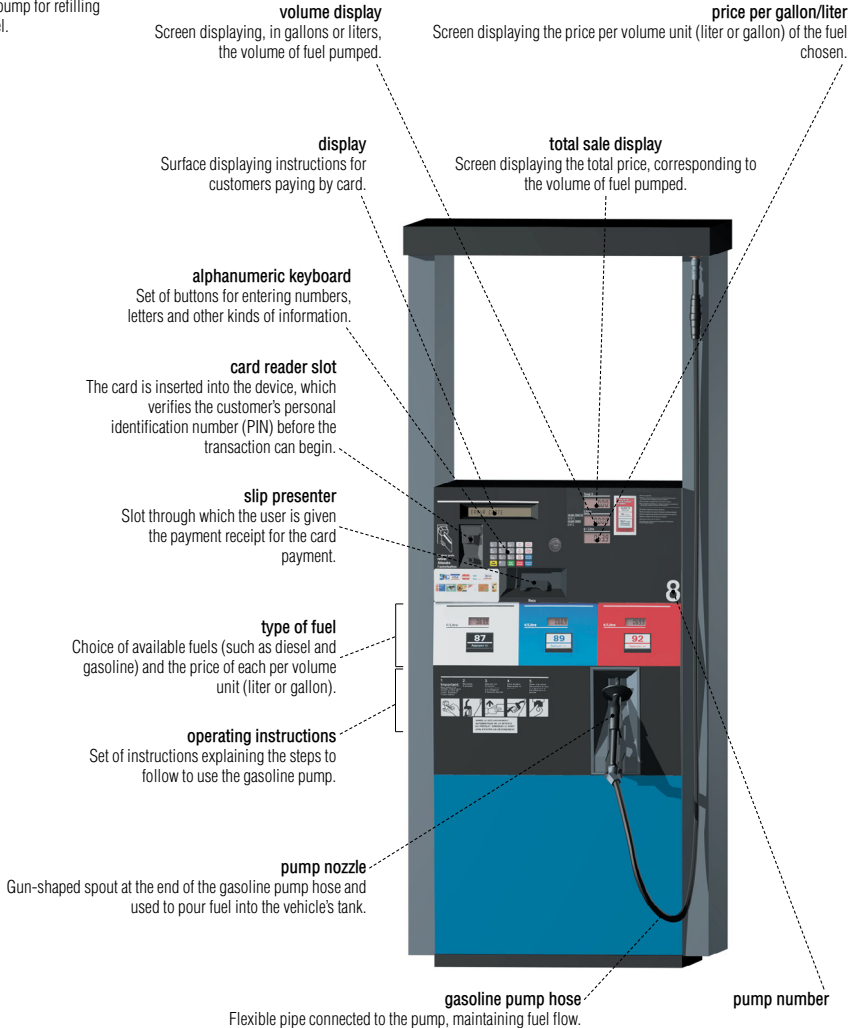




service station

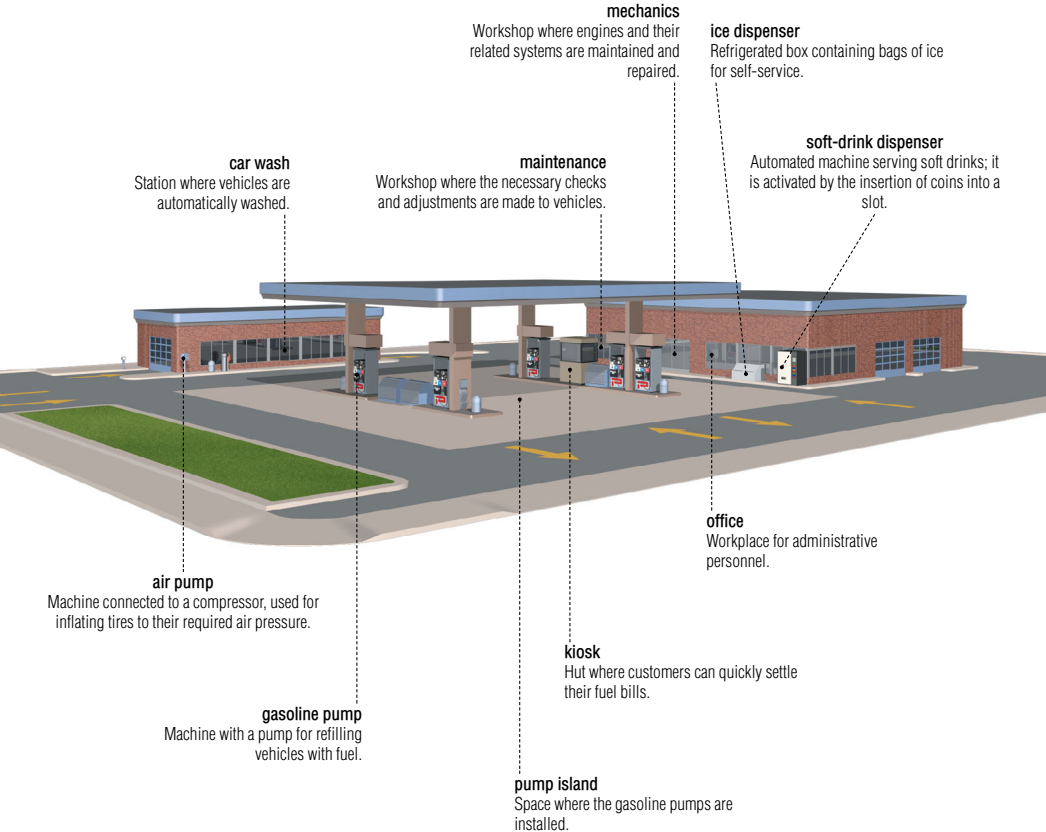
gasoline pump

Machine with a pump for refilling vehicles with fuel.



service station

Commercial establishment comprising one or several gasoline pumps and carrying out general maintenance of vehicles.

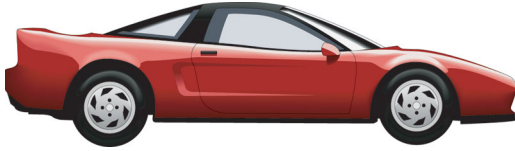


automobile

Motor vehicle comprising four wheels, developed for transporting a small number of people and small loads.

examples of bodies

Styles vary from manufacturer to manufacturer and from year to year but there is little variation in the basic model.



sports car

Automobile with an aerodynamic look comprising two doors, a small trunk separate from the passenger compartment and, sometimes, narrow rear seats.



hatchback

Automobile comprising two doors and a lift gate, folding front seats granting access to the rear seats, and a cargo area integrated with the passenger compartment.



four-door sedan

Automobile comprising four doors and a trunk separate from the passenger compartment.

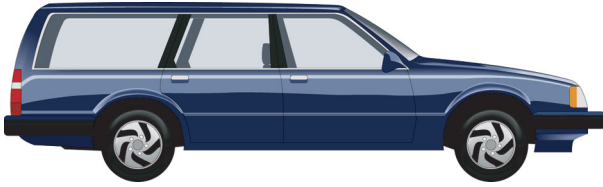


convertible

Automobile comprising two or four doors and a soft or hard retractable roof.

micro compact car
Very small automobile comprising two seats and integrated cargo area, designed to be driven and parked in large cities.



**station wagon**

Automobile comprising four doors, a large cargo area integrated with the passenger compartment and folding rear seats for enlarging the cargo area.

minivan

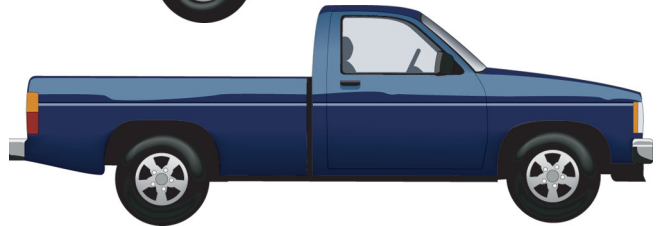
Automobile comprising three rows of seats; the last row can be folded down to enlarge the cargo area.

**sport-utility vehicle**

Automobile designed to be driven on any kind of roadway or on rugged terrain.

pickup truck

Automobile comprising only one row of seats and an uncovered bed closed off by a gate.

**limousine**

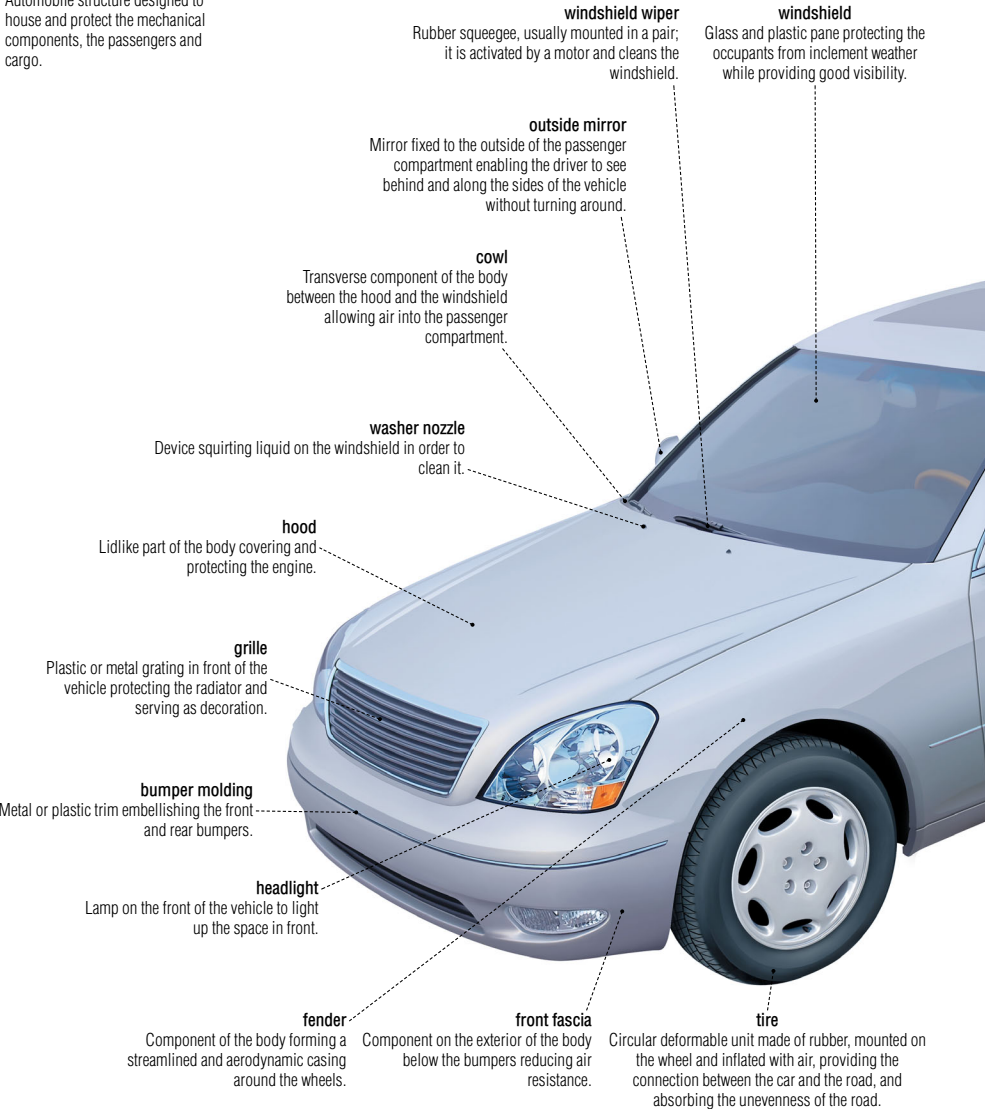
Spacious deluxe sedan comprising four or more doors; the passenger area is separated from the chauffeur's.



automobile

body

Automobile structure designed to house and protect the mechanical components, the passengers and cargo.



windshield wiper
Rubber squeegee, usually mounted in a pair; it is activated by a motor and cleans the windshield.

windshield
Glass and plastic pane protecting the occupants from inclement weather while providing good visibility.

outside mirror
Mirror fixed to the outside of the passenger compartment enabling the driver to see behind and along the sides of the vehicle without turning around.

cowl
Transverse component of the body between the hood and the windshield allowing air into the passenger compartment.

washer nozzle
Device squirting liquid on the windshield in order to clean it.

hood
Lidlike part of the body covering and protecting the engine.

grille
Plastic or metal grating in front of the vehicle protecting the radiator and serving as decoration.

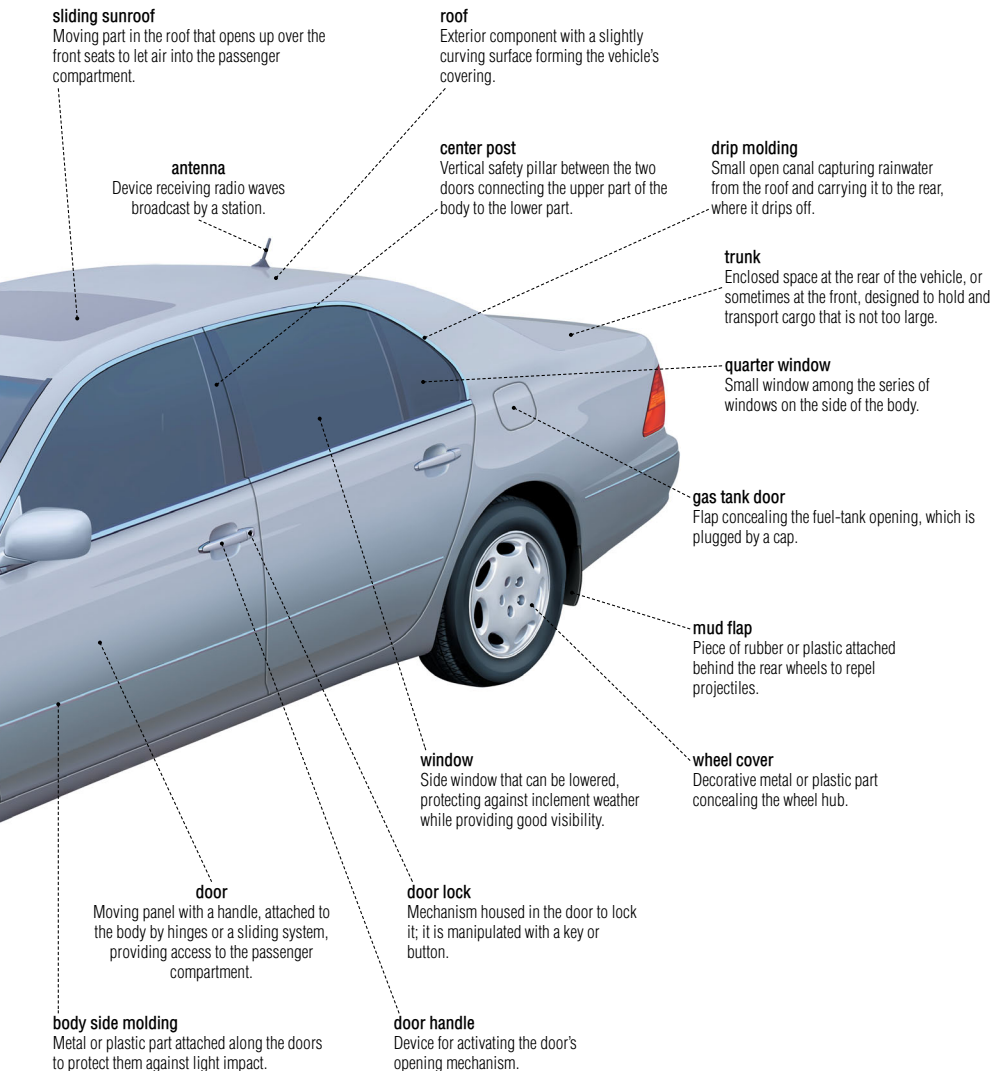
bumper molding
Metal or plastic trim embellishing the front and rear bumpers.

headlight
Lamp on the front of the vehicle to light up the space in front.

fender
Component of the body forming a streamlined and aerodynamic casing around the wheels.

front fascia
Component on the exterior of the body below the bumpers reducing air resistance.

tire
Circular deformable unit made of rubber, mounted on the wheel and inflated with air, providing the connection between the car and the road, and absorbing the unevenness of the road.



automobile

headlights

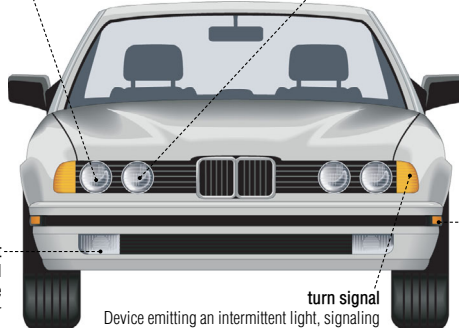
Set of regulation luminous devices placed on the front of a vehicle for illuminating and signaling.

low beam

Lamp illuminating the road at short distances (30 yards), used instead of high beam to avoid blinding drivers coming in the opposite direction.

high beam

Lamp illuminating the road over a long distance (100 yards), used outside urban areas.

**fog light**

Lamp whose light rays are directed toward the roadway and illuminate the road shoulder, by which the driver navigates in the event of fog.

side marker light

Colored light demarcating the width of the vehicle.

turn signal

Device emitting an intermittent light, signaling a change of the vehicle's direction or a temporary hazard to other vehicles.

taillights

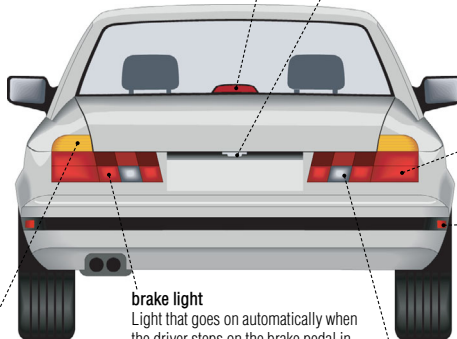
Set of regulation lighting devices placed at the rear of a vehicle and used for signaling.

brake light

Light that goes on automatically when the driver steps on the brake pedal in order to warn the vehicles following it.

license plate light

Lighting device for a vehicle's license plate, making it visible in darkness.

**taillight**

Lamp turning on automatically when the front lights are lit, making the vehicle visible for up to 150 yards.

side marker light

Colored light demarcating the width of the vehicle.

turn signal

Device emitting an intermittent light, signaling a change of the vehicle's direction or a temporary hazard to other vehicles.

brake light

Light that goes on automatically when the driver steps on the brake pedal in order to warn the vehicles following it.

reverse light

White lamp that turns on automatically to warn motorists and pedestrians when the driver puts the car in reverse.

door

Moving panel with a handle, attached to the body by hinges or a sliding system, providing access to the passenger compartment.

outside mirror control

Lever for adjusting the position of the outside mirror from the inside.

window regulator handle

Handily placed lever that turns to activate the mechanism raising and lowering the window.

assist grip

Handle allowing the passenger to pull the door inward in order to close it.

window

Side window that can be lowered; it protects against inclement weather while ensuring good visibility.

interior door lock button

Visible end of the rod activating the lock; it is lifted or lowered to unlock and lock the door.

lock

Mechanism housed in the door to lock it; it is manipulated with a key or button.

trim panel

Component covered with fabric, plastic or leather, upholstering the inside of the door.

inner door shell

The door's metal structure, serving to absorb impacts; it also encloses the locking mechanisms and, when it is lowered, the window.

accessory pocket

Open compartment fitted into the bottom of the door, for storing small objects.

armrest

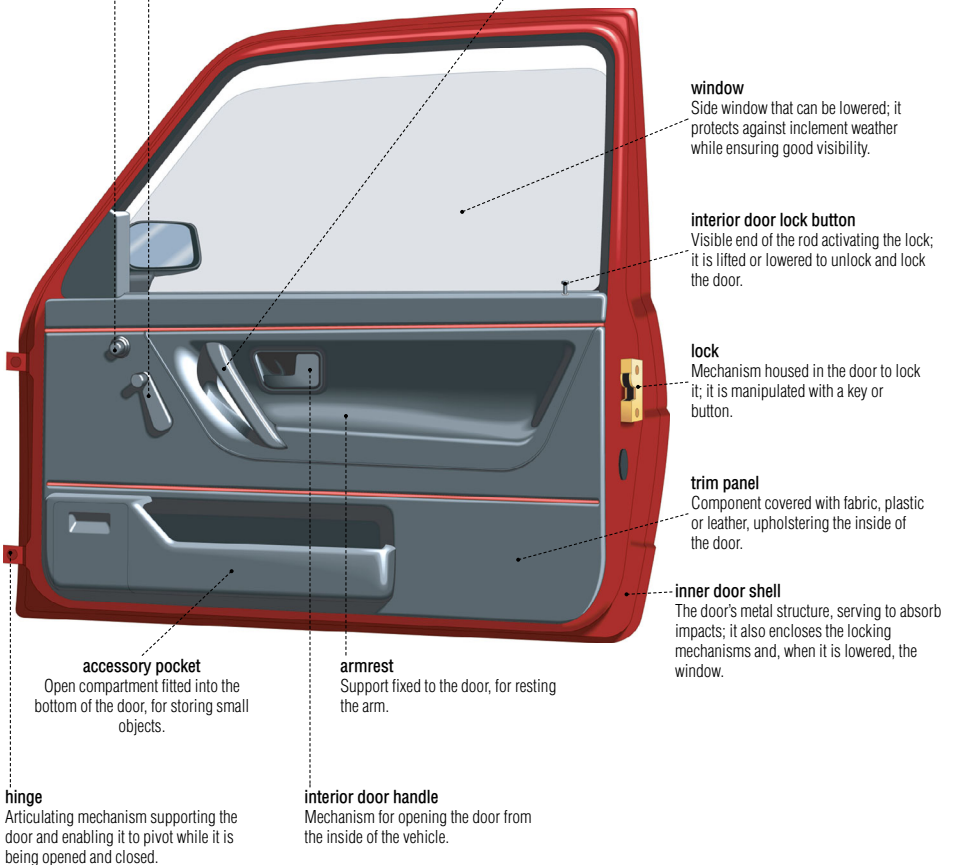
Support fixed to the door, for resting the arm.

hinge

Articulating mechanism supporting the door and enabling it to pivot while it is being opened and closed.

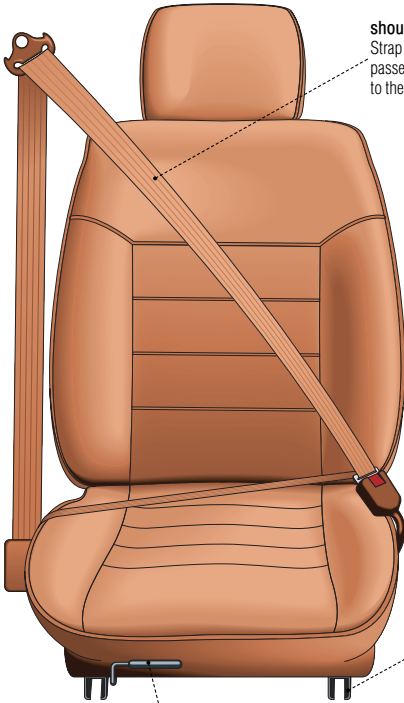
interior door handle

Mechanism for opening the door from the inside of the vehicle.



bucket seat: front view

Bucket seat: upholstered and adjustable seat that envelops the occupant's body, keeping it in place during turns and providing greater comfort.



shoulder belt

Strap crossing in front of the passenger's thorax, from the shoulder to the hip.

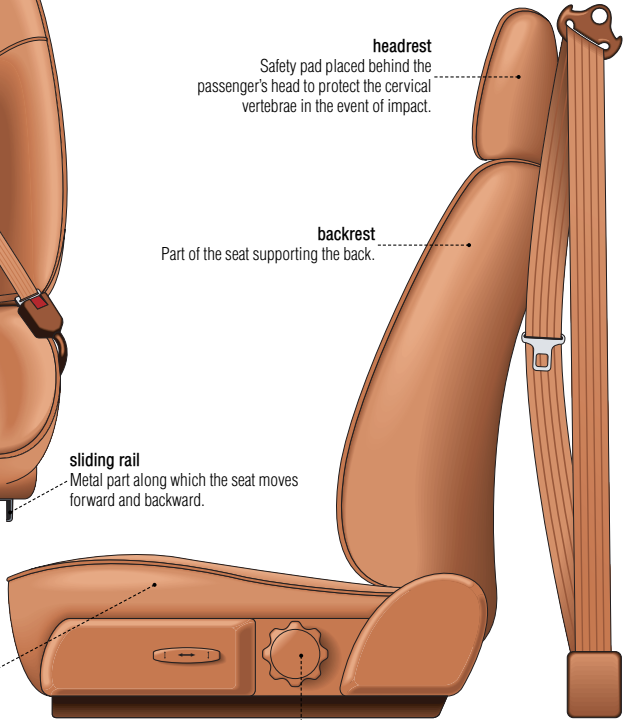
sliding lever

Handle for moving the seat toward or away from the dashboard, in relation to the passenger's height.

seat

Horizontal unit for a passenger to sit on.

bucket seat: side view



headrest

Safety pad placed behind the passenger's head to protect the cervical vertebrae in the event of impact.

backrest

Part of the seat supporting the back.

sliding rail

Metal part along which the seat moves forward and backward.

adjustment knob

The seat's regulating mechanism, for changing the angle of the backrest to an almost horizontal position.

seat belt

Safety device fitted with sliding straps, keeping the passenger in the seat in the event of an accident.

rear seat

Bench containing several spaces installed in the rear of the passenger compartment and occupying its full width.

armrest

Folding support in the middle of the rear seat, for resting the forearm.

**webbing**

Center belt in the rear seat, strapping in the passenger's pelvis and restraining only the lower part of the body in the event of impact.

bench seat

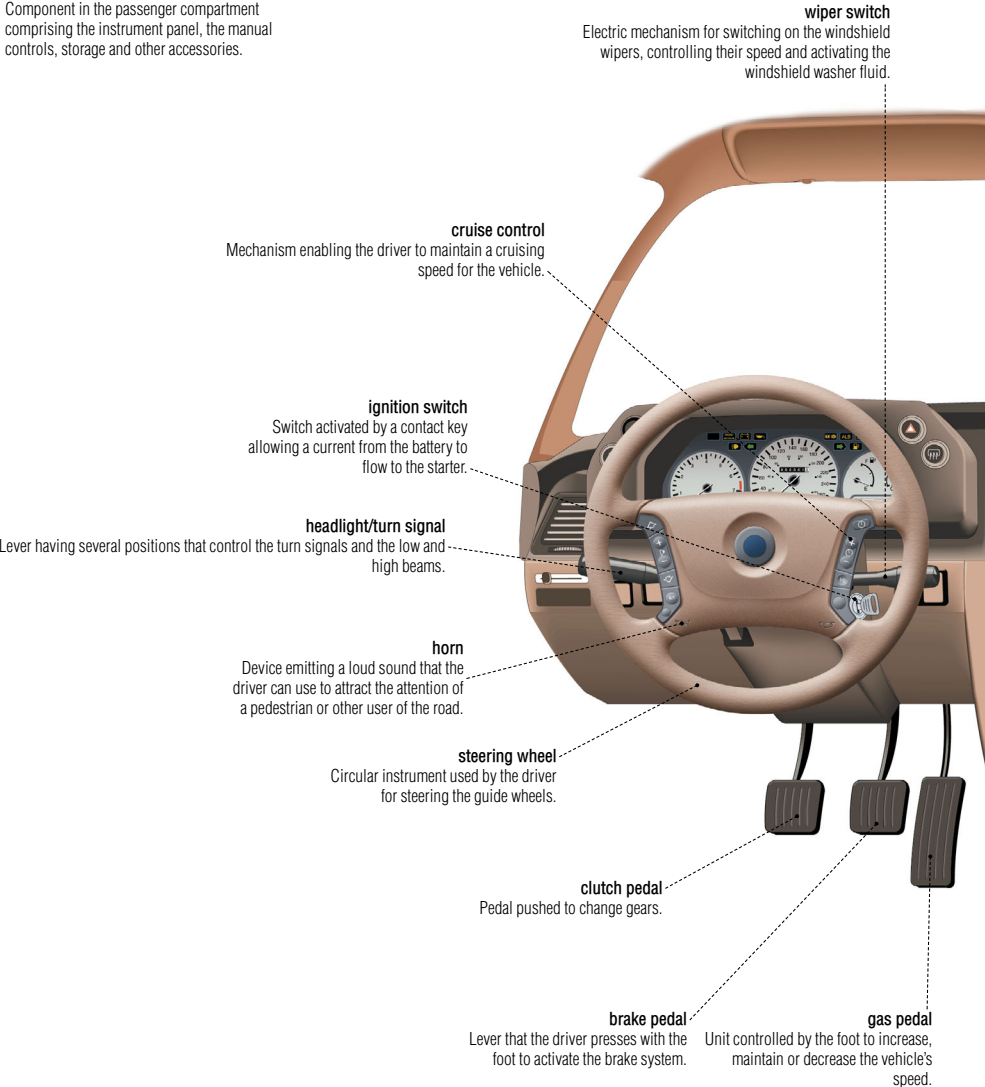
Horizontal unit for sitting on, providing up to three spaces.

buckle

Clasp keeping the seat belt around the passenger and released by pressing with the finger.

dashboard

Component in the passenger compartment comprising the instrument panel, the manual controls, storage and other accessories.



wiper switch

Electric mechanism for switching on the windshield wipers, controlling their speed and activating the windshield washer fluid.

cruise control

Mechanism enabling the driver to maintain a cruising speed for the vehicle.

ignition switch

Switch activated by a contact key allowing a current from the battery to flow to the starter.

headlight/turn signal

Lever having several positions that control the turn signals and the low and high beams.

horn

Device emitting a loud sound that the driver can use to attract the attention of a pedestrian or other user of the road.

steering wheel

Circular instrument used by the driver for steering the guide wheels.

clutch pedal

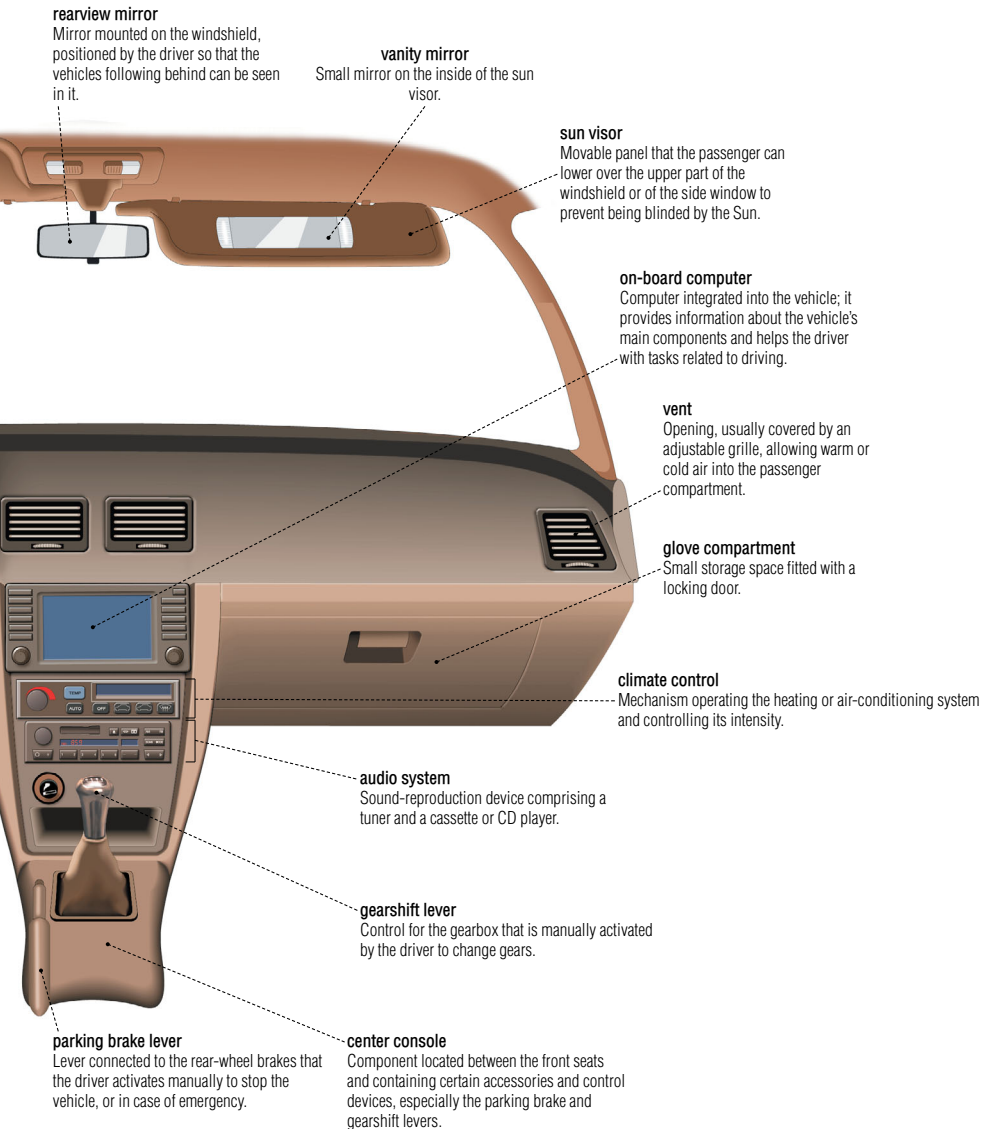
Pedal pushed to change gears.

brake pedal

Lever that the driver presses with the foot to activate the brake system.

gas pedal

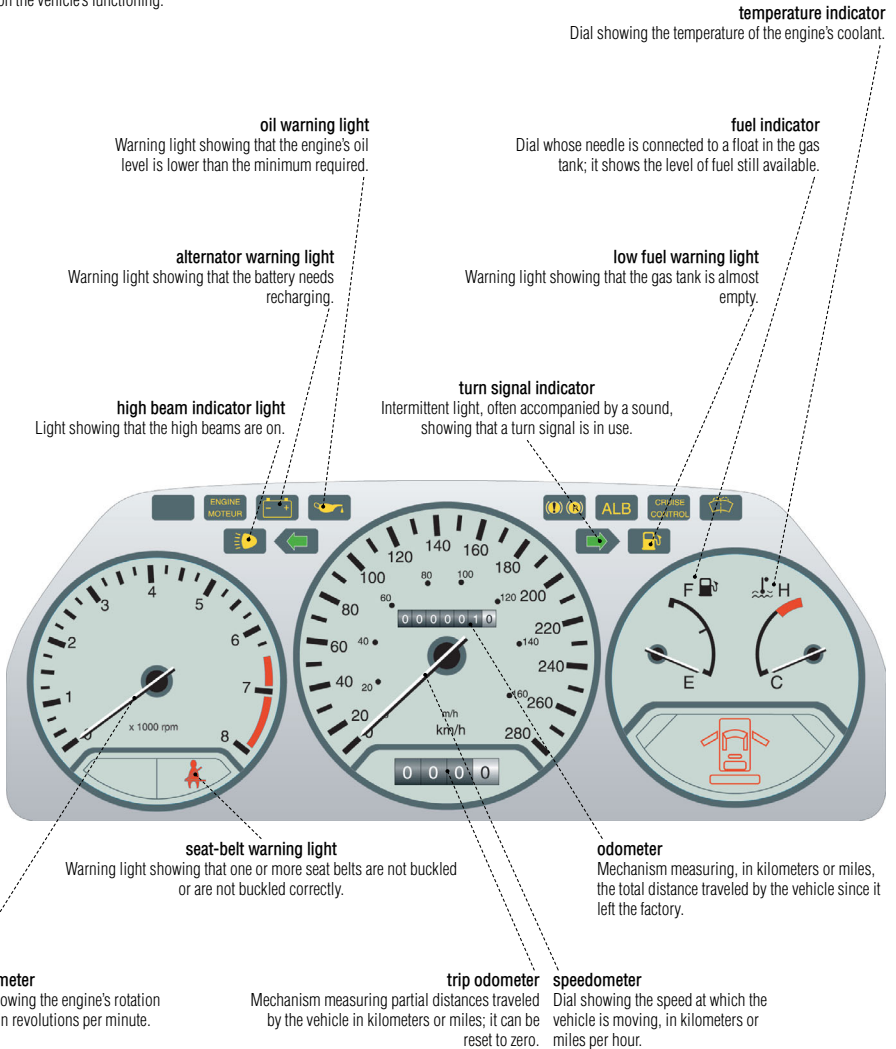
Unit controlled by the foot to increase, maintain or decrease the vehicle's speed.



automobile

instrument panel

Set of dials and warning lights within the driver's view that report on the vehicle's functioning.



air bag restraint system

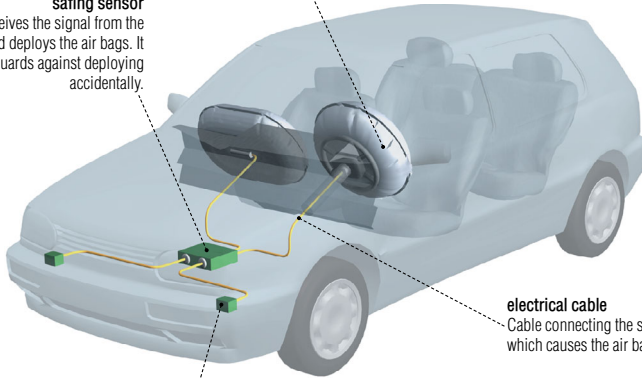
Automatic safety device containing air bags that, in the event of impact, instantly come between the occupants and the dashboard.

air bag

Flexible envelope encased in the dashboard, the steering wheel or the doors, which inflates with pressurized gas when it receives the signal from the safing sensor.

safing sensor

Device that receives the signal from the primary sensor and deploys the air bags. It has safeguards against deploying accidentally.



electrical cable

Cable connecting the safing sensor, which causes the air bags to deploy.

primary crash sensor

Device located at the front of the vehicle, which, in the event of collision, transmits the pulse it receives to the safing sensor.

windshield wiper

Rubber squeegee, usually mounted in a pair; it is activated by a motor and cleans the windshield.

windshield wiper blade

Metal part supporting the wiper through the actions of two small connecting rods.

wiper arm

Metal rod with a to-and-fro motion that exerts a uniform pressure on the blade attached to it.

fluted shaft

Part driven by an electric motor, whose rotating motion it converts into alternating motion through two connecting rods.

tension spring

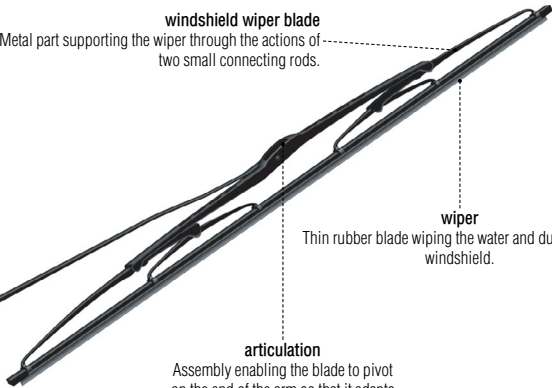
Spring causing the arm to exert pressure on the blade.

articulation

Assembly enabling the blade to pivot on the end of the arm so that it adapts to the curvature of the windshield.

wiper

Thin rubber blade wiping the water and dust from the windshield.



accessories

Secondary components of a vehicle, used for its maintenance, safety and such.

roller shade

Shade with a roller containing a spring that causes the shade cloth to roll up; it is usually placed on a side window.



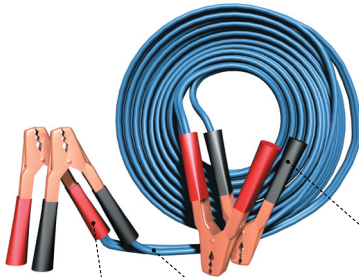
floor mat

Fabric or rubber covering placed under the passengers' feet in order to protect the floor of the vehicle.



jumper cables

Cables fitted with alligator clips for connecting an emergency battery to a discharged one.



black clamp

A black clamp is fitted on the negative terminal of the emergency battery; the other is attached to a metal part of the other car.

red clamp

A red clamp is fitted on the positive terminal of both batteries.

cable

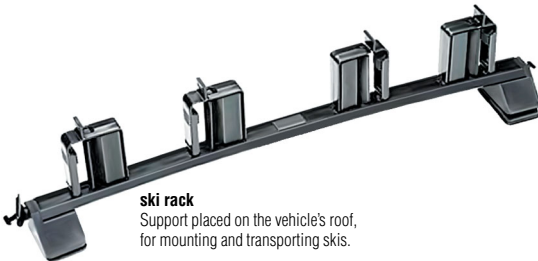
snow brush with scraper

Small broom with one end for removing snow from the vehicle and the other for scraping ice off the windows.



ski rack

Support placed on the vehicle's roof, for mounting and transporting skis.



bike carrier

Support placed on the roof or the rear of the vehicle, on which one or more bicycles can be mounted and transported.



jack

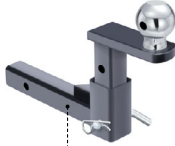
Mechanism activated by a handle, for raising the vehicle.

**handle**

Lever comprising two right-angle bends, for activating the jack mechanism to raise and lower it.

hitch ball

Device for hooking up a trailer or caravan to a vehicle.

**ball mount**

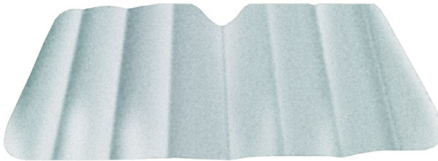
Part attached under the rear of the vehicle, with a hitch ball on one end; the trailer's or caravan's hitch articulates with it.

four-way lug wrench

Wrench for tightening and loosening the wheel nuts; it is made up of two crossed rods with each end having a different size.

**child safety seat**

Chair adapted to the size of a child; it is equipped with a safety harness for keeping the child seated and attached to the rear seat by the seat belt.

**sun visor**

Screen placed inside the windshield of a parked vehicle to protect the passenger compartment from the Sun's rays.

**car cover**

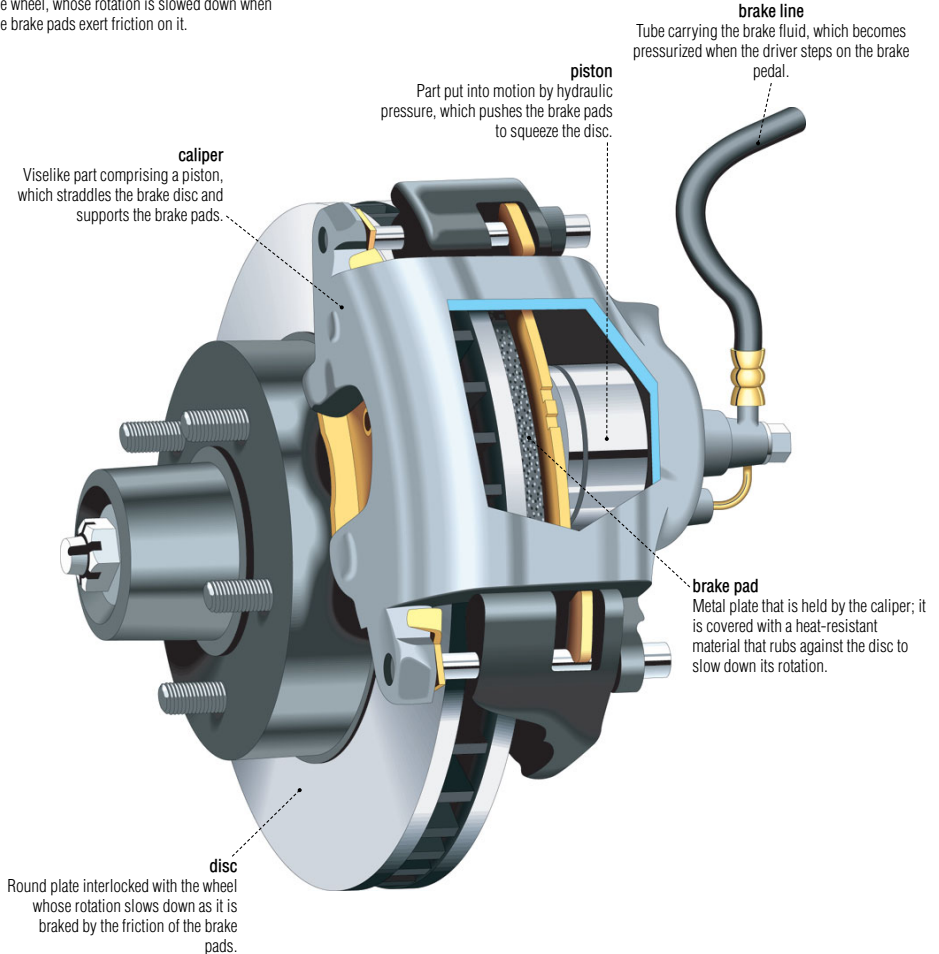
Flexible casing for covering and protecting the vehicle from the sun, dust and inclement weather.

brakes

Units slowing down or stopping the rotation of the vehicle's wheels.

disc brake

Braking mechanism comprising a disc attached to the wheel, whose rotation is slowed down when the brake pads exert friction on it.



drum brake

Braking mechanism comprising a drum interlocked with the wheel; the brake shoes rub against the drum to slow down the wheel's rotation.

wheel cylinder

Mechanism with a cylinder and two pistons that converts the hydraulic pressure in the master cylinder to mechanical force that is applied to the brake shoes.

piston

Part that slides in the cylinder under hydraulic pressure and pushes the brake shoe against the drum.

anchor pin

Axle serving as an anchoring point for the brake shoe, enabling it to move when acted upon by the piston.

brake shoe

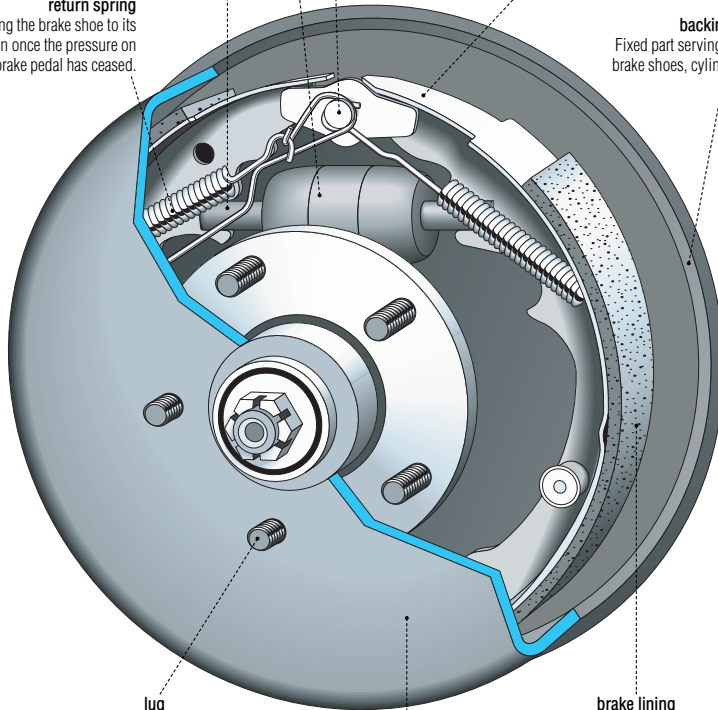
Crescent-shaped part interlocked with an anchor pin; it is fitted with a lining, which moves against the interior surface of the drum to slow its rotation.

return spring

Spring returning the brake shoe to its initial position once the pressure on the brake pedal has ceased.

backing plate

Fixed part serving as a mount for the brake shoes, cylinder and anchor pin.

**lug**

Part for assembling and interlocking the drum and the wheel.

drum

Part interlocked with the wheel so that the wheel slows its rotation when the brake shoes rub against the inside of the drum.

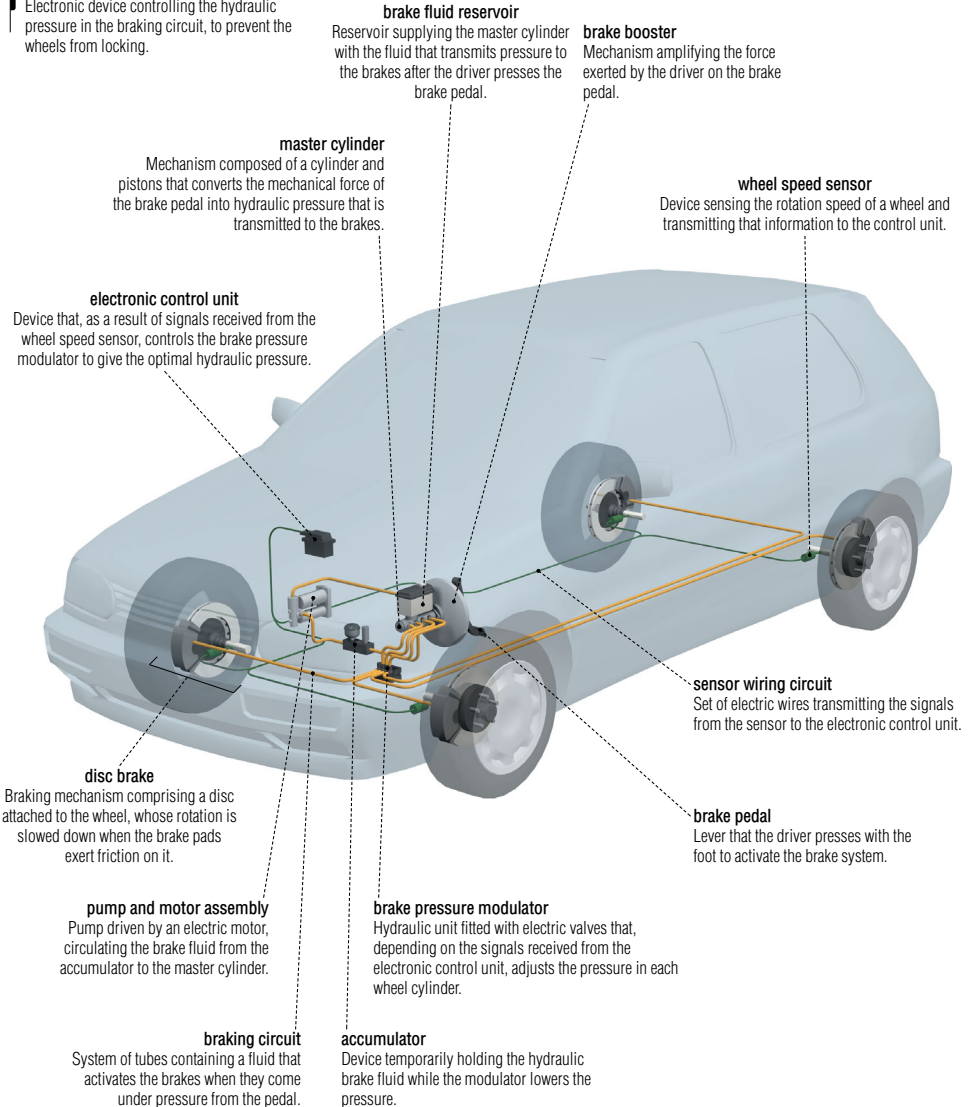
brake lining

Band of material attached to the brake shoe; heat resistant, it increases the frictional force on the drum.

brakes

antilock braking system (ABS)

Electronic device controlling the hydraulic pressure in the braking circuit, to prevent the wheels from locking.



Circular deformable unit made of rubber, mounted on the wheel and inflated with air, providing the connection between the car and the road, and absorbing the unevenness of the road.

wheel

Circular unit turning around an axle; it supports the weight of the vehicle and transmits the thrust, steering and braking actions.



rim
Metal circle constituting the wheel's circumference and on which the tire is mounted.

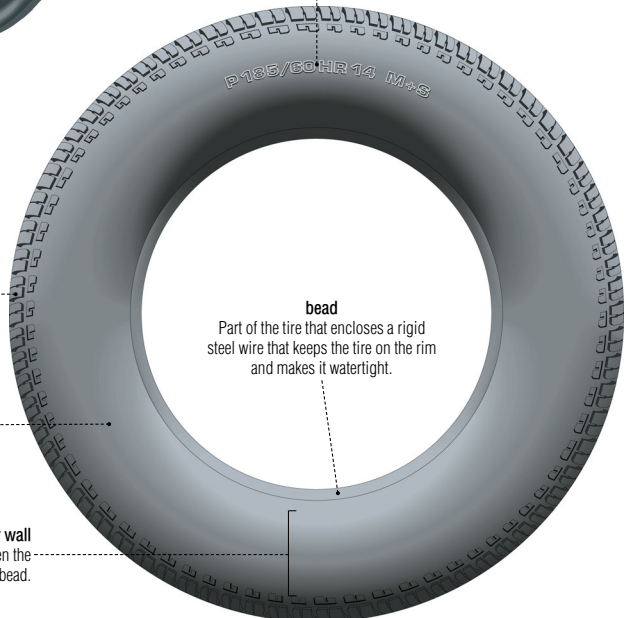
rim flange
Edge of the rim providing lateral support to the tire bead so that it adheres solidly to it.

disk

A part of the rim that is fixed at its center on the wheel's axle.

technical specifications

Alphanumeric code molded onto the side of the tire, showing its characteristics.



tread design
Raised part of the tire tread that improves traction for various usage conditions.

rubbing strip
Round protrusion of the rubber wall, protecting it from side impact and wear.

rubber wall
Part of the tire located between the tread and the bead.

bead
Part of the tire that encloses a rigid steel wire that keeps the tire on the rim and makes it watertight.

examples of tires

Depending on the intended conditions and uses, tire construction (e.g., type of rubber, tread design, width) varies widely.

**performance tire**

Wide tire that withstands particularly high temperatures and offers superior performance in holding the road and handling turns.

**all-season tire**

Tire designed for driving on roads that are dry, wet or slightly snow-covered.

**winter tire**

Tire characterized by ridges providing a good grip on snow- and ice-covered roads.

**touring tire**

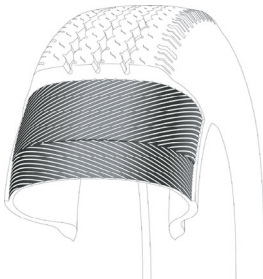
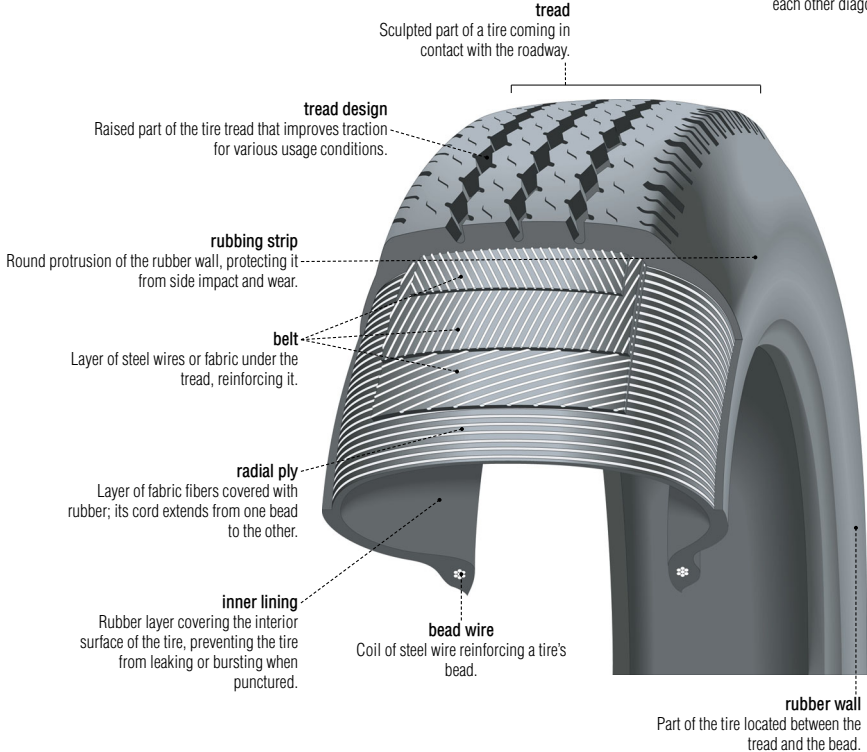
Tire designed for driving on dry or wet roads, but not recommended for snow or ice.

**studded tire**

Tire whose tread is fitted with metal studs, which provide a good grip on icy roads.

steel belted radial tire

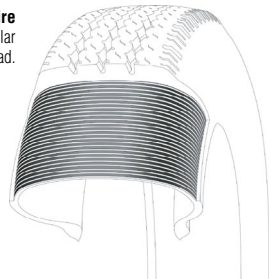
Hybrid tire with addition belts laid on top of the plies of the radial tire; the cords of these belts crisscross each other diagonally.



bias-ply tire

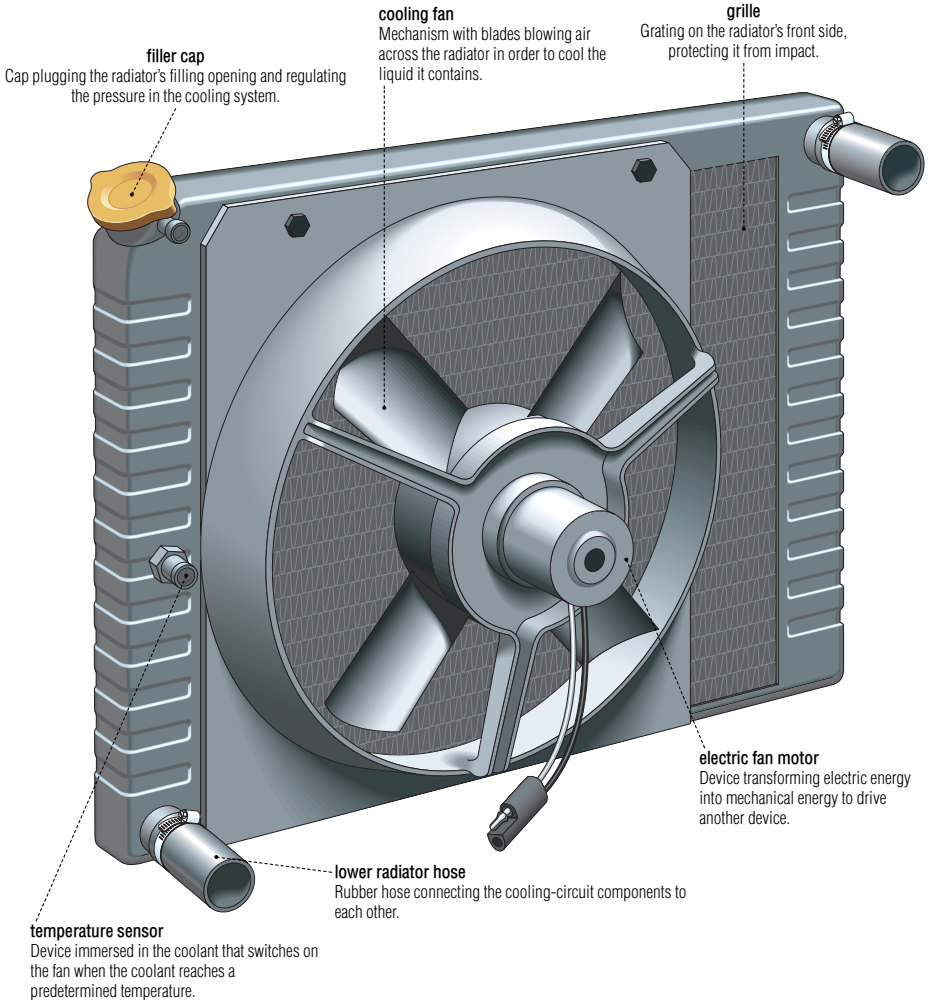
Tire with plies whose cords cross each other and are diagonal to the direction of the tread.

radial tire
Tire with plies whose cords are perpendicular to the direction of the tread.

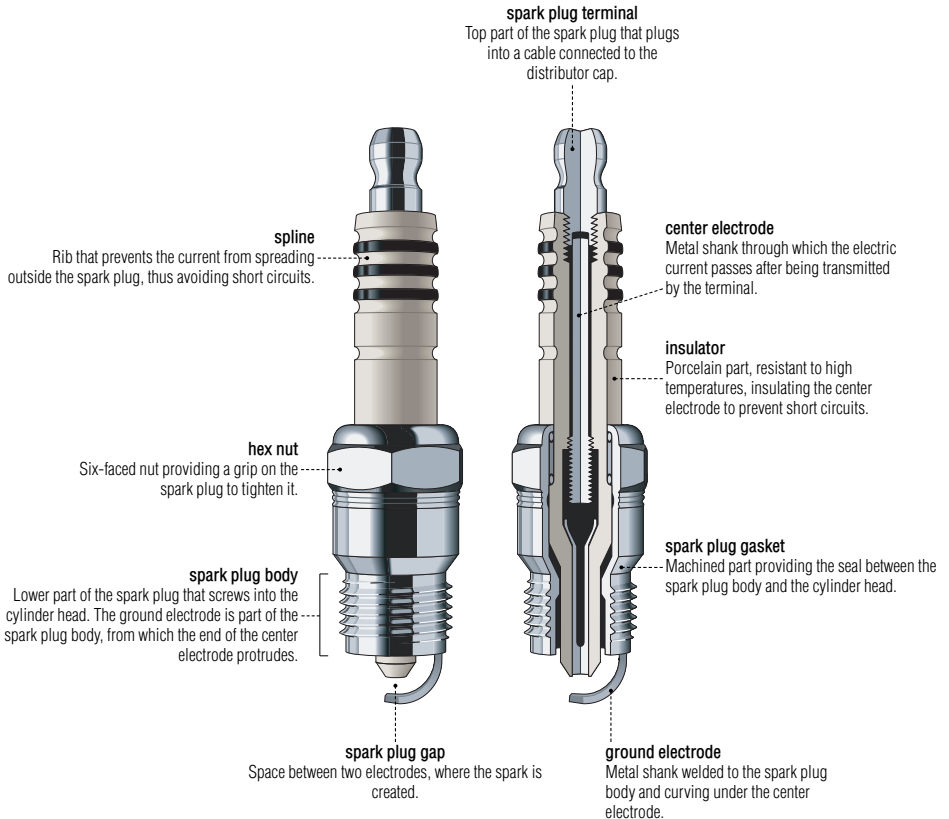


radiator

Vessel in which the coolant, which circulates around the engine, is cooled by means of flowing air.

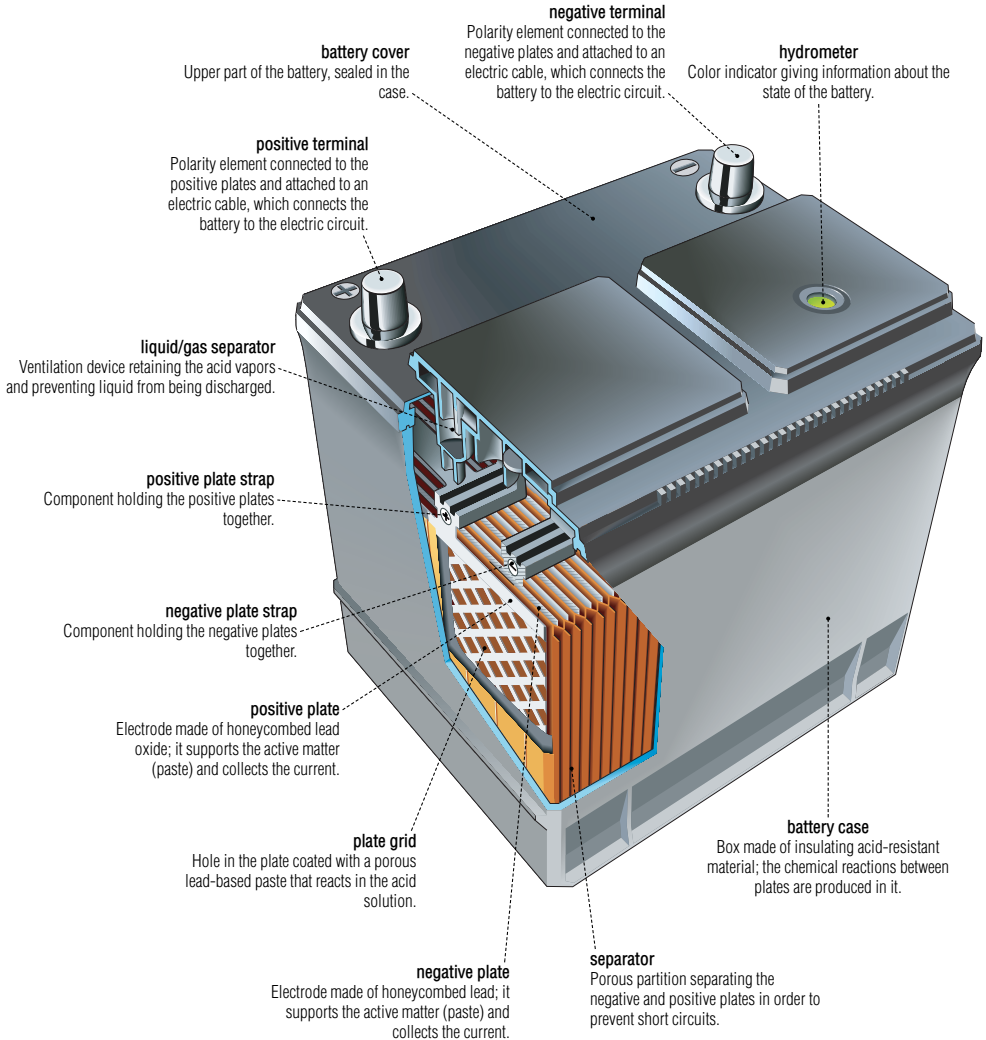


Electric device whose two electrodes produce the spark necessary to ignite the air/gasoline mixture in the cylinder.

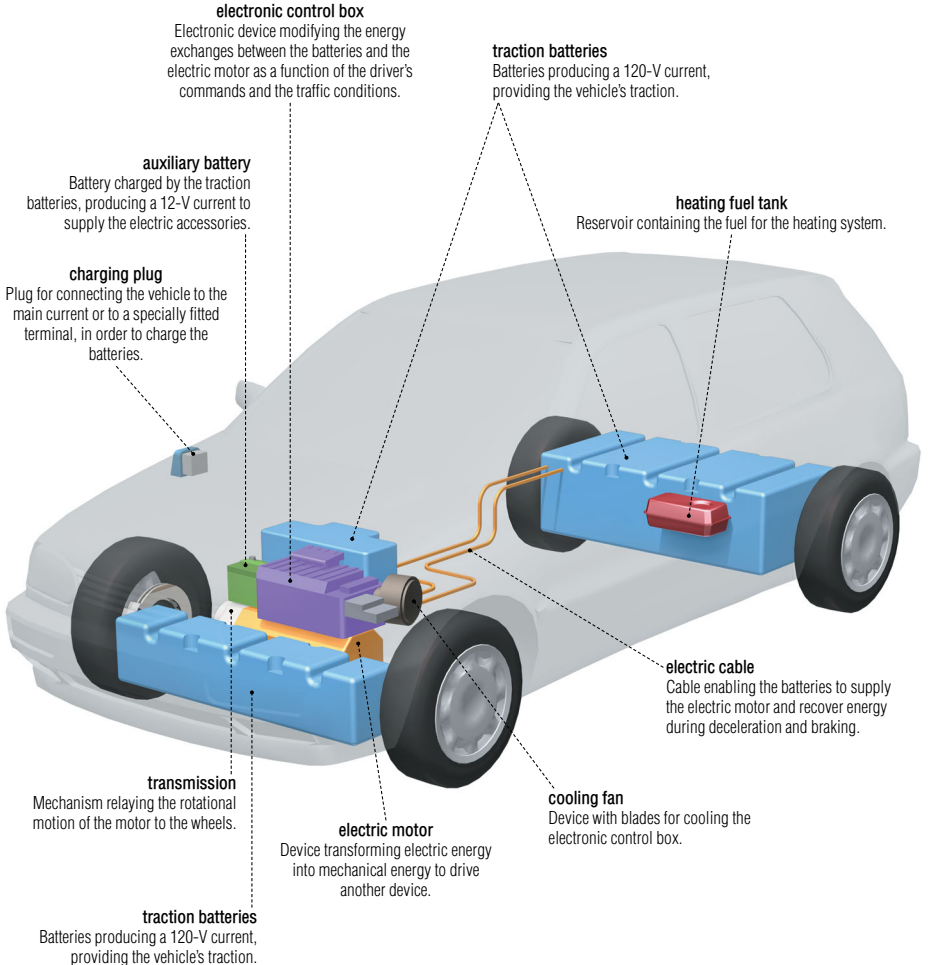


battery

Unit storing the electricity produced by the alternator and releasing it to supply the vehicle's electric system.

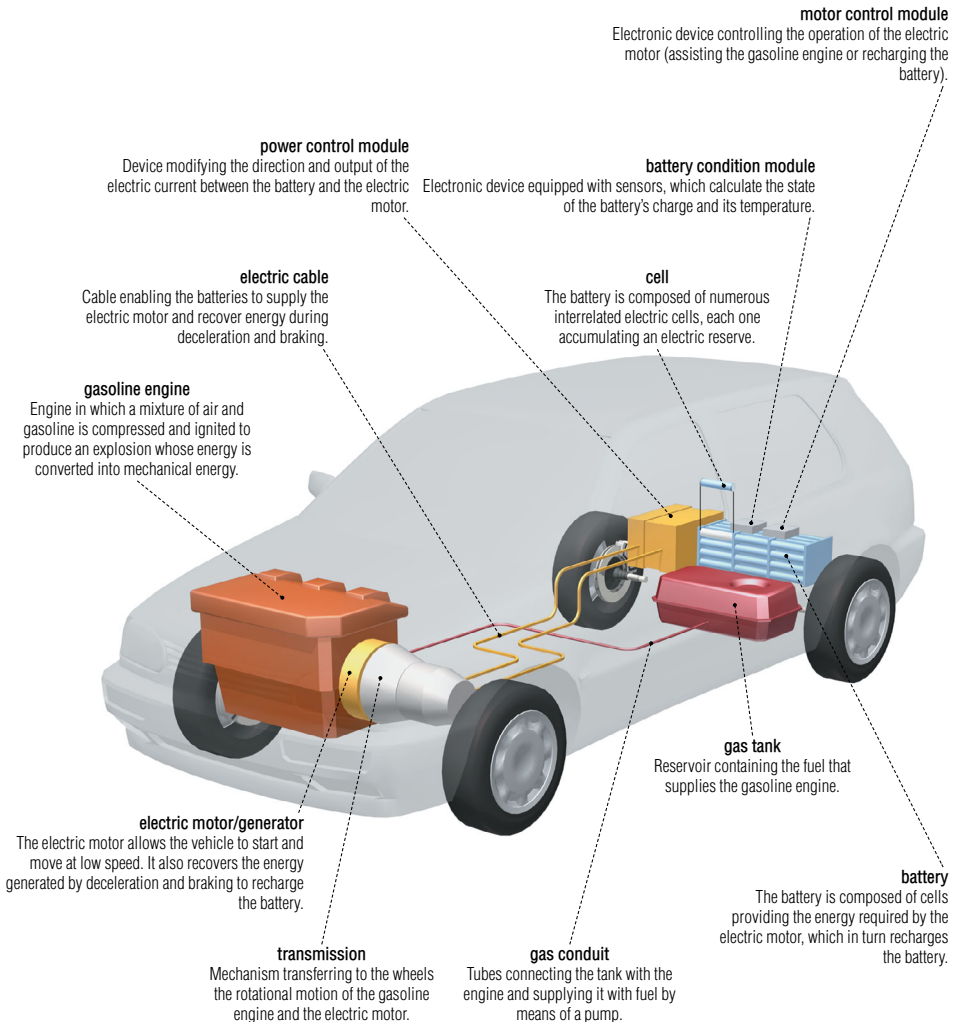


Car propelled by an electric motor whose energy is provided by a battery.



hybrid automobile

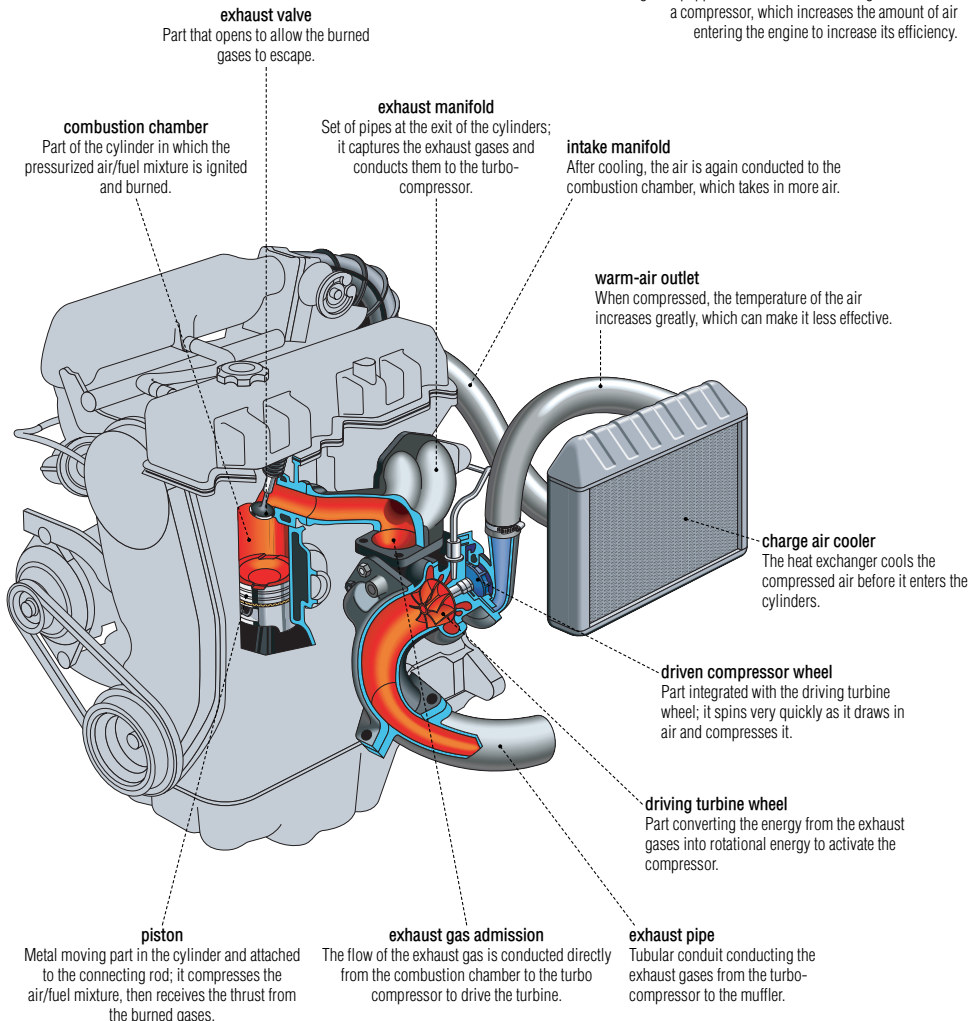
Car powered by an internal combustion engine and an electric motor, reducing gasoline consumption and polluting emissions.



Engines: machines that convert the combustion of an air/fuel mixture into mechanical energy.

turbo-compressor engine

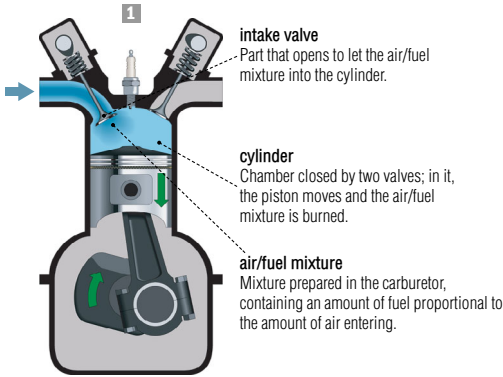
Engine equipped with a device combining a turbine with a compressor, which increases the amount of air entering the engine to increase its efficiency.



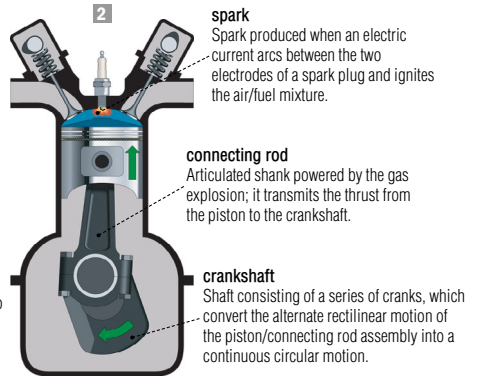
types of engines

four-stroke-cycle engine

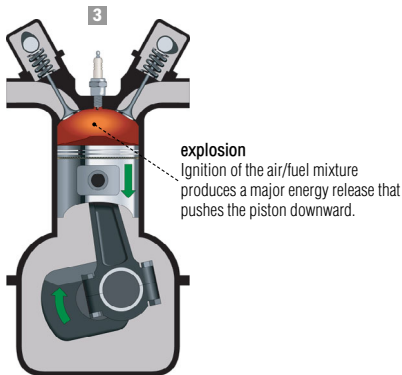
Combustion engine whose cycle (intake, compression, combustion, exhaust) requires two up-and-down movements of the piston.

**intake**

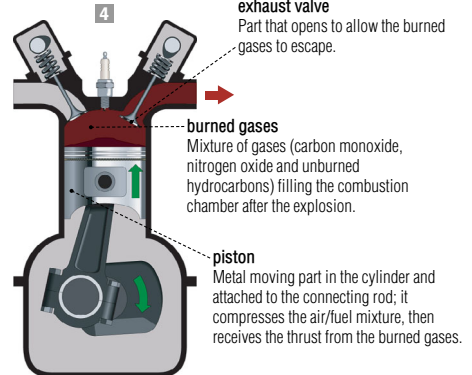
Phase during which the exhaust valve opens and the piston comes down and draws the air/fuel mixture into the combustion chamber.

**compression**

Phase during which the piston goes up to compress the air/fuel mixture. At the height of the compression, the spark plug produces a spark.

**combustion**

Phase during which the expansion of the combustion gases pushes the piston downward, driving the rotation of the crankshaft.

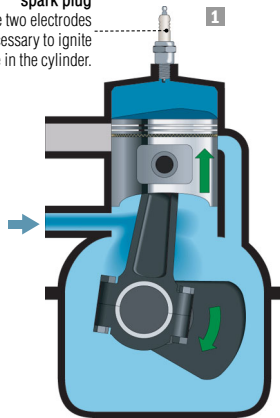
**exhaust**

Phase during which the exhaust valve opens and the piston moves back up to expel the burned gases.

two-stroke-cycle engine cycle

Two-stroke engine: combustion engine whose cycle (intake, compression, combustion and exhaust) requires one up-and-down movement of the piston.

spark plug
Electric device whose two electrodes produce the spark necessary to ignite the air/fuel mixture in the cylinder.

**compression/intake**

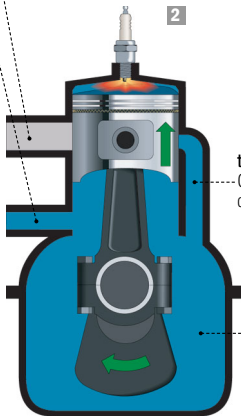
Beginning of the first stroke during which the piston moves up, drawing the air/fuel mixture into the crankcase and compressing the mixture in the cylinder.

intake port

Conduit through which the air/fuel mixture enters the crankcase.

exhaust port

Conduit through which the burned gases are expelled from the combustion chamber.

**combustion**

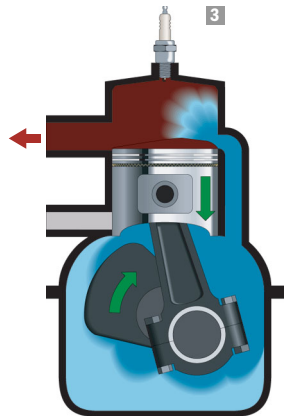
End of the first stroke during which a spark ignites the air/fuel mixture.

transfer port

Conduit conducting the air/fuel mixture from the crankcase to the cylinder.

crankcase

Sealed enclosure where the air/fuel mixture enters and the piston/connecting rod moves.

**exhaust/scavenging**

Second stroke during which the piston is pushed back by the expansion of the burned gases, which are then expelled and replaced by the mixture coming from the crankcase.

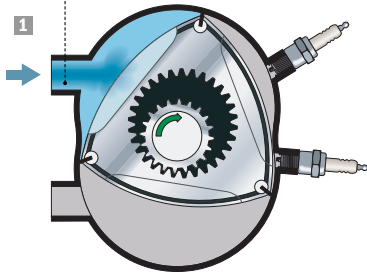
types of engines

rotary engine cycle

Rotary engine: combustion engine in which the combustion chamber is divided by a rotor into three turning parts of unequal volume.

intake manifold

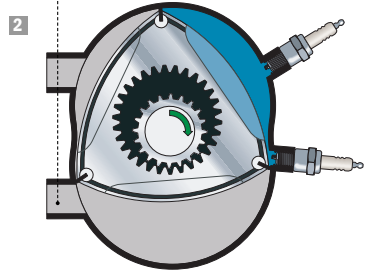
Passages through which the air/fuel mixture enters the cylinder.

**intake**

The air/fuel mixture enters the cylinder through the intake manifold; the rotor's motion forces it into the next chamber.

exhaust manifold

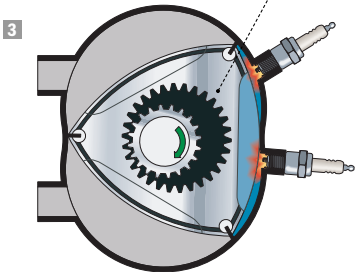
Pipe through which the burned gases are expelled from the cylinder.

**compression**

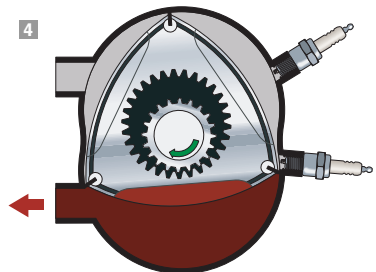
The rotor's rotation reduces the volume in the chamber and compresses the mixture.

rotor

Triangular piston turning eccentrically around an axle and transmitting a rotational motion directly to the crankshaft.

**power**

When the compression level is reached, the spark plugs produce sparks that ignite the air/fuel mixture.

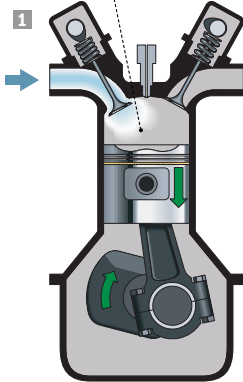
**exhaust**

In the passage before the exhaust manifold, the burned gases are expelled by the rotor.

diesel engine cycle

Diesel engine: combustion engine in which the compressed air becomes sufficiently hot to ignite the injected fuel.

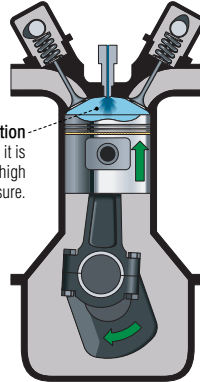
air
Air enters the combustion chamber.

**intake**

Phase during which the exhaust valve opens and the piston comes down and draws the air/fuel mixture into the combustion chamber.

2

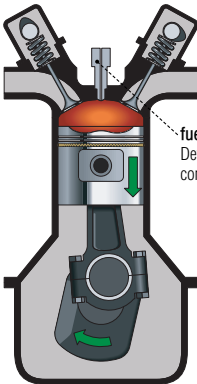
injection/combustion
Fuel ignites immediately when it is injected into the hot air at very high pressure.

**compression**

Stroke during which the piston rises, compressing the air, which becomes heated under the pressure.

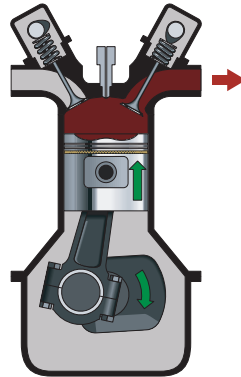
3

fuel injector
Device pulverizing the fuel in the combustion chamber.

**power**

Stroke during which the expansion of the burning gases pushes the piston downward.

4

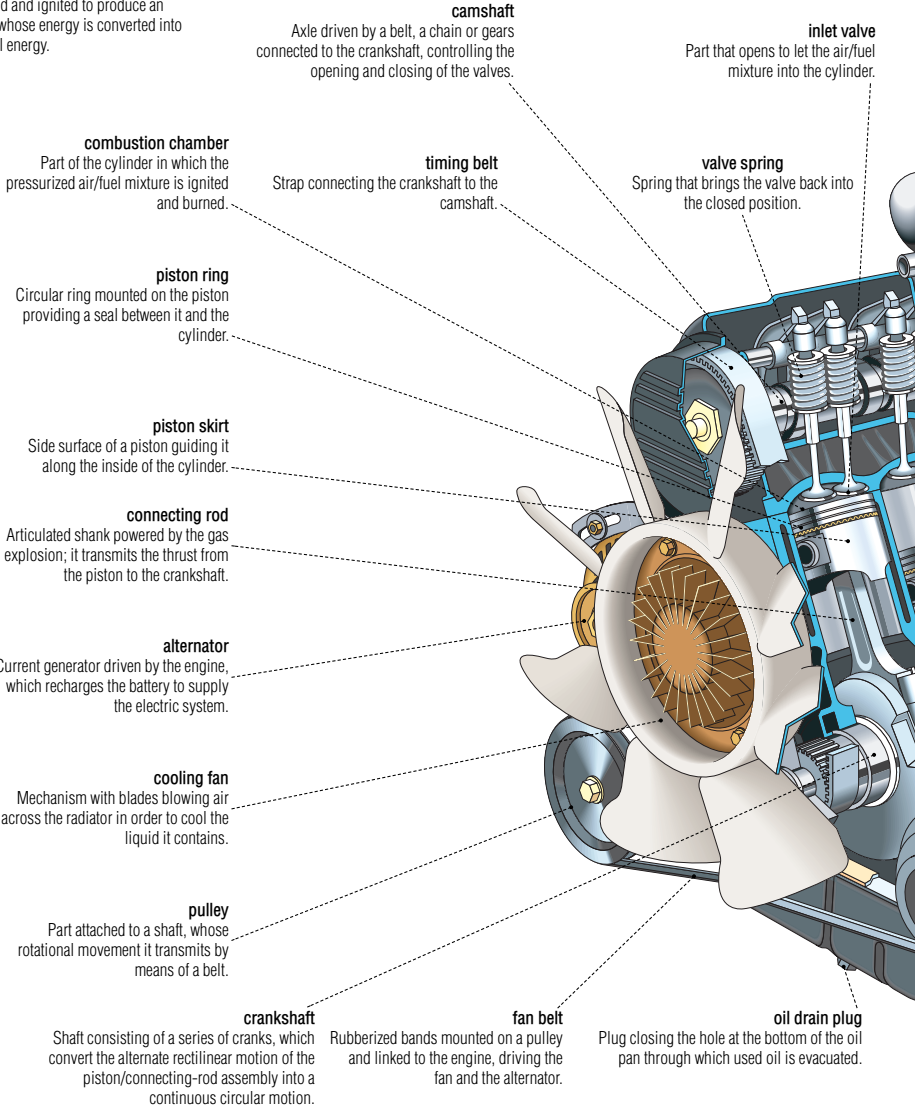
**exhaust**

Phase during which the piston moves up and forces the burned gases toward the exhaust valve.

types of engines

gasoline engine

Engine in which a mixture of air and gasoline is compressed and ignited to produce an explosion whose energy is converted into mechanical energy.



combustion chamber
Part of the cylinder in which the pressurized air/fuel mixture is ignited and burned.

piston ring
Circular ring mounted on the piston providing a seal between it and the cylinder.

piston skirt
Side surface of a piston guiding it along the inside of the cylinder.

connecting rod
Articulated shank powered by the gas explosion; it transmits the thrust from the piston to the crankshaft.

alternator
Current generator driven by the engine, which recharges the battery to supply the electric system.

cooling fan
Mechanism with blades blowing air across the radiator in order to cool the liquid it contains.

pulley
Part attached to a shaft, whose rotational movement it transmits by means of a belt.

crankshaft
Shaft consisting of a series of cranks, which convert the alternate rectilinear motion of the piston/connecting-rod assembly into a continuous circular motion.

camshaft
Axle driven by a belt, a chain or gears connected to the crankshaft, controlling the opening and closing of the valves.

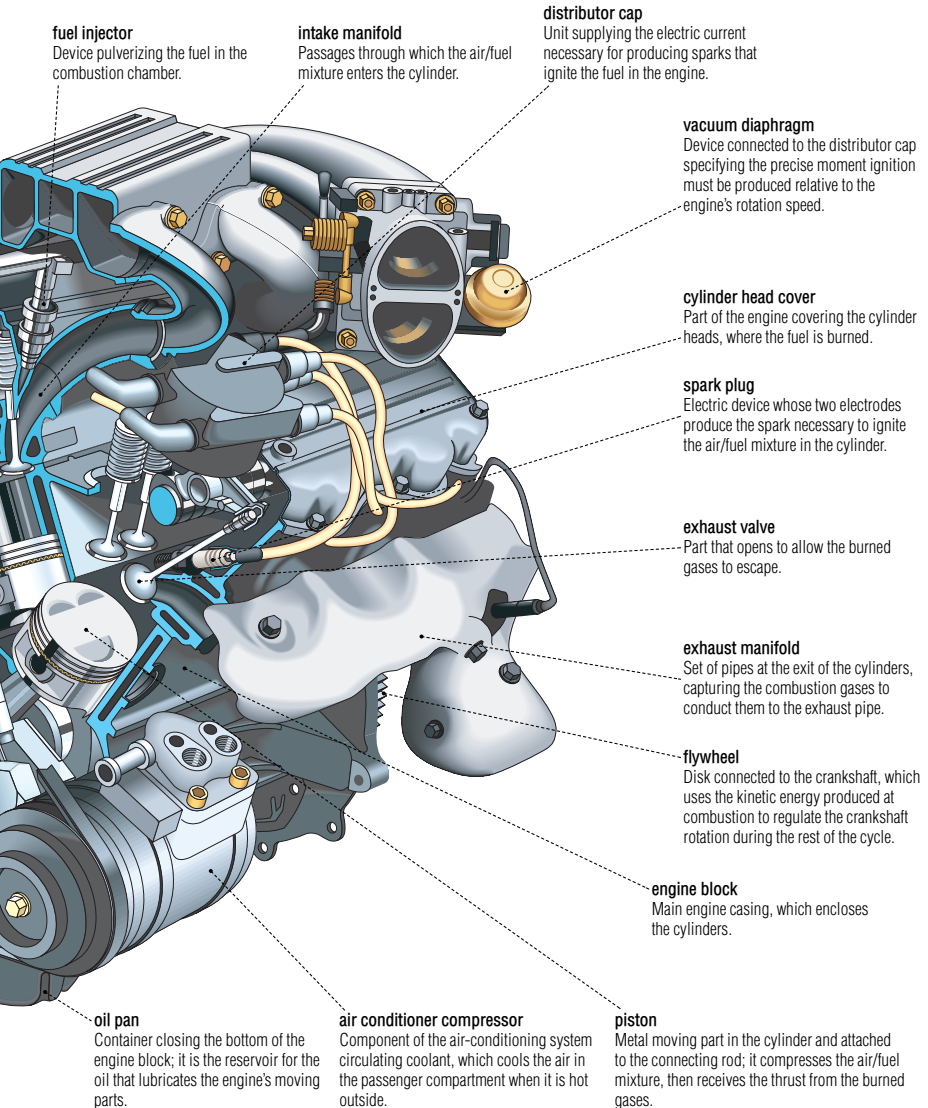
timing belt
Strap connecting the crankshaft to the camshaft.

inlet valve
Part that opens to let the air/fuel mixture into the cylinder.

valve spring
Spring that brings the valve back into the closed position.

fan belt
Rubberized bands mounted on a pulley and linked to the engine, driving the fan and the alternator.

oil drain plug
Plug closing the hole at the bottom of the oil pan through which used oil is evacuated.



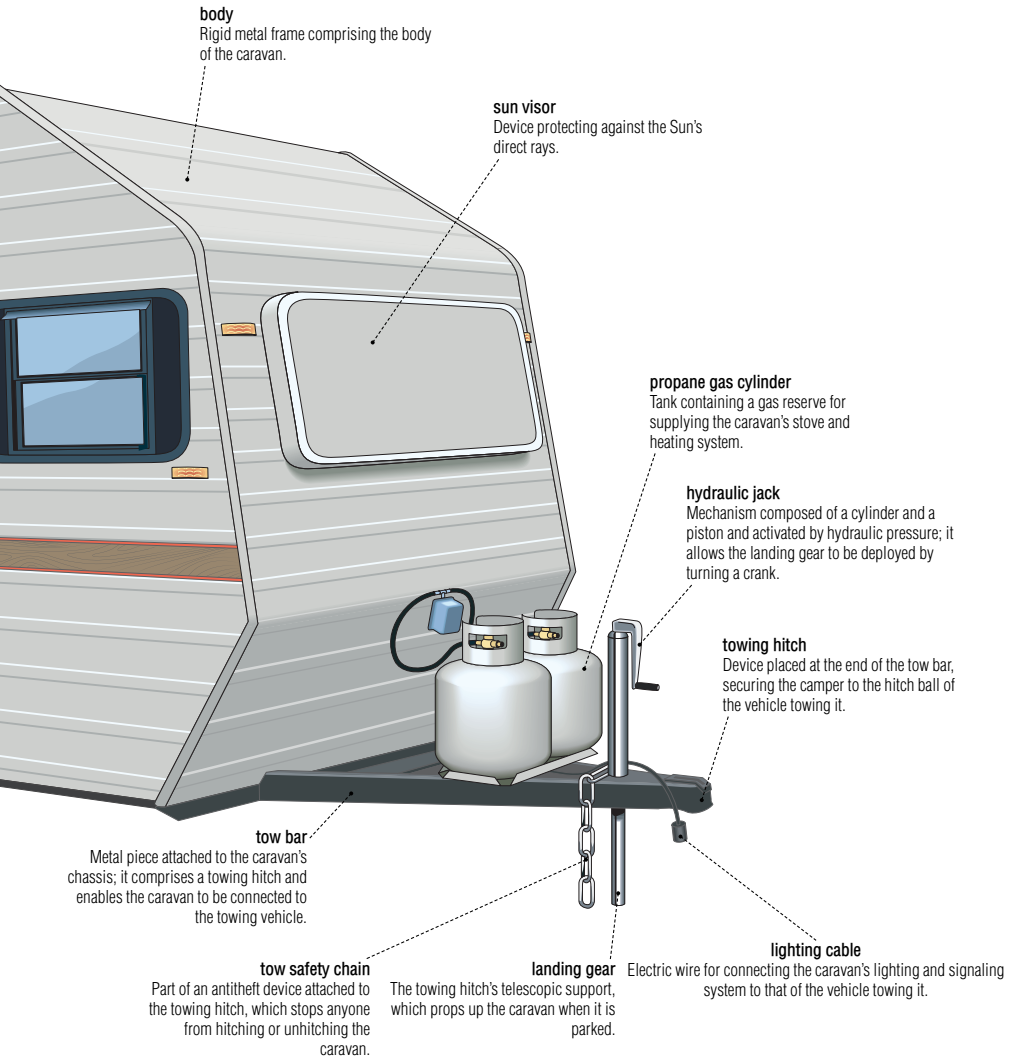
caravan

Motorized or towed vehicle fitted out as a dwelling.

trailer

Caravan fitted out as a dwelling, usually pulled by an automobile.

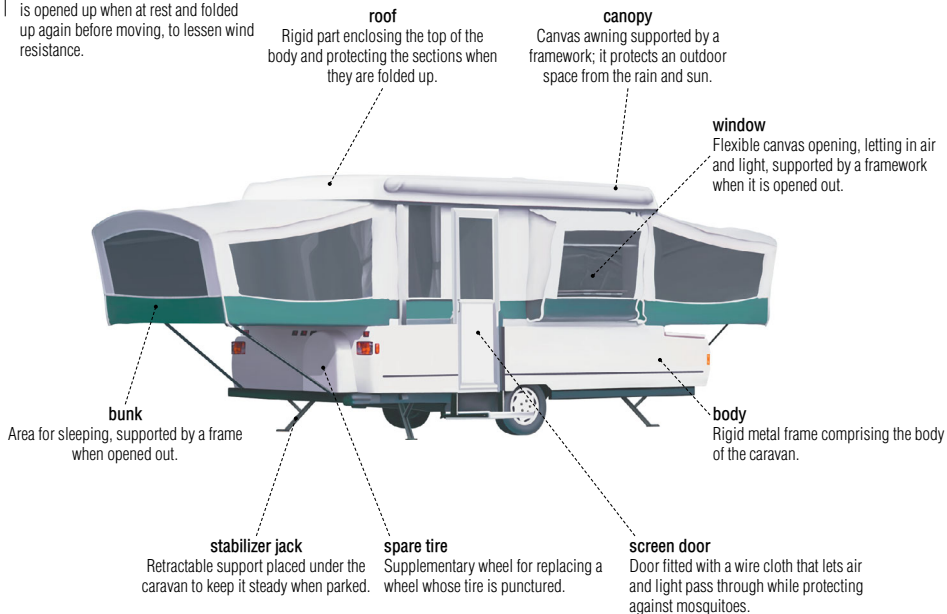




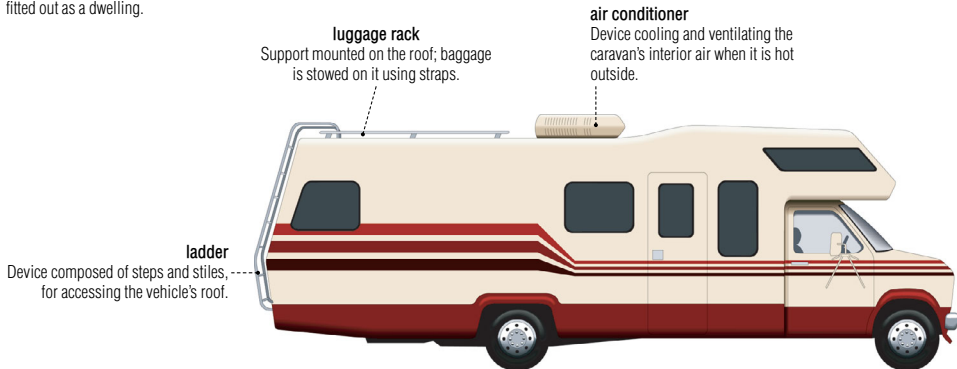
caravan

tent trailer

Caravan with a collapsible section that is opened up when at rest and folded up again before moving, to lessen wind resistance.

**motor home**

Van whose passenger compartment is fitted out as a dwelling.



Motorized vehicle for city or intercity transportation of passengers who are standing or seated.



upper deck
Upper floor of the bus.

double-deck bus
Bus equipped with two superimposed compartments, connected by stairs.

route sign
Screen usually on the front, rear and right side of the vehicle, displaying the number of the bus's route.

outside mirror
Mirror fixed to the outside of the passenger compartment enabling the driver to see behind and along the sides of the vehicle without turning around.

blind spot mirror
Exterior convex mirror providing a wider field of vision than a conventional mirror.

school bus
Motorized vehicle for transporting schoolchildren and equipped with specialized safety devices.

blinking lights
Flashing red lights at the front and rear of the bus that the driver activates at each stop to signal other vehicles to stop.



crossing arm
Pivoting rod deployed at each stop so that the schoolchildren stay in the driver's field of vision while passing in front of the bus.

crossover mirror
Convex mirror allowing the driver to see the front of the bus.

city bus

Motorized vehicle for city transportation of passengers who are standing or seated.

air intake

Opening in the roof, fitted with a cover, for letting fresh air into the bus.

route sign

Screen usually on the front, rear and right side of the vehicle, displaying the number of the bus's route.

**two-leaf door**

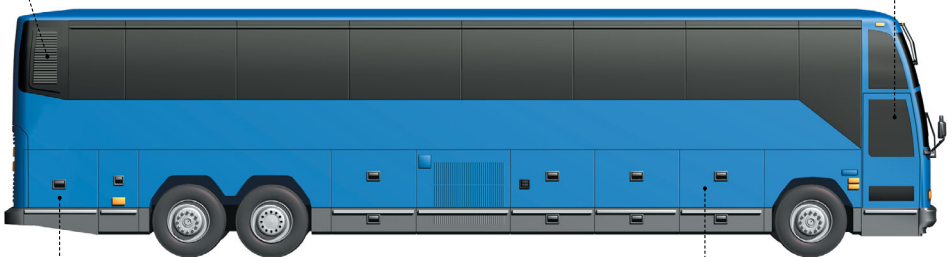
Wide door divided into two movable parts, which double back to each side to allow several people to pass through at once.

coach

Motorized vehicle for intercity transportation of seated passengers over medium and long distances.

engine air intake

Opening through which outside air enters the vehicle's engine.

entrance door**engine compartment**

Housing for the engine under the vehicle's chassis, accessible by a door.

baggage compartment

Large compartment beneath the vehicle's floor, fitted with side doors, in which passengers' baggage is deposited.

minibus

Motorized vehicle for transporting about 10 passengers, sometimes equipped with a lift for wheelchairs.

West Coast mirror

Mirror fixed to the outside of the passenger compartment enabling the driver to see behind and along the sides of the vehicle without turning around.

lift door

handrail

Support rail equipped with a belt restraining the wheelchair when the platform is being raised and lowered.

platform

Horizontal part moving up and down for the wheelchair; it rests on the ground in the lower position and forms the doorsill in the upper position.

wheelchair lift

Electric lifting device deployed so that a person in a wheelchair can be raised into and lowered from a minibus.

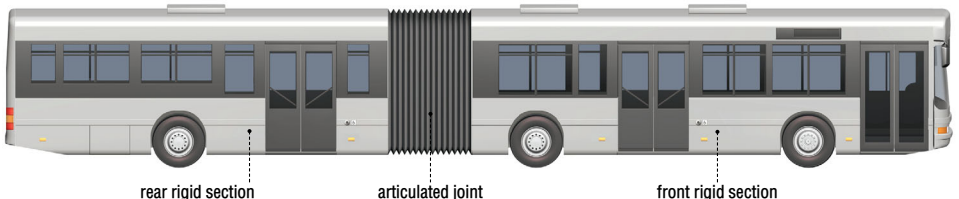
entrance door

blind spot mirror

Exterior convex mirror providing a wider field of vision than a conventional mirror.

articulated bus

Bus with two aligned compartments, connected by an articulated joint.



rear rigid section

articulated joint

front rigid section

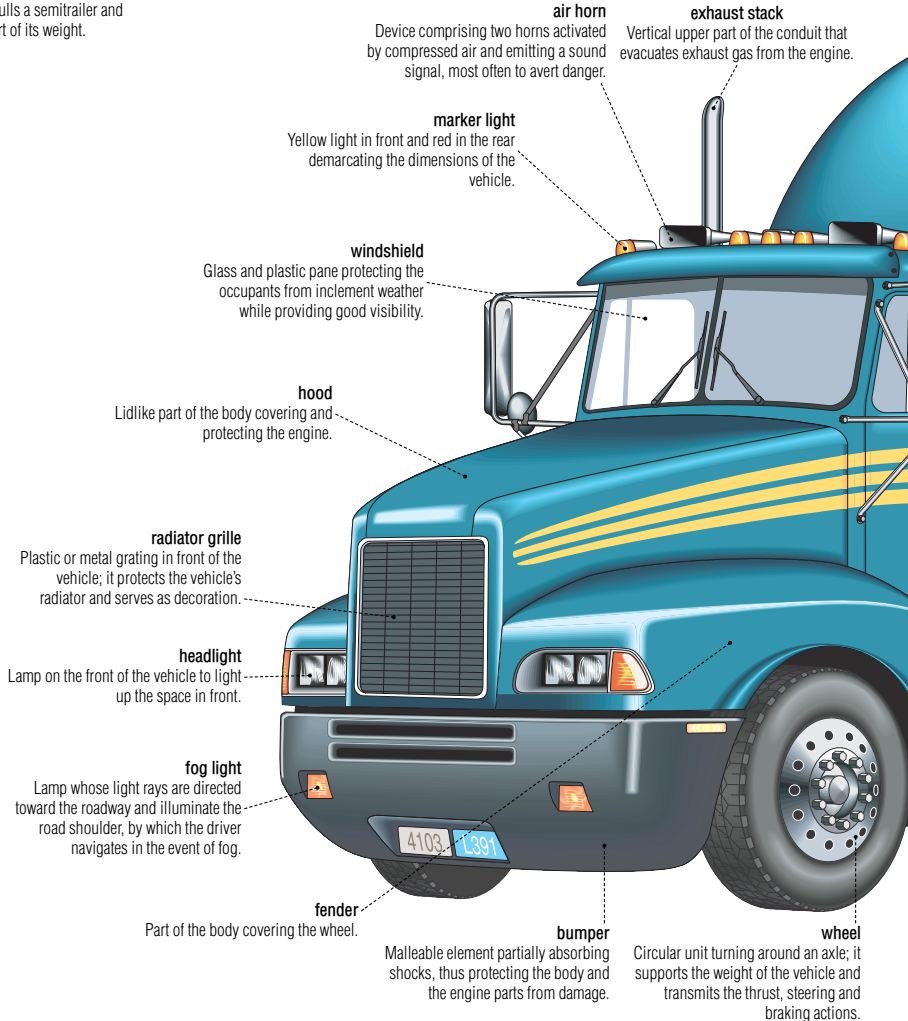
Part connecting the rigid sections by a waterproof bellows and a turning platform shared by the two sections.

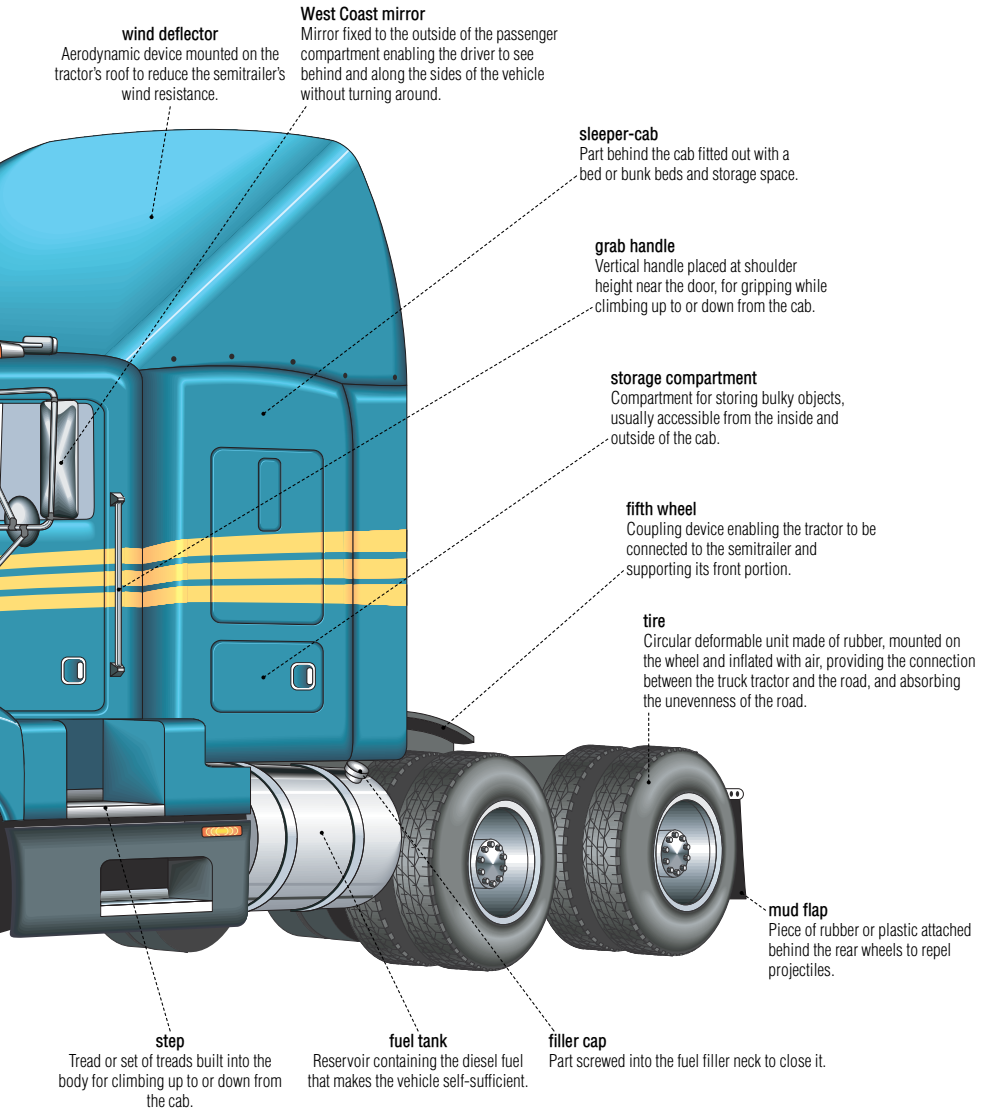
trucking

Transportation of cargo by truck.

truck tractor

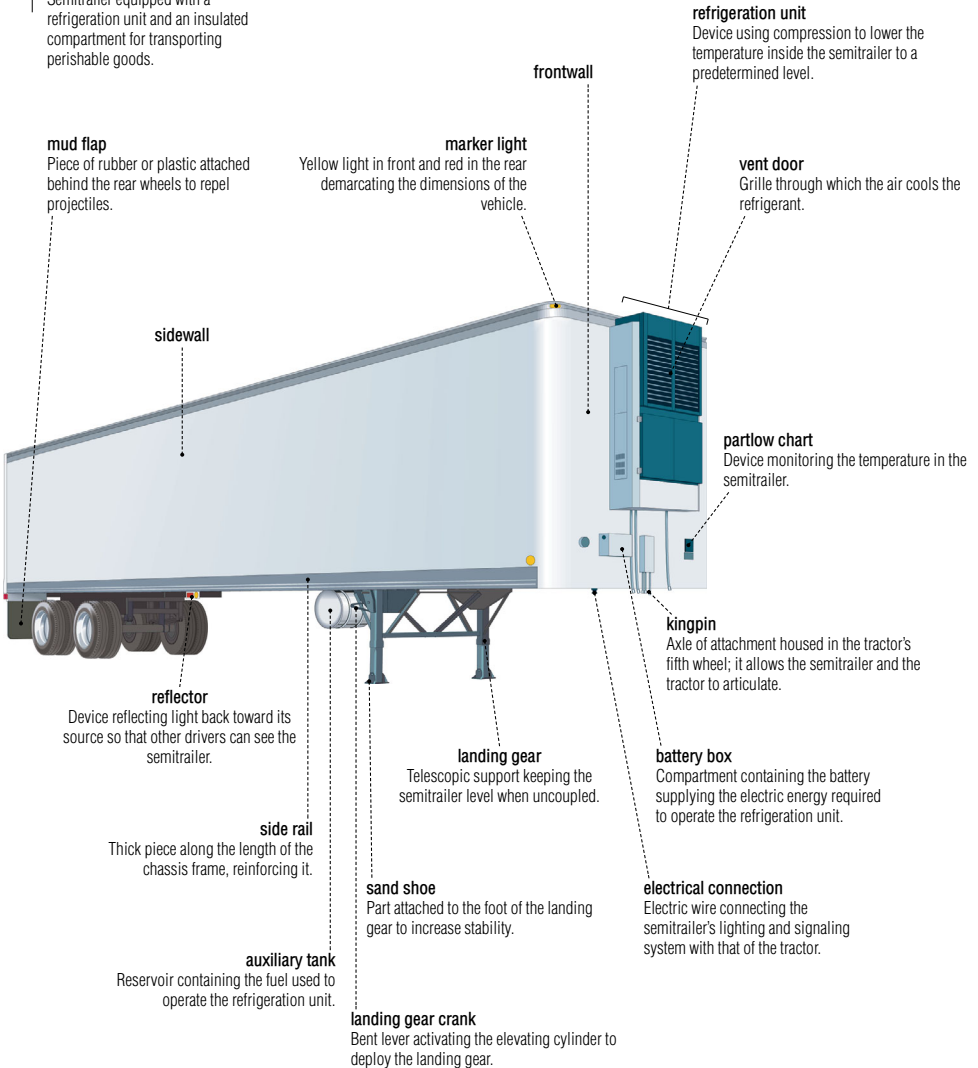
Motorized vehicle equipped with a fifth wheel that pulls a semitrailer and supports part of its weight.





refrigerated semitrailer

Semitrailer equipped with a refrigeration unit and an insulated compartment for transporting perishable goods.



mud flap

Piece of rubber or plastic attached behind the rear wheels to repel projectiles.

sidewall

marker light
Yellow light in front and red in the rear demarcating the dimensions of the vehicle.

refrigeration unit

Device using compression to lower the temperature inside the semitrailer to a predetermined level.

vent door

Grille through which the air cools the refrigerant.

partlow chart

Device monitoring the temperature in the semitrailer.

kingpin

Axle of attachment housed in the tractor's fifth wheel; it allows the semitrailer and the tractor to articulate.

reflector

Device reflecting light back toward its source so that other drivers can see the semitrailer.

landing gear

Telescopic support keeping the semitrailer level when uncoupled.

battery box

Compartment containing the battery supplying the electric energy required to operate the refrigeration unit.

side rail

Thick piece along the length of the chassis frame, reinforcing it.

sand shoe

Part attached to the foot of the landing gear to increase stability.

electrical connection

Electric wire connecting the semitrailer's lighting and signaling system with that of the tractor.

auxiliary tank

Reservoir containing the fuel used to operate the refrigeration unit.

landing gear crank

Bent lever activating the elevating cylinder to deploy the landing gear.

flatbed semitrailer

Semitrailer composed of a platform around which detachable side panels can be placed.

stake pocket

Support placed on the side edges of the deck, holding in place a belt hook or a post for attaching the side panels.

turn signal

Device emitting an intermittent light, signaling a change of the vehicle's direction or a temporary hazard to other vehicles.

bulkhead

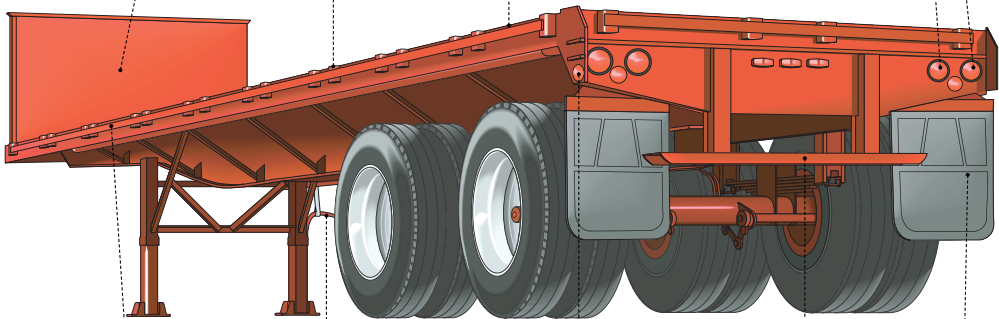
Panel fixed to the front of the deck to prevent cargo from moving forward.

deck

Floor of the semitrailer serving as the loading plane for the cargo.

taillight

Lamp turning on automatically when the front lights are lit, making the vehicle visible for up to 150 meters.

**rub rail**

Bar attached to the stake pockets to protect them from side impact.

marker light

Yellow light in front and red in the rear demarcating the dimensions of the vehicle.

bumper

Malleable element partially absorbing shocks, thus protecting the body from damage.

landing gear crank

Bent lever activating the elevating cylinder to deploy the landing gear.

mud flap

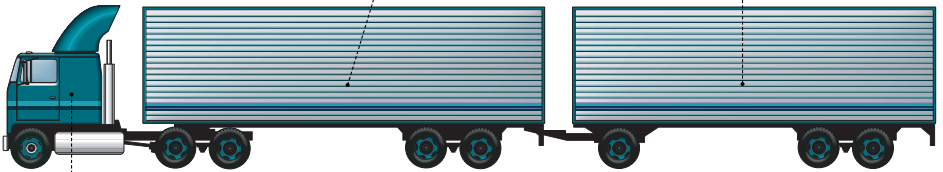
Piece of rubber or plastic attached behind the rear wheels to repel projectiles.

examples of semitrailers

Semitrailers: trailers whose front portion is equipped with a kingpin for coupling them to a tractor.

tandem tractor trailer

Set of vehicles comprising a tractor, a semitrailer and a trailer.

**semitrailer**

Trailer whose front part is equipped with a kingpin for coupling it to the tractor.

truck trailer

Motorless vehicle for transporting cargo and connected by a coupling bar to the vehicle towing it.

truck tractor

Motorized vehicle equipped with a fifth wheel that pulls a semitrailer and supports part of its weight.

container semitrailer

Semitrailer comprising only a chassis; containers of standard sizes are loaded on it to transport cargo.

**twist lock**

Locking mechanism housed in each bottom corner of the container to secure it to the semitrailer.

tank trailer

Semitrailer for transporting bulk products in liquid, powder or gas form.

**tank body**

Closed tank divided into several compartments of various sizes.

double drop lowbed semitrailer

Semitrailer for transporting heavy machinery.



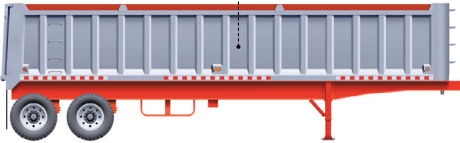


automobile transport semitrailer

Semitrailer equipped with several sloped platforms for transporting vehicles.

dump body

Open or closed container; when raised by the elevation cylinder, it discharges its bulk material.



dump semitrailer

Semitrailer equipped with a dump body for transporting in bulk.



chip van

Semitrailer designed to transport wood in chip form.



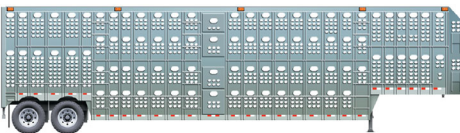
van body semitrailer

Semitrailer comprising a closed box, rigid or made of thick fabric (tarpaulin and sliding curtains).



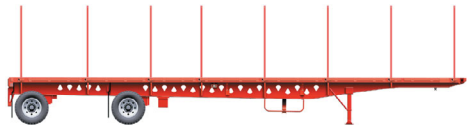
refrigerated semitrailer

Semitrailer equipped with a refrigeration unit and an insulated compartment for transporting perishable goods.



possum-belly body semitrailer

Semitrailer designed to transport livestock; it comprises several perforated compartments.



log semitrailer

Semitrailer with folding side posts for transporting tree trunks.

examples of trucks

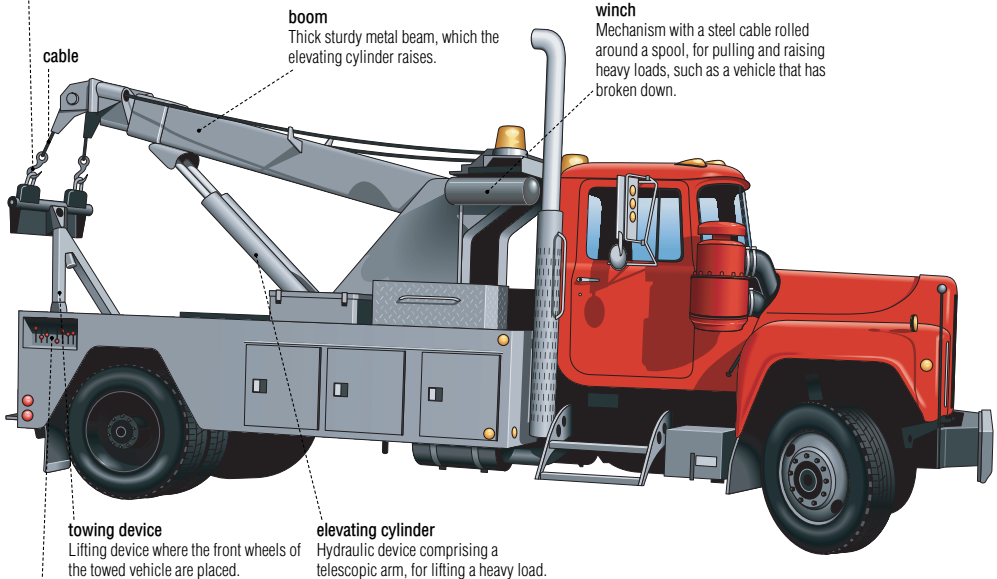
Trucks: motorized vehicles for transporting cargo and providing maintenance and safety.

tow truck

Truck for towing vehicles that have broken down.

hook

Part that is detached from the towing device while the vehicle's front wheels are placed in position, then reattached to raise it.

**winch controls**

Control mechanisms for the electric motor, which powers the spool's rotation.

**van straight truck**

Truck whose box is rigid and closed.

dump body

Open or closed container; when raised by the elevation cylinder it discharges its bulk material.

**dump truck**

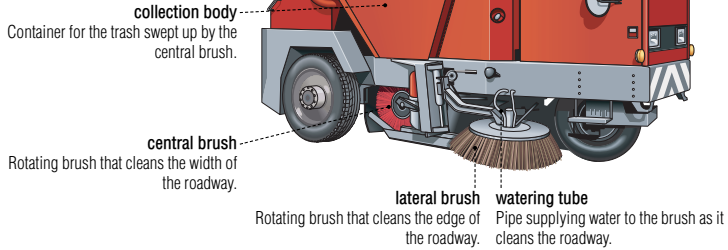
Truck equipped with a dump body; it is used for bulk transport.

**cesspit emptier**

Truck equipped with a tank, a pump and a long pipe, for emptying septic tanks and other pipes.

street sweeper

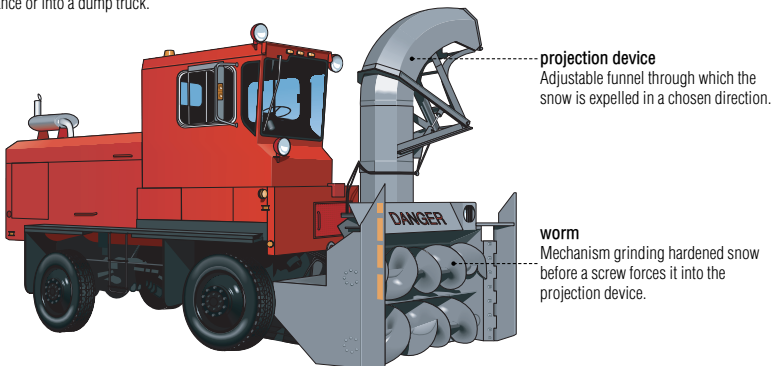
Vehicle for cleaning city streets, equipped with a collection body, rotating brushes, a vacuum cleaner and a watering device.

**detachable body**

Truck for transporting containers, which it loads and unloads using a mechanical arm.

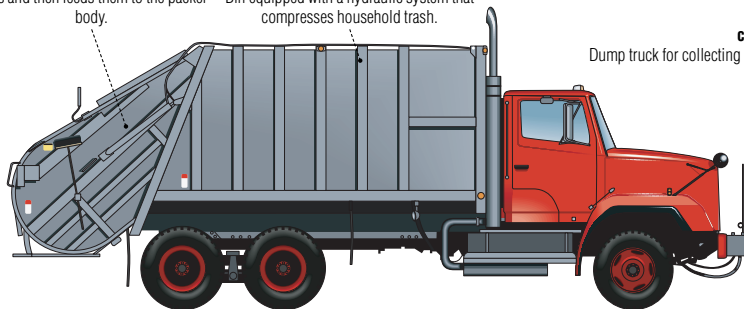
**snowblower**

Vehicle with a mechanism that draws up snow from the road and projects it some distance or into a dump truck.



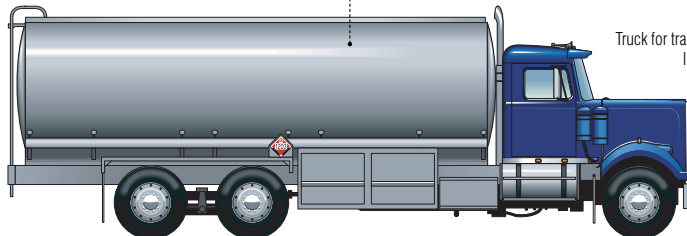
loading hopper
Large reservoir that takes the trash bags and then feeds them to the packer body.

packer body
Bin equipped with a hydraulic system that compresses household trash.



collection truck
Dump truck for collecting household trash.

tank body
Closed tank divided into several compartments of various sizes.



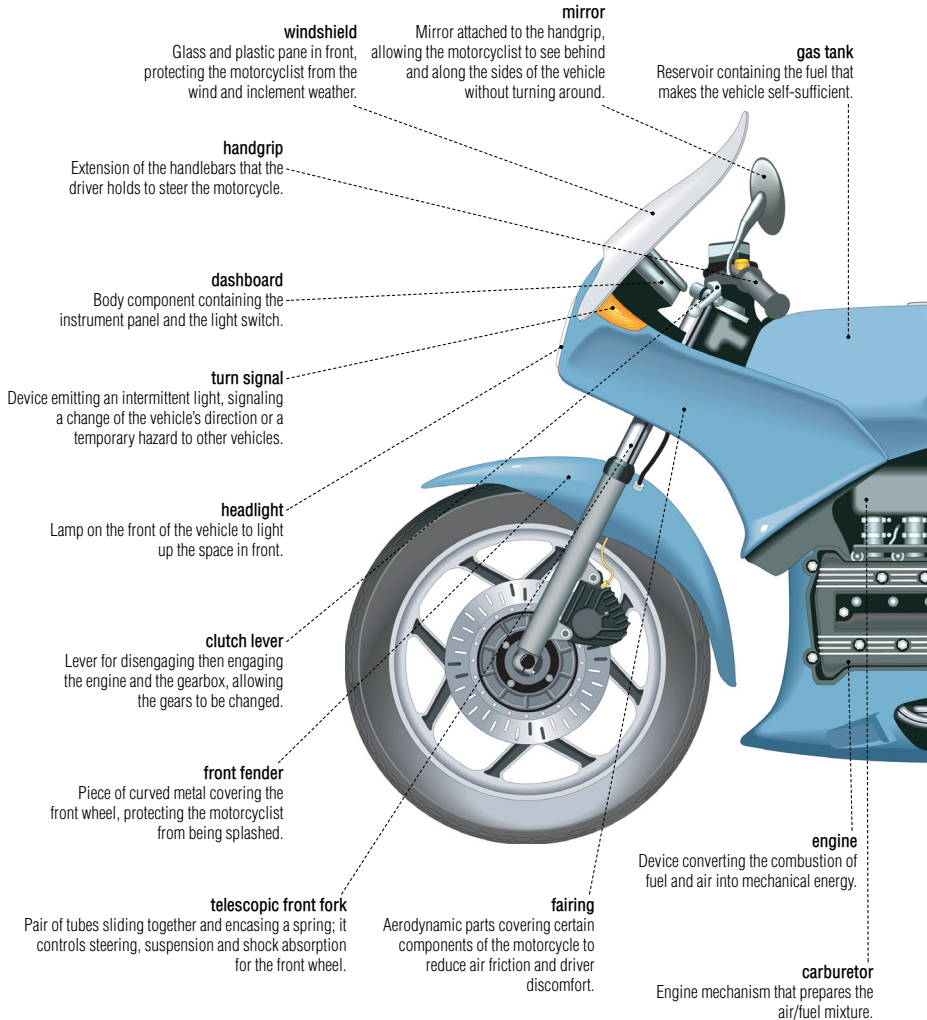
tank truck
Truck for transporting bulk products in liquid, powder or gas form.

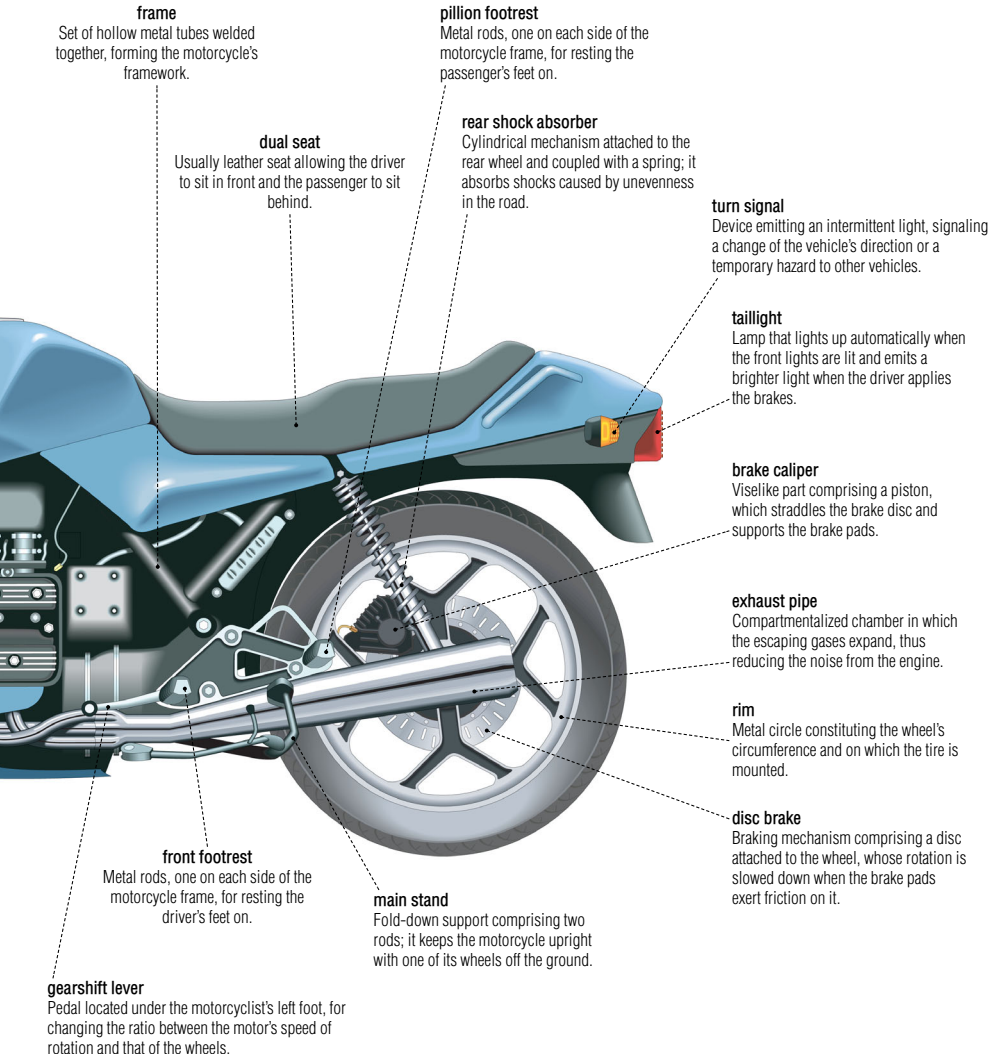


concrete mixer truck
Truck equipped with a rotating tub, for transporting fresh cement, which it pours out down a chute.

motorcycle

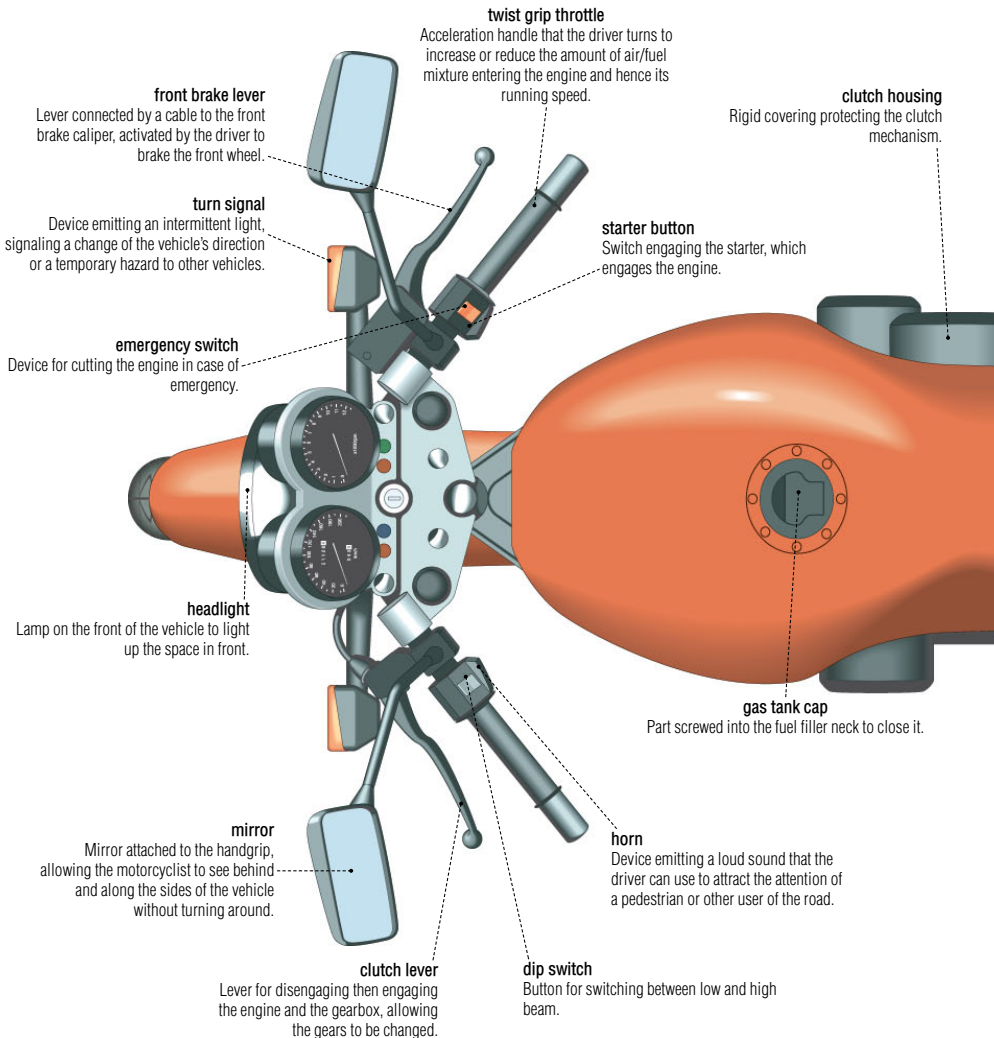
Two-wheeled motorized vehicle whose engine cylinder is larger than 125 cubic centimeters.

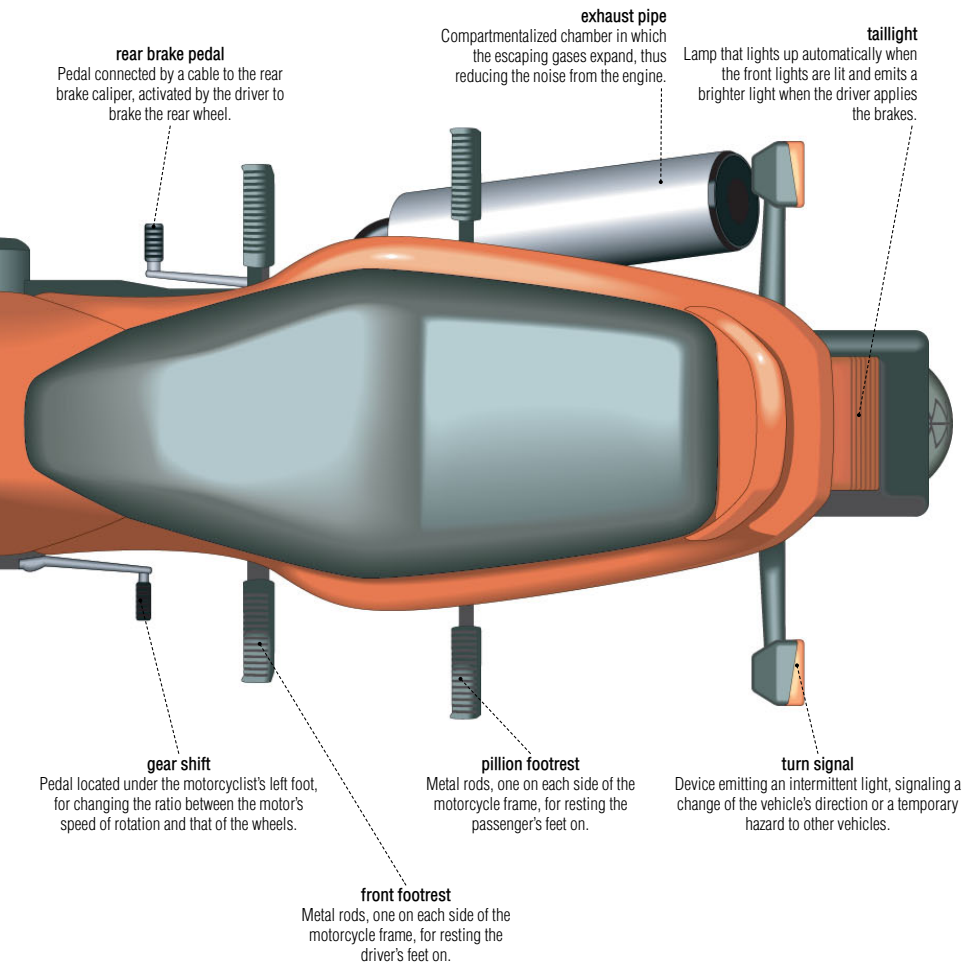




motorcycle

motorcycle: view from above

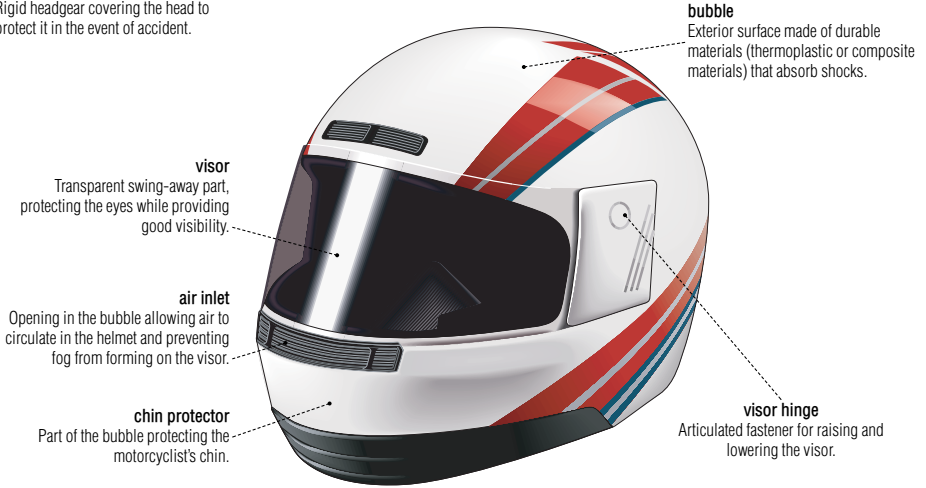




motorcycle

protective helmet

Rigid headgear covering the head to protect it in the event of accident.



visor

Transparent swing-away part, protecting the eyes while providing good visibility.

air inlet

Opening in the bubble allowing air to circulate in the helmet and preventing fog from forming on the visor.

chin protector

Part of the bubble protecting the motorcyclist's chin.

bubble

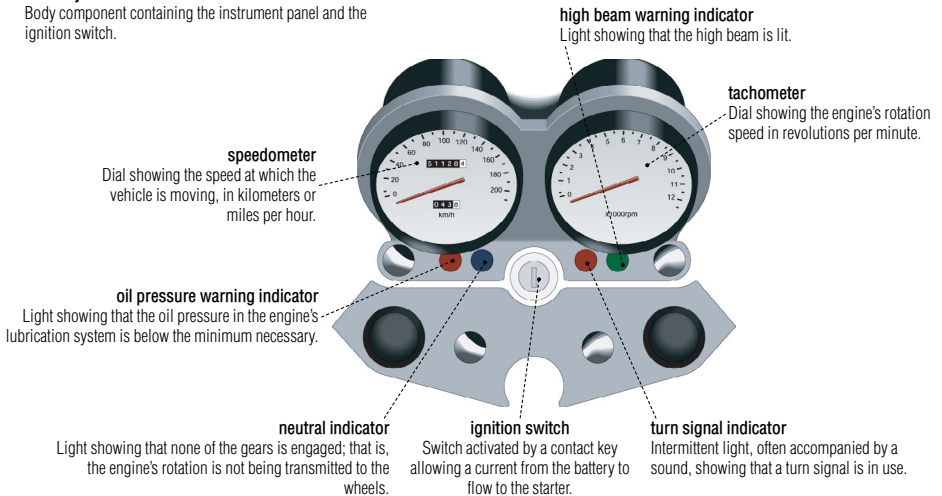
Exterior surface made of durable materials (thermoplastic or composite materials) that absorb shocks.

visor hinge

Articulated fastener for raising and lowering the visor.

motorcycle dashboard

Body component containing the instrument panel and the ignition switch.



high beam warning indicator

Light showing that the high beam is lit.

tachometer

Dial showing the engine's rotation speed in revolutions per minute.

speedometer

Dial showing the speed at which the vehicle is moving, in kilometers or miles per hour.

oil pressure warning indicator

Light showing that the oil pressure in the engine's lubrication system is below the minimum necessary.

neutral indicator

Light showing that none of the gears is engaged; that is, the engine's rotation is not being transmitted to the wheels.

ignition switch

Switch activated by a contact key allowing a current from the battery to flow to the starter.

turn signal indicator

Intermittent light, often accompanied by a sound, showing that a turn signal is in use.

examples of motorcycles

off-road motorcycle

Motorcycle designed for traveling over rough terrain, with features such as a raised engine, extended suspension, elevated muffler and tires with studs.

seat
Usually leather seat where the driver sits.



telescopic front fork
Pair of sliding tubes enclosing a spring; it controls steering, suspension and shock absorption on the front wheel.

knobby tread tire
Tire whose tread is fitted with blocks of rubber, providing better traction on rough terrain.

windshield

Glass and plastic pane in front, protecting the motorcyclist from the wind and inclement weather.

touring motorcycle

Motorcycle providing comfort for the driver and the passenger, with features such as wide fairsing, extended handgrips and footrests for stretching the legs.

antenna
Device receiving radio waves broadcast by a station.

backrest
Part supporting the back.

top box
Usually rigid and waterproof compartment, behind the passenger seat, for storing light objects.

passenger seat
Usually leather, individual seat with a back; it is higher than the driver seat, for the passenger to sit.

saddlebag
Usually rigid and waterproof luggage, attached to each side of the passenger seat.

driver seat
Usually leather, individual seat, sometimes equipped with a back, for the driver to sit.



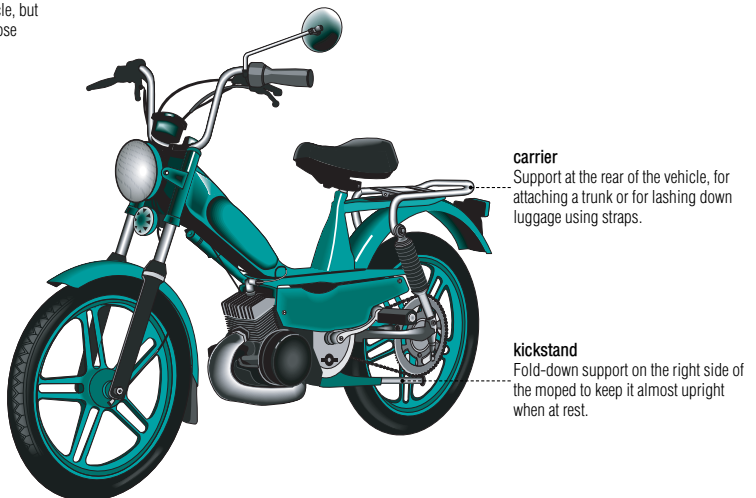
motorcycle

motor scooter

Motorized vehicle with two small wheels, embellished with fairing, characterized by an open frame and a flat floor.

**moped**

Vehicle designed like a bicycle, but equipped with an engine whose cylinder is no larger than 50 cubic centimeters.



Four-wheeled all-terrain vehicle (ATV) for traversing most kinds of terrain, equipped with a motorcycle engine.

rear fender

Piece of curved metal covering the rear wheel, for protecting the motorcyclist from being splashed.

rear cargo rack

Support at the rear of the vehicle, for attaching a trunk or for lashing down luggage using straps.

seat

Usually leather seat where the driver sits.

gas tank

Reservoir containing the fuel that makes the vehicle self-sufficient.

handgrip

Extension of the handlebars used for steering the ATV.

bumper

Malleable component partly absorbing impact in the event of a front-on collision.

gearshift lever

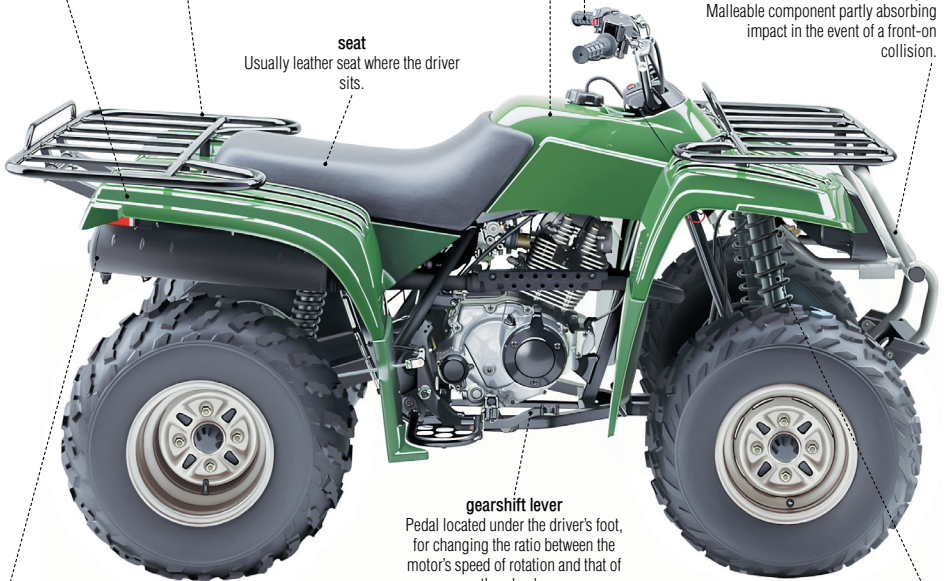
Pedal located under the driver's foot, for changing the ratio between the motor's speed of rotation and that of the wheels.

muffler

Compartmentalized chamber in which the escaping gases expand, thus reducing the noise from the engine.

front shock absorber

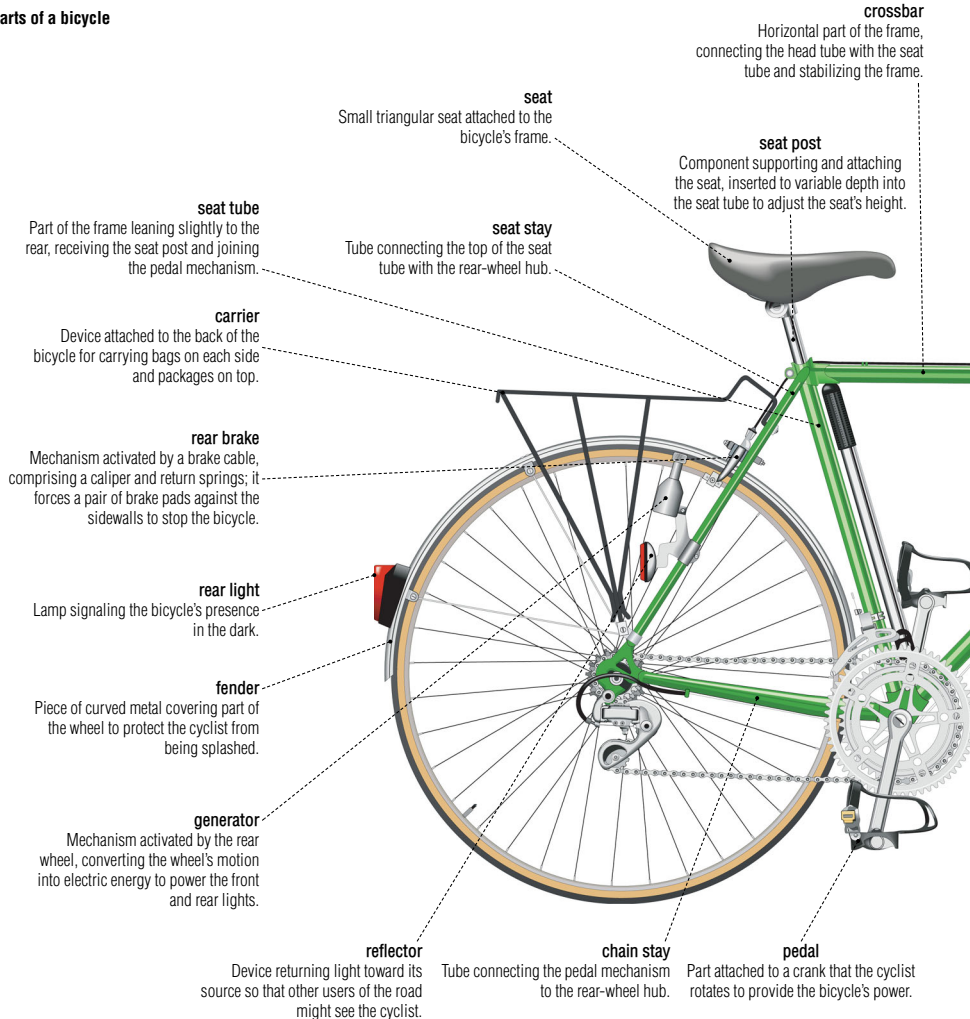
Cylindrical mechanism attached to the front wheel and coupled with a spring; it absorbs shocks caused by unevenness in the road.

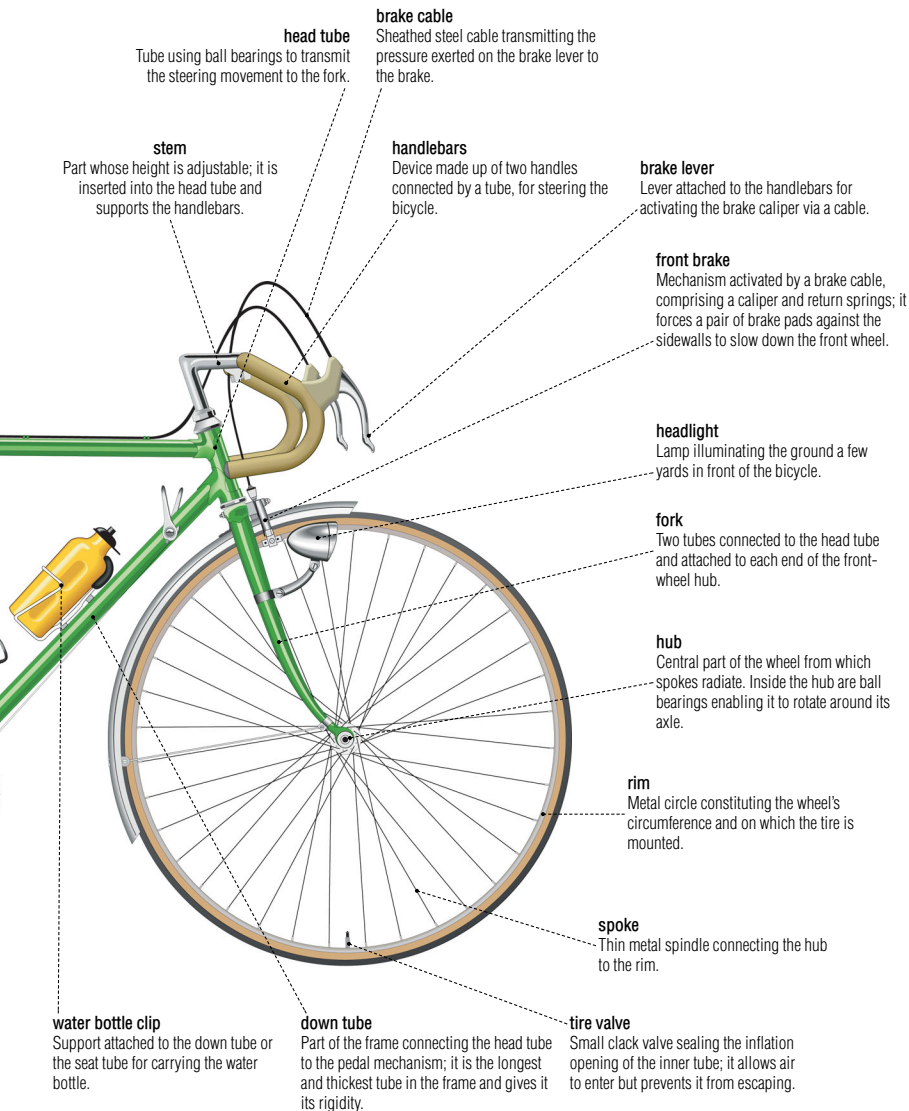


bicycle

Frame vehicle steered by the front wheel and propelled by the rear wheel, which in turn is driven, via a chain, by a pedal mechanism.

parts of a bicycle





bicycle

power train

Set of parts (axle, chain wheel, cranks and pedals) transmitting the force exerted by the cyclist on the pedals to the rear wheel.

chain guide

Part of the derailleur moving the chain from one chain wheel to the other.

front derailleur

Mechanism for changing the front gears by lifting the chain from one chain wheel to another; it allows the cyclist to adapt to road conditions.

shifter

Lever for changing gears via a cable moving the derailleur.

freewheel

Mechanism attached to the rear-wheel hub allowing it to continue turning when the cyclist stops pedaling.

toe clip

Metal device attached to the pedals that covers the front of the feet, keeping the feet in the proper position and increasing pedaling power.

chain

Set of metal links meshing with the sprockets on the chain wheel and gear wheel to transmit the pedaling motion to the rear wheel.

control cable

Wire made of steel strands transmitting the action exerted on the shifter to each derailleur.

chain wheel A

Larger wheel with sprockets that, in combination with the rear gear wheels, increases the distance of one rotation of the pedal, and therefore the speed of the bicycle.

bottom bracket axle

Tube to which the crank is attached at each end so that one end is up when the other is down.

chain wheel B

Smaller wheel with sprockets that, in combination with the rear gear wheels, decreases the distance of one rotation of the pedal.

rear derailleur

Mechanism for changing the rear gears by lifting the chain from one gear wheel to another; it allows the cyclist to adapt to road conditions.

jockey rollers

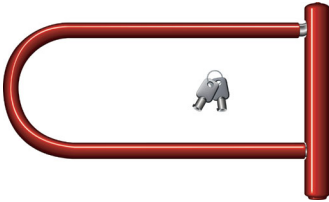
Small wheels guiding the chain and keeping it taut while changing gears.

pedal

Part attached to a crank that the cyclist rotates to provide the bicycle's power.

crank

Metal part bent at a right angle, supporting a pedal and providing a rotational movement around the pedal's axle.

**lock**

Antitheft system made up of two metal shanks, one inserted into the other and fitted with a lock, for locking the bicycle to a fixed object.

**protective helmet**

Rigid headgear covering the head to protect it in the event of accident.

**bicycle bag**

Bag that can be attached to the handlebars or the carrier.

**tool kit**

Set of tools for simple repairs and adjustments, such as fixing a flat tire, replacing spokes or adjusting brakes.

**child carrier**

Seat attached to the frame or the carrier, comprising a harness and footrests, for transporting a child.

examples of bicycles

**Dutch bicycle**

City bicycle designed for comfort and in such a way that the cyclist sits upright, its features include a built-in chain guard and a drop-down fender.

**BMX bike**

Strong small bicycle, for acrobatics and competitions on bumpy tracks.

**city bicycle**

Bicycle designed for comfort and safety while taking short trips on city streets.

**mountain bike**

Bicycle with large wheels with treads with studs, a strong frame, numerous gears and powerful brakes, for navigating all kinds of terrain.

**road bicycle**

Bicycle with narrow tires, lightweight frame and handlebars that position the cyclist for optimum aerodynamics, designed for road racing.

child's tricycle

Very stable three-wheeled vehicle with pedals driving either the front wheel or the rear wheels, for the use of young children.

**touring bicycle**

Intermediate bicycle between a road bicycle and a city bicycle, designed for traveling long distances in comfort.

**tandem bicycle**

Bicycle with two places; both cyclists pedal simultaneously but only the person in front steers.

passenger station

Covered building for the public where trains and passengers arrive and depart.

glossed roof
Large glassed surface forming the walls and roof.

indicator board
Panel showing the destination and the configuration of the train, such as type and numbering of cars.

office
Workplace of the employees managing the station.

passenger train
Set of cars coupled together and pulled along tracks by a locomotive.

parcels office
Courier-service wicket for sending envelopes and packages to be dispatched by train.

baggage room
Counter where passengers leave their baggage to be taken to the train's baggage car, if it has one.

passenger platform
Area alongside the tracks for passengers to embark and disembark trains.

booking hall
Large space for passengers and the public at large housing the various services of the station, such as ticket sales, information counter and shops.



metal structure

Set of metal components comprising the skeleton of a building and supporting its roof; here, the roof is made of glass.

baggage cart

Four-wheeled handcart available to passengers for transporting baggage inside the station.

platform number**track**

A pair of parallel rails laid end to end and on which trains run.

ticket collector

Person checking that passengers' tickets correspond to their destinations.

schedules

Grid showing the departure and arrival times of the trains, their number and their destination or point of departure.

platform edge

Zone along the edge of the platform, usually demarcated by a safety line.

baggage lockers

Metal compartments for keeping luggage temporarily for a small fee.

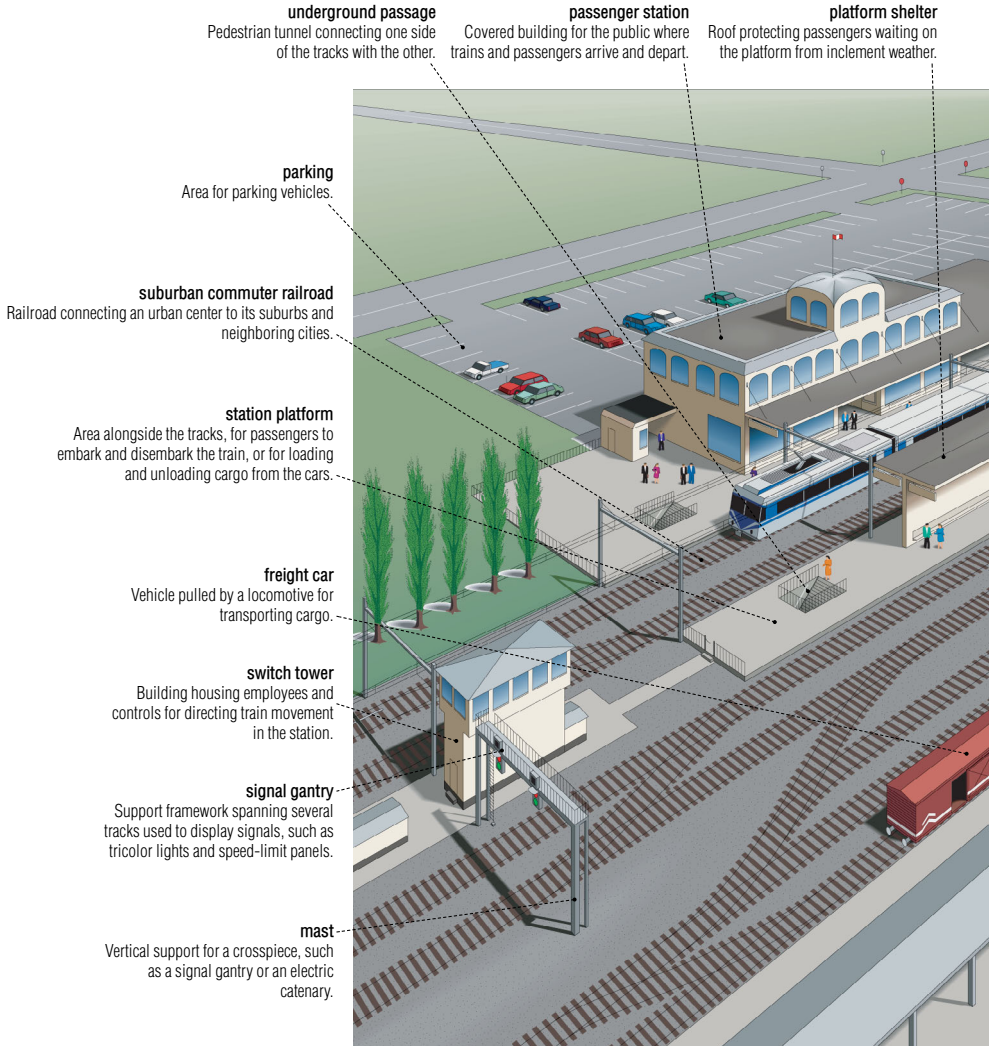
destination

Name of the last station where the train stops at the end of its route.

departure time indicator

railroad station

Covered building for the public where trains and passengers arrive and depart.



commuter train

Local train running frequently each day between an urban center and its suburbs or neighboring cities.

footbridge

Elevated walkway for passengers to cross over a set of tracks.

semaphore

Light for relaying information such as the speed of trains and the distance between them.

main line

Tracks for trains traveling long distances.

level crossing

Intersection of a railroad and a road, with or without warning lights.

bumper

Buffer placed at the end of a track stopping the train from running off the end of the track.

subsidiary track

Side track not used for railroad traffic but for shunting, marshaling or loading and unloading.

diesel shop

Building for maintaining and refueling diesel locomotives.

freight station

Set of railroad installations and buildings required for transporting cargo.

switch

A pair of movable track rails (switch rails) for guiding the train from one track to another.

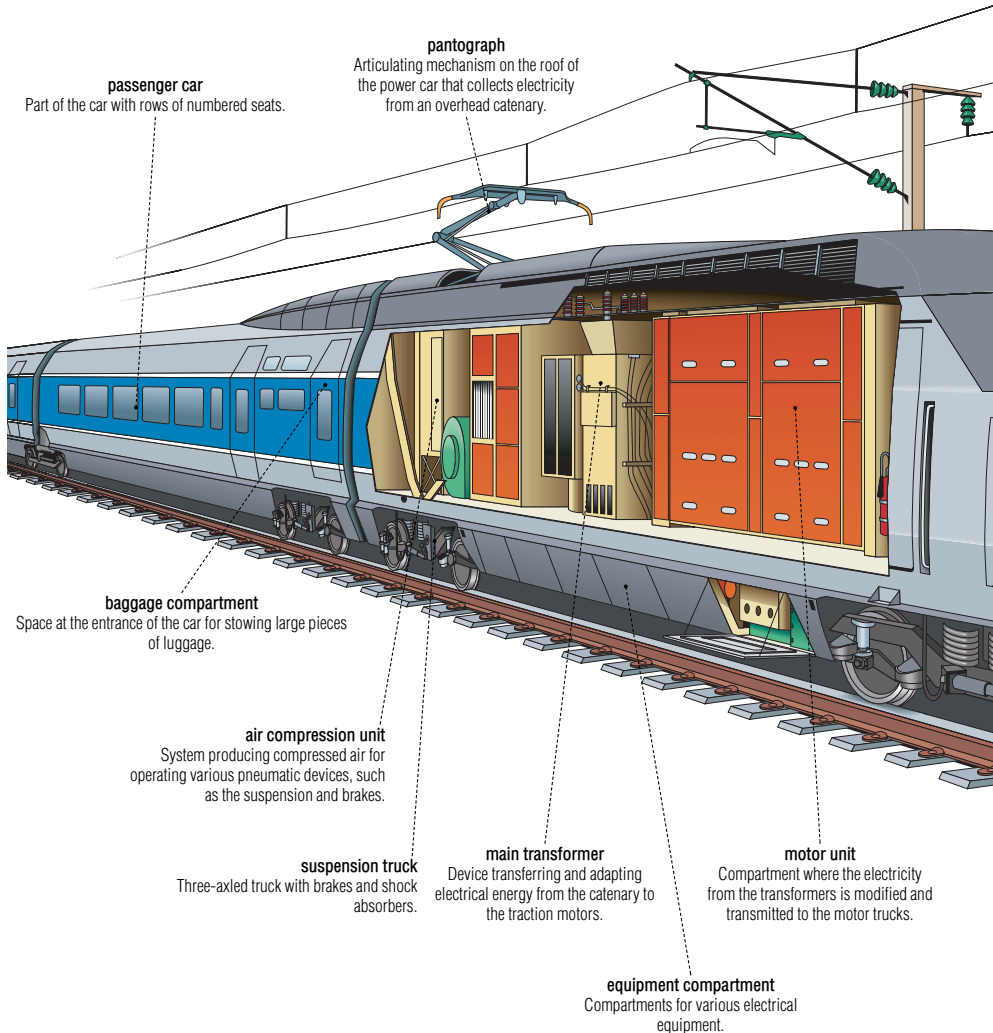
scissors crossing

Track enabling a train to change tracks.



high-speed train

High-speed passenger train (between 135 and 190 mph) powered by electricity, with a power car at each end and a limited number of cars in between.



passenger car

Part of the car with rows of numbered seats.

pantograph

Articulating mechanism on the roof of the power car that collects electricity from an overhead catenary.

baggage compartment

Space at the entrance of the car for stowing large pieces of luggage.

air compression unit

System producing compressed air for operating various pneumatic devices, such as the suspension and brakes.

suspension truck

Three-axled truck with brakes and shock absorbers.

main transformer

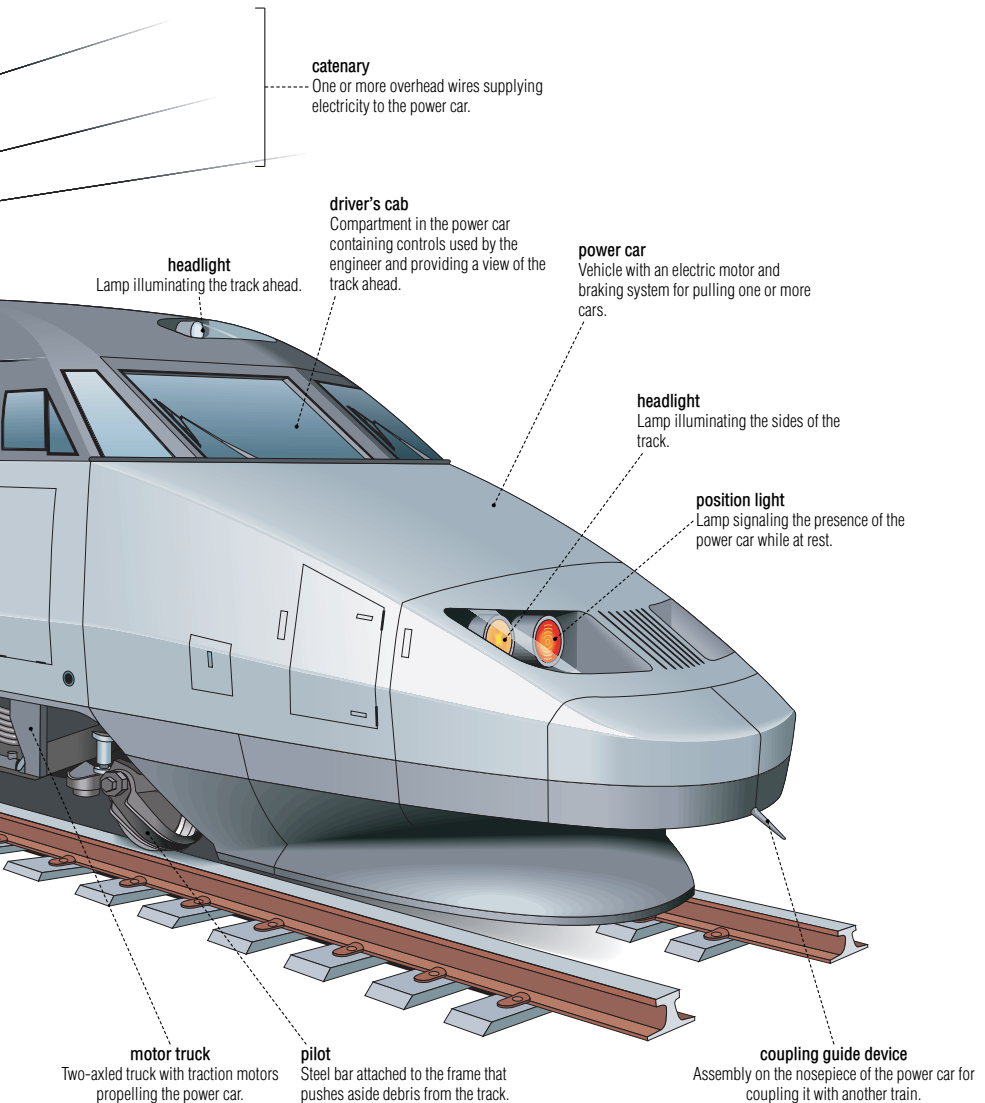
Device transferring and adapting electrical energy from the catenary to the traction motors.

motor unit

Compartment where the electricity from the transformers is modified and transmitted to the motor trucks.

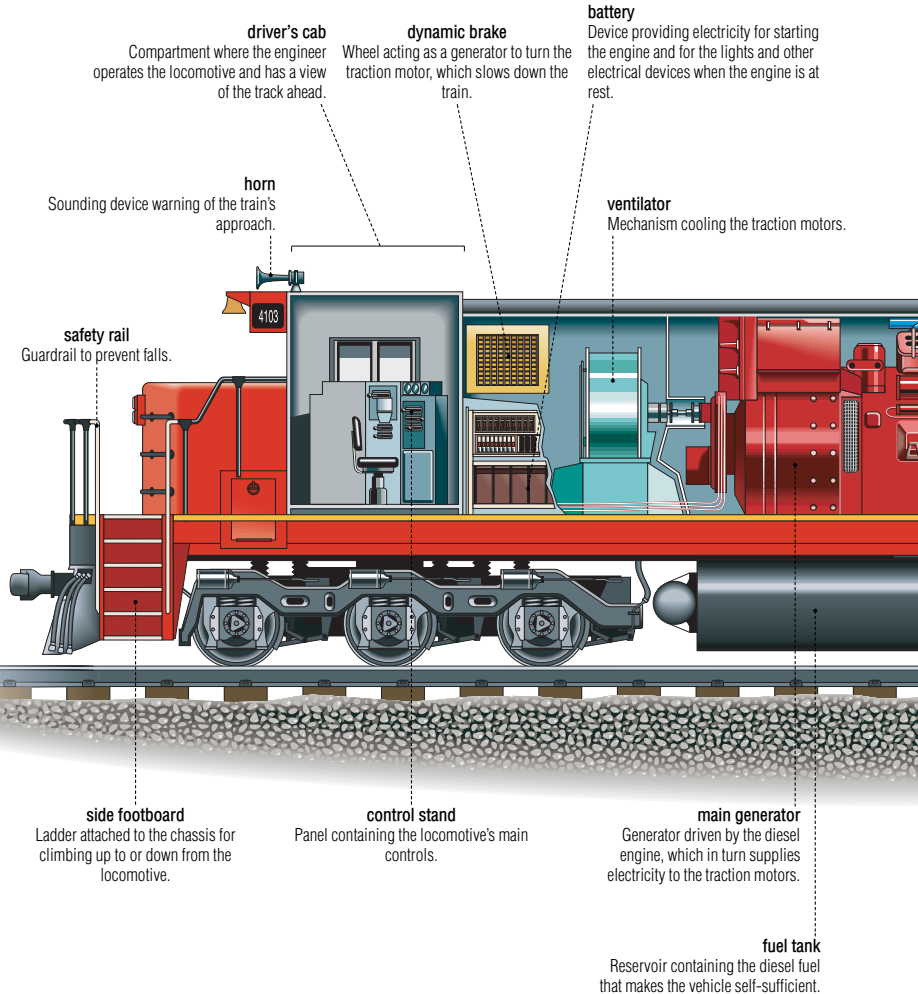
equipment compartment

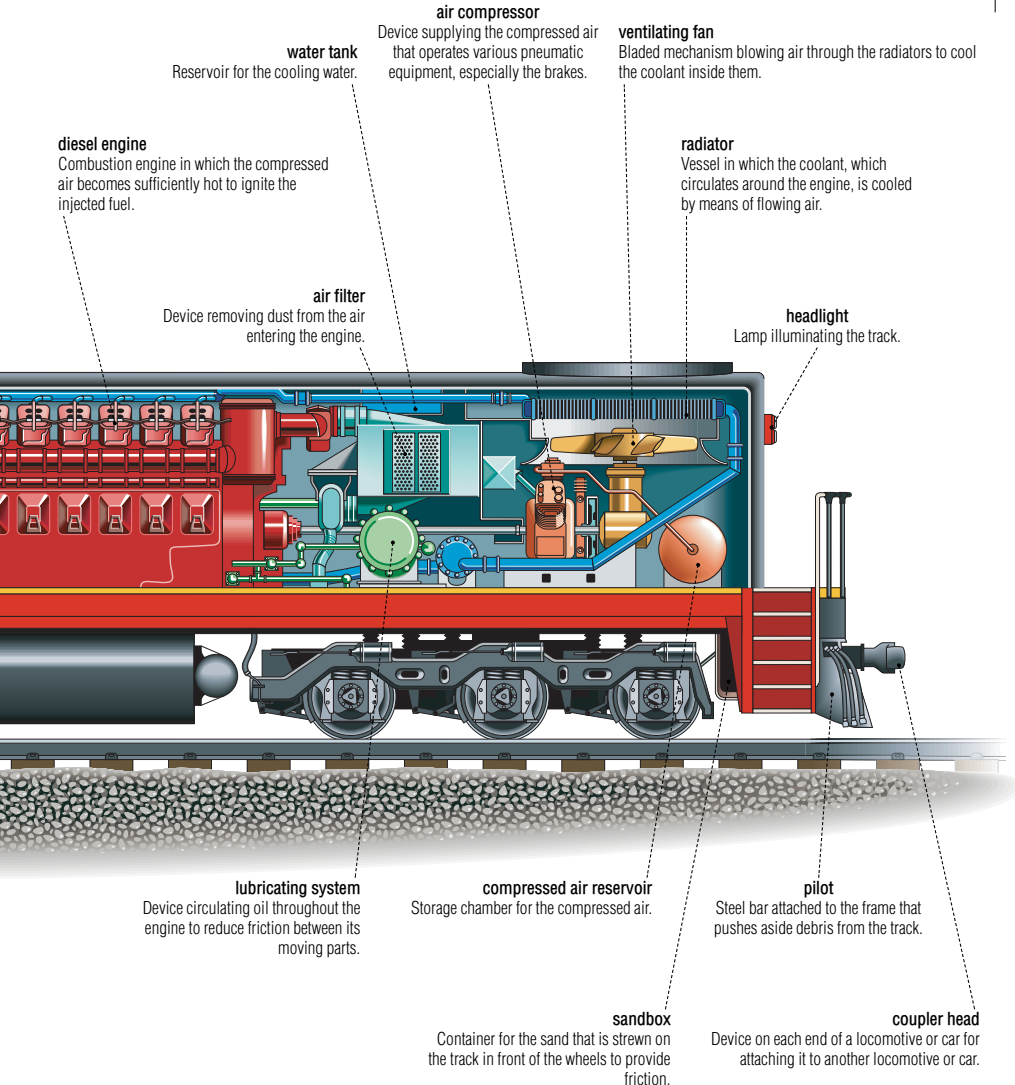
Compartments for various electrical equipment.



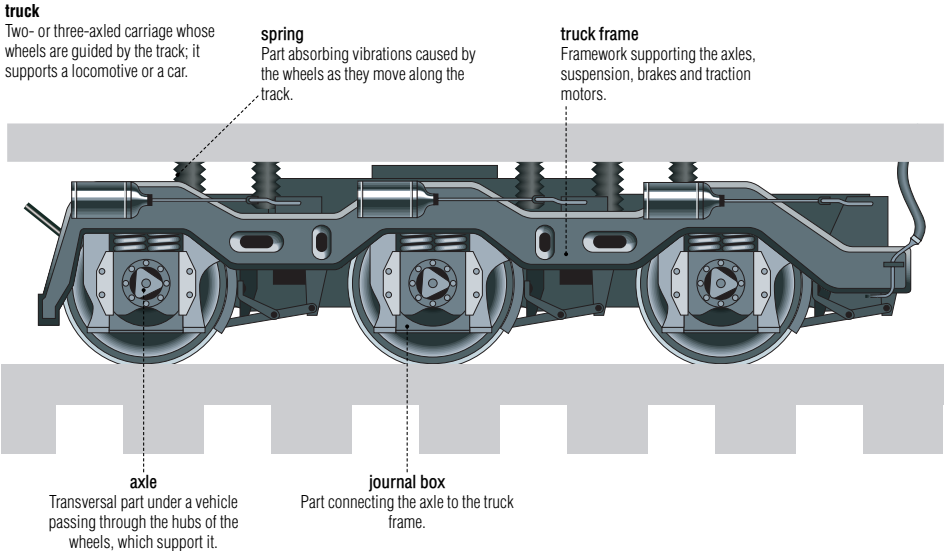
diesel-electric locomotive

Vehicle with a diesel engine turning a generator that in turn powers the electric traction motors.





diesel-electric locomotive

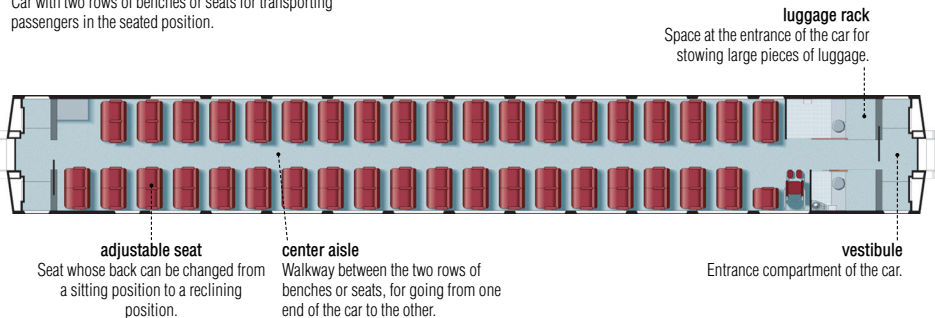


types of passenger cars

Cars: vehicles with various layouts that are pulled by locomotives, for transporting and providing services to passengers.

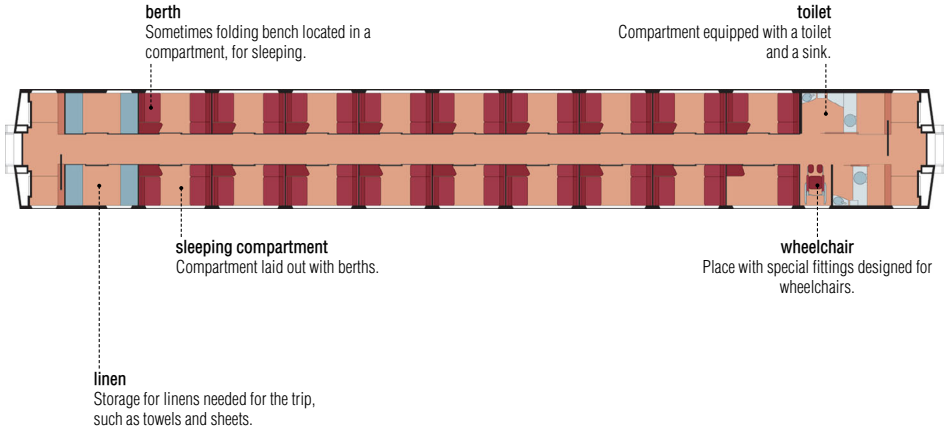
coach car

Car with two rows of benches or seats for transporting passengers in the seated position.



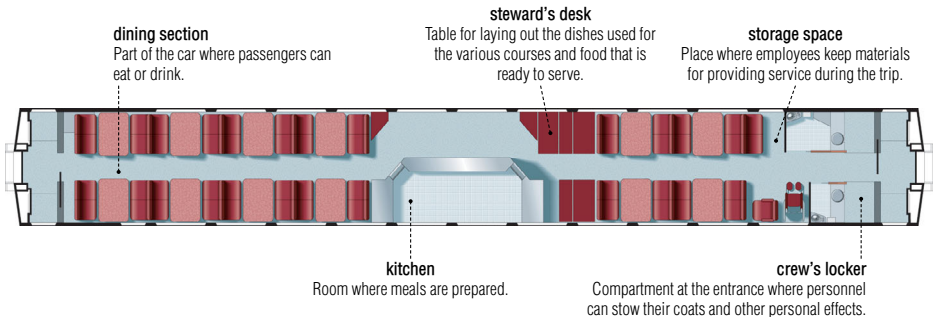
sleeping car

Car with compartments laid out as small bedrooms.



dining car

Car laid out for serving meals.

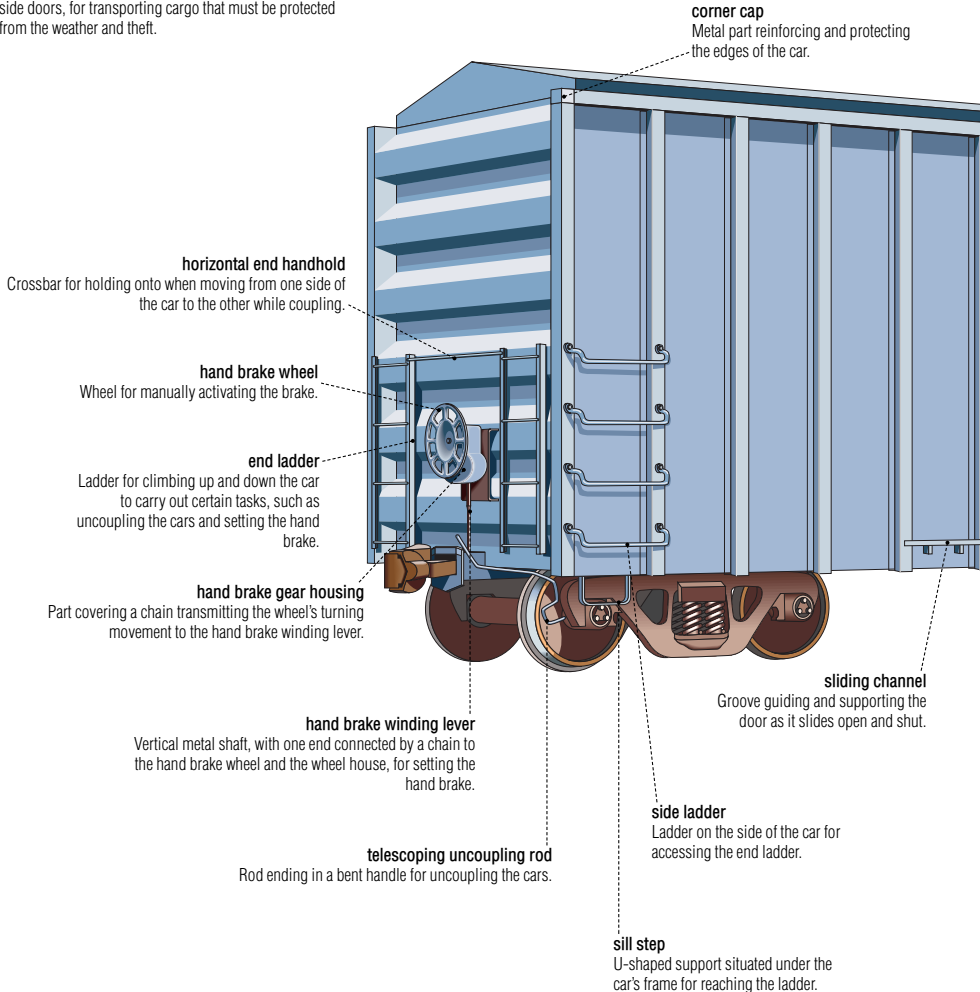


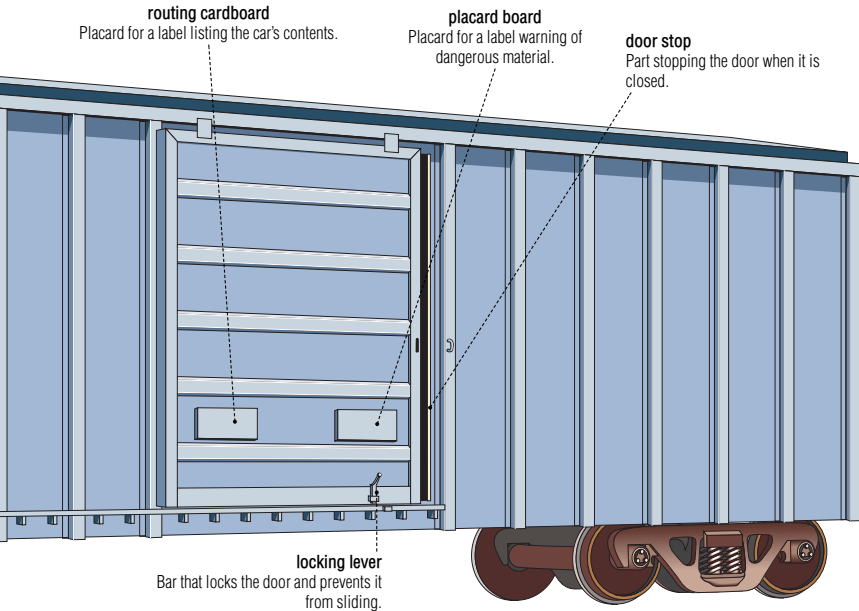
car

Vehicle pulled by a locomotive for transporting cargo.

box car

Car covered with a waterproof casing and having sliding side doors, for transporting cargo that must be protected from the weather and theft.



**automatic coupler**

Device on each end of a locomotive or car for attaching it to another locomotive or car.



examples of freight cars

The shape of the cars varies depending on the type of cargo being transported.

**flat car**

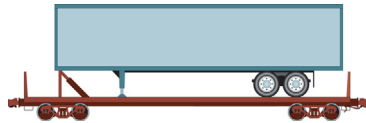
Car with a simple wooden deck for carrying large objects, such as pipes, logs and heavy machinery.

**bulkhead flat car**

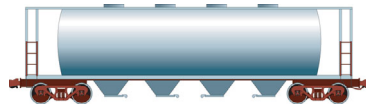
Flat car with sturdy plates at each end for carrying loose cargo (usually logs).

**depressed-center flat car**

Car with two extra trucks and a lowered deck for carrying heavy equipment.

**intermodal car**

Flat car for carrying semitrailers.

**hopper car**

Car for carrying bulk cargo; it has dump doors on the bottom for unloading the cargo.

**gondola car**

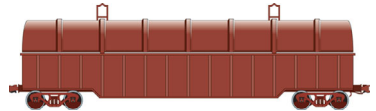
Open-top car for carrying heavy bulk material, such as scrap metal and construction material.

**hopper ore car**

Usually open-top hopper car of limited capacity for carrying minerals.

**wood chip car**

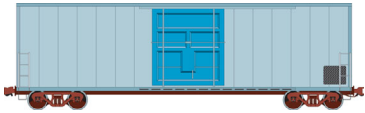
Open-top gondola car with a large compartment for carrying wood chips.

**hard top gondola**

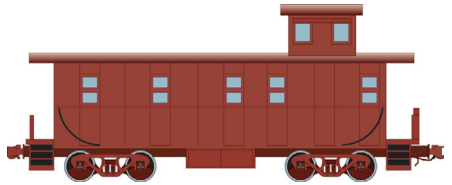
Gondola with of a retractable metal roof for carrying bulk cargo.

**tank car**

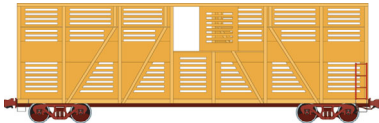
Car with a sealed reservoir for carrying liquids and gases.

**refrigerator car**

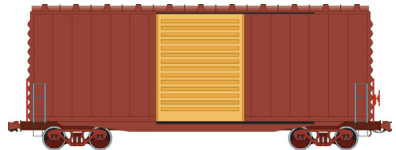
Closed-box insulated car with a refrigeration unit for carrying perishable foodstuffs.

**caboose**

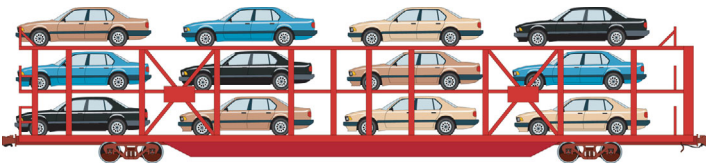
Car that is usually at the end of the train; it houses personnel, provisions and tools.

**livestock car**

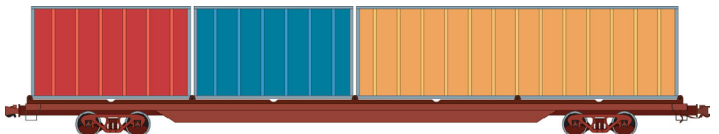
Car with slatted sides for carrying livestock; it sometimes has two decks.

**box car**

Car covered with a waterproof casing and having sliding side doors, for transporting cargo that must be protected from the weather and theft.

**automobile car**

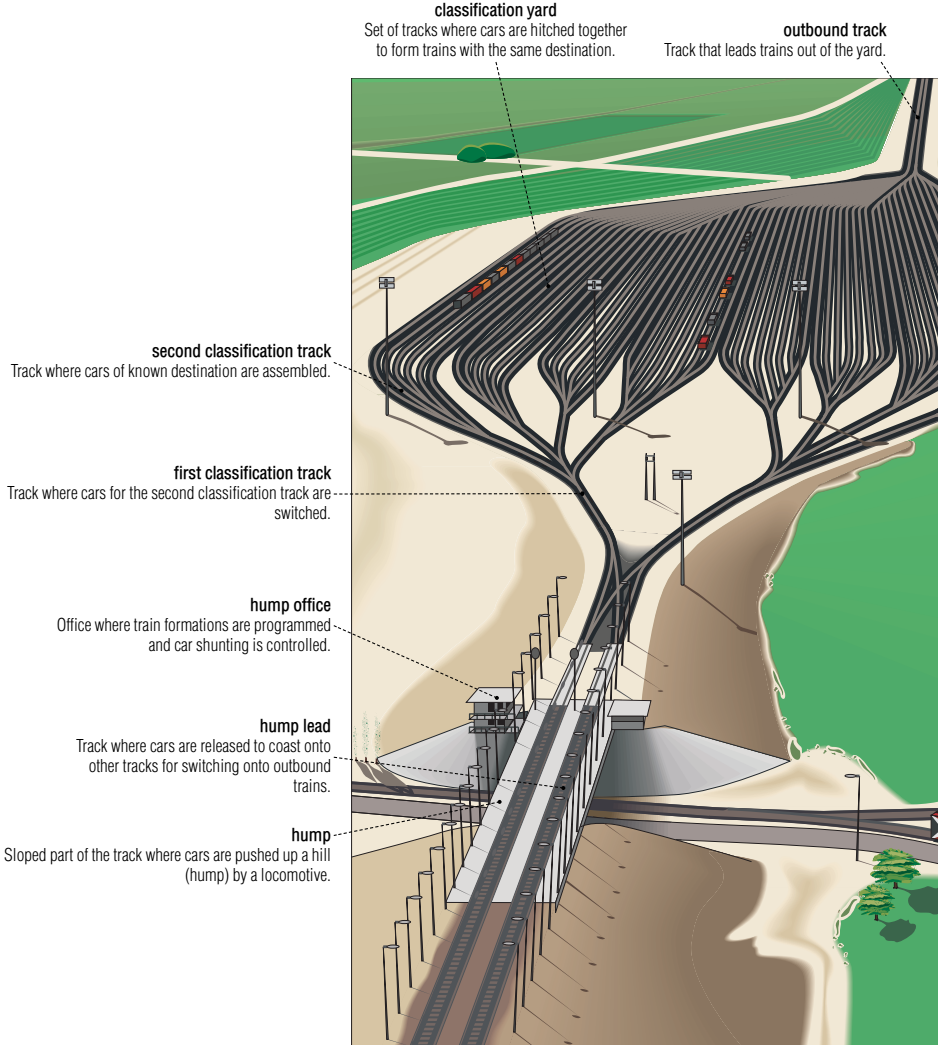
Multi-level car for carrying vehicles, which are strapped down.

**container car**

Flat car for carrying standard-size shipping boxes.

yard

Set of tracks where freight trains are reconfigured to contain cargo cars with the same destination and then dispatched.



car cleaning yard

Set of tracks where cars are cleansed of any cargo residue before going back into circulation.

water tower

Elevated reservoir containing potable water.

repair shop

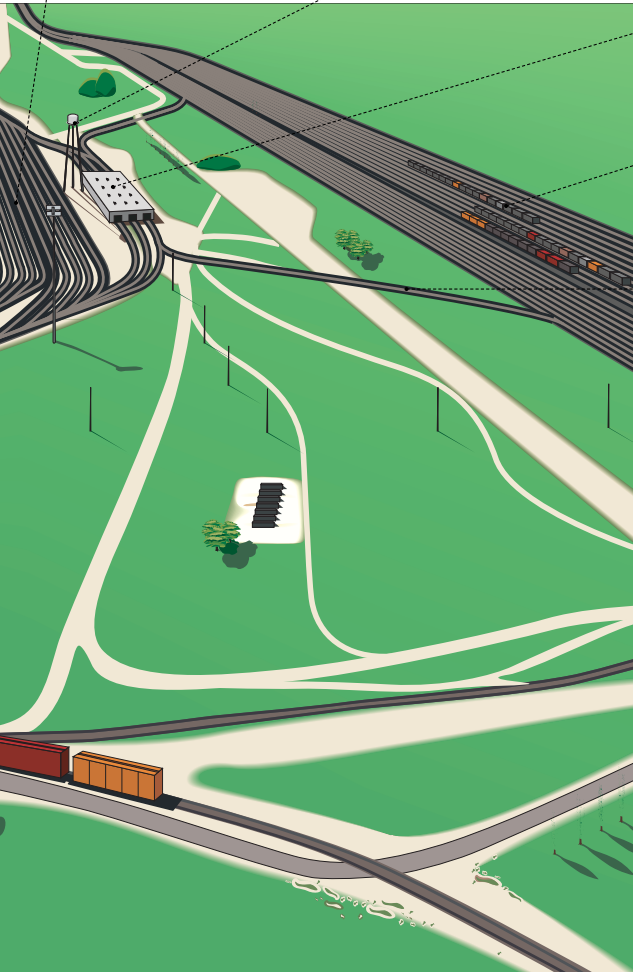
Structure for repairing and maintaining locomotives and cars.

receiving yard

Set of tracks where arriving trains park and are unhitched from their locomotives.

locomotive track

Track that leads locomotives to the shop for maintenance.



railroad track

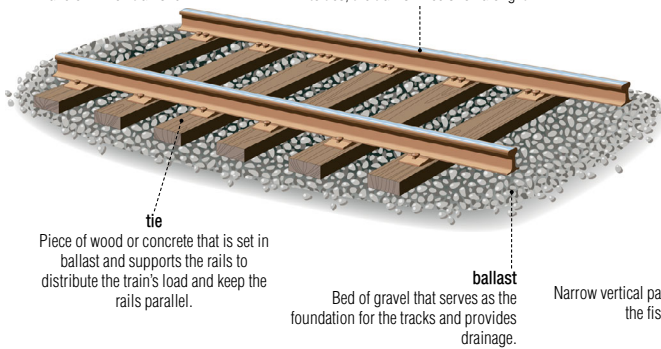
A pair of parallel rails laid end to end and on which trains run.

railroad track

A pair of parallel rails laid end to end and on which trains run.

rail

Steel bar of a set gauge that is attached to ties; the train's wheels roll along it.

rail section

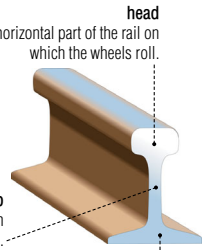
tie
Piece of wood or concrete that is set in ballast and supports the rails to distribute the train's load and keep the rails parallel.

ballast
Bed of gravel that serves as the foundation for the tracks and provides drainage.

head
Upper horizontal part of the rail on which the wheels roll.

web
Narrow vertical part of the rail to which the fishplates are attached.

base
Lower horizontal part of the rail; it rests on and is attached to the ties.

**remote-controlled switch**

Device operated from a distance for opening and closing a pair of movable track rails (switch points) to guide a train from one track to another.

switch rod

Metal part located between two ties that maintains the distance between two switch points.

switch point

Movable rail that is machine-tapered at the end and connected to a parallel and similarly machined switch point.

pull rod

Metal part connected to the power switch machine that opens and closes the switch points.

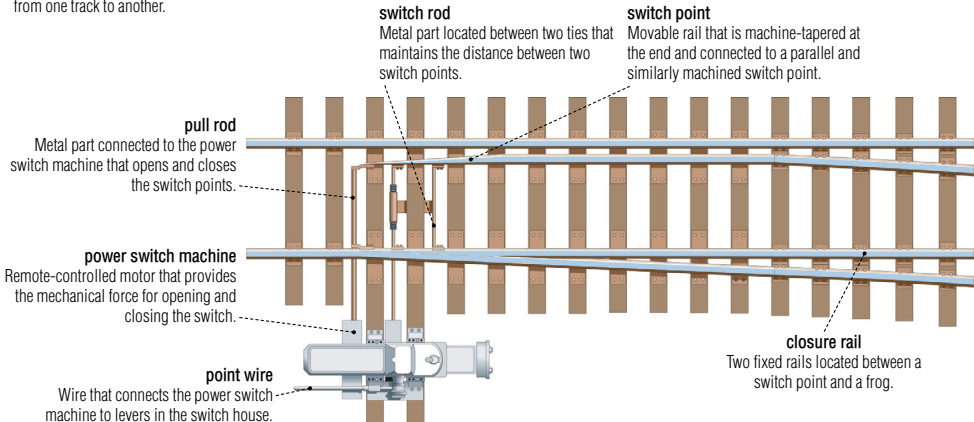
power switch machine

Remote-controlled motor that provides the mechanical force for opening and closing the switch.

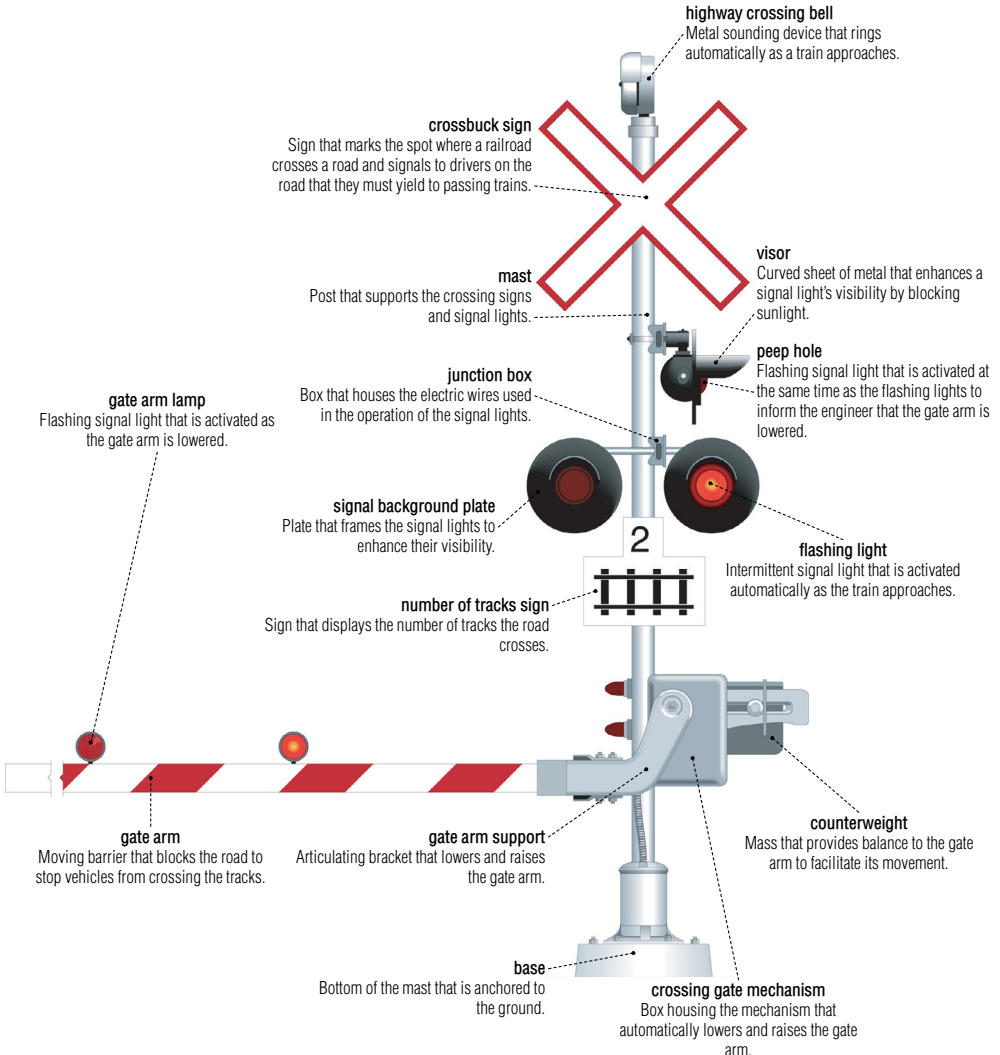
point wire

Wire that connects the power switch machine to levers in the switch house.

closure rail
Two fixed rails located between a switch point and a frog.



Intersection of a railroad and a road, with or without warning lights.

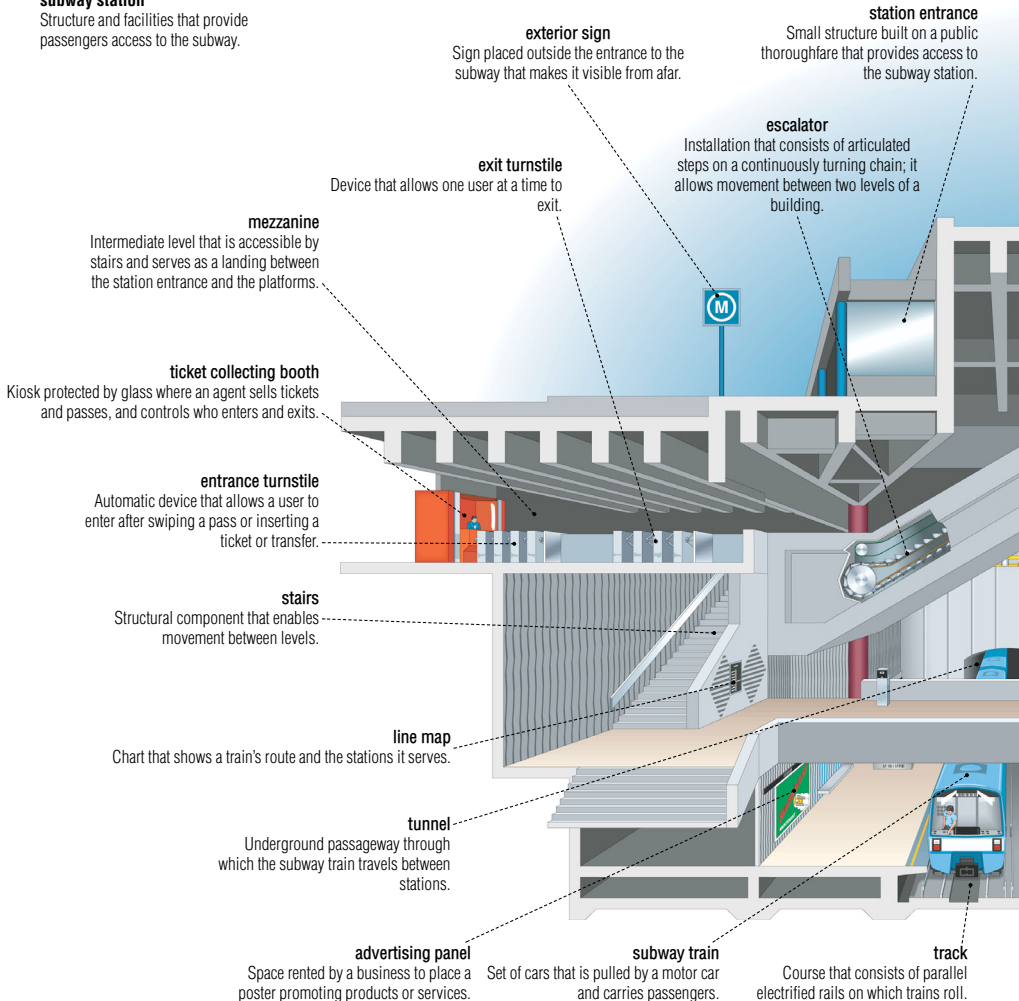


subway

Electrified urban railroad built mainly underground for transporting passengers at frequent intervals.

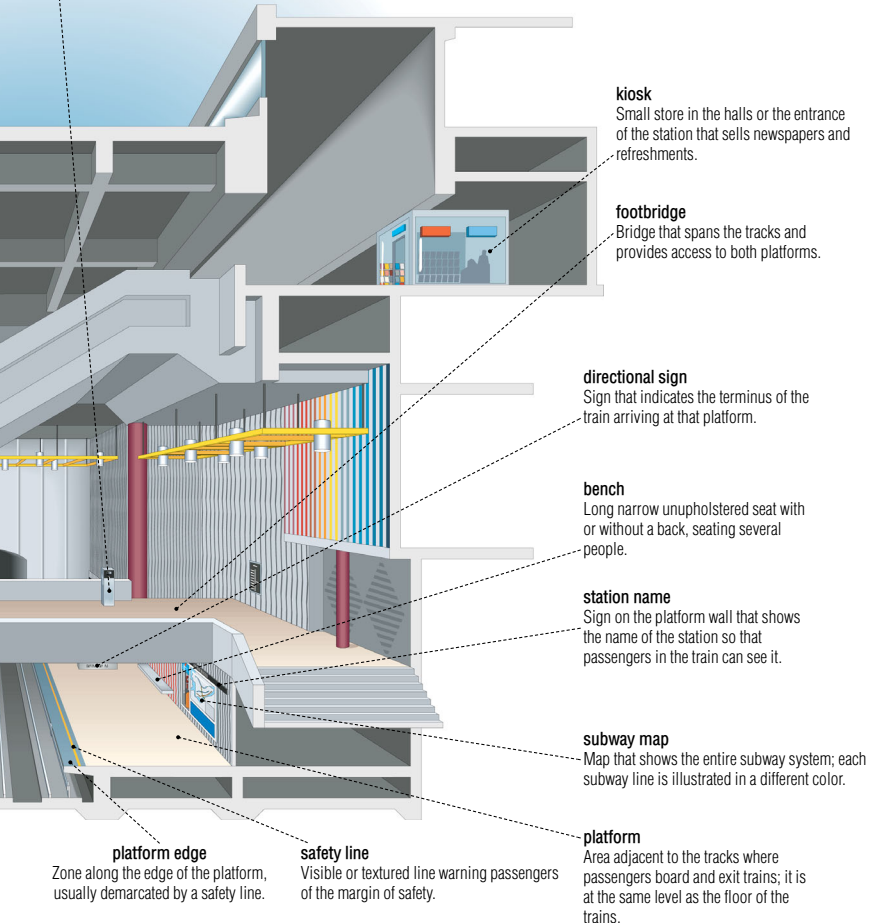
subway station

Structure and facilities that provide passengers access to the subway.



transfer dispensing machine

Device that dispenses tickets entitling the user to subsequently board another means of transportation linked with the subway system, such as a bus, streetcar or train.

**kiosk**

Small store in the halls or the entrance of the station that sells newspapers and refreshments.

footbridge

Bridge that spans the tracks and provides access to both platforms.

directional sign

Sign that indicates the terminus of the train arriving at that platform.

bench

Long narrow upholstered seat with or without a back, seating several people.

station name

Sign on the platform wall that shows the name of the station so that passengers in the train can see it.

subway map

Map that shows the entire subway system; each subway line is illustrated in a different color.

platform

Area adjacent to the tracks where passengers board and exit trains; it is at the same level as the floor of the trains.

platform edge

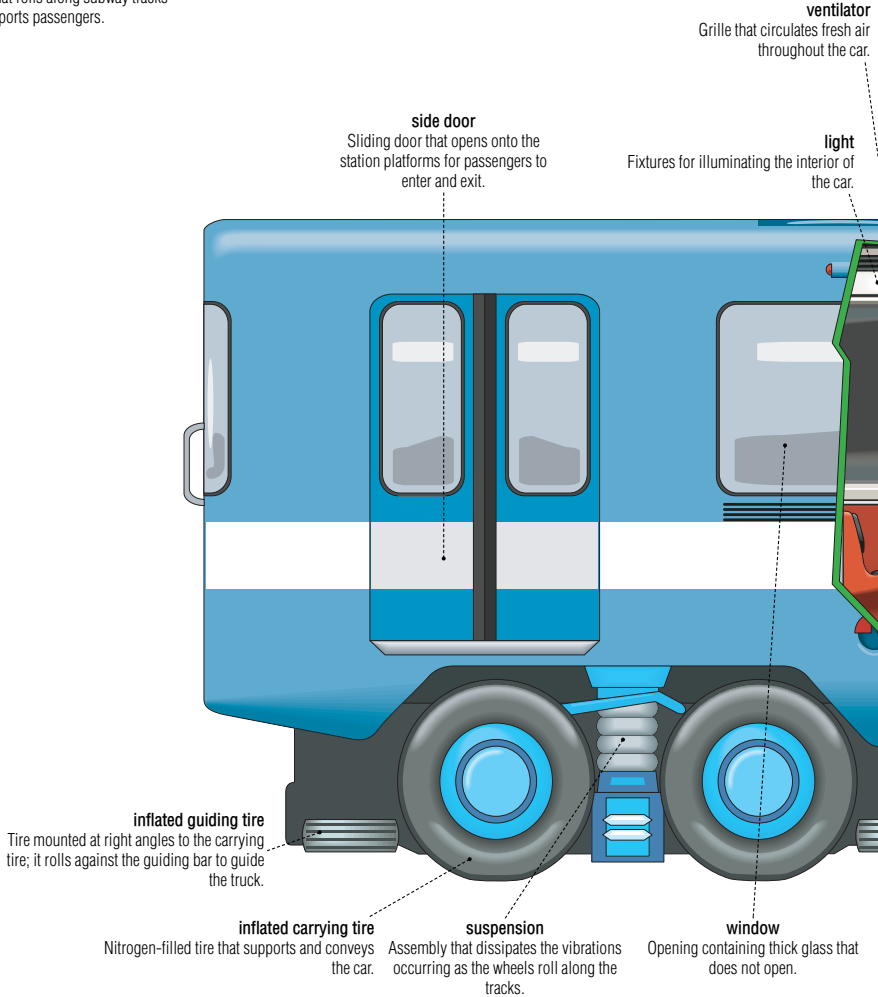
Zone along the edge of the platform, usually demarcated by a safety line.

safety line

Visible or textured line warning passengers of the margin of safety.

passenger car

Vehicle that rolls along subway tracks and transports passengers.



advertising sign

Poster on a space rented by a business that promotes products or services.

communication set

Loudspeaker phone used for talking to the train driver.

side handrail

Handle on the wall next to the door for passengers to hold onto while the train is in motion.

emergency brake

Device that stops the train; it is available to users in case of emergency.

subway map

Map that shows the entire subway system; each subway line is illustrated in a different color.

handrail

Floor-to-ceiling pole in the middle of the aisle for passengers to hold onto while the train is in motion.

single seat

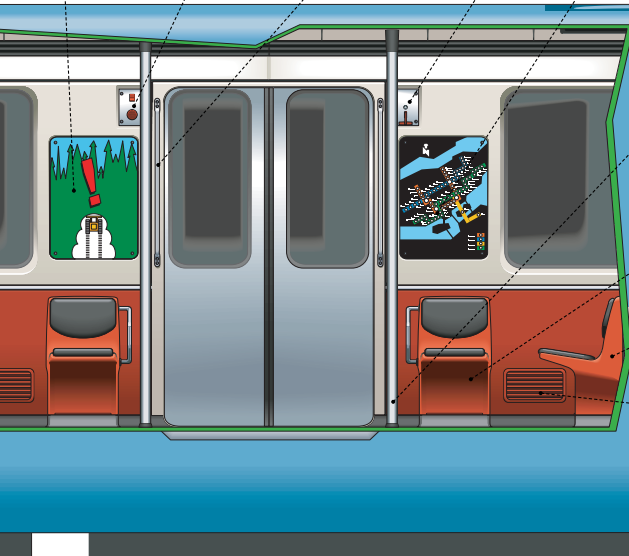
Seat for one passenger.

double seat

Bench with space for two passengers.

heating grille

Grating through which warm air is forced to heat the car interior.



subway train

Set of cars that is pulled by a motor car and carries passengers.

motor car

Vehicle with an electric motor and braking system for pulling one or more cars.

trailer car

Freewheeling car pulled by a motor car.

motor car

Vehicle with an electric motor and braking system for pulling one or more cars.



subway

truck and track

The most up-to-date subway trucks ride on tires, which provide fast acceleration and little noise or vibration.

guiding and current bar

Metal bar against which the guiding tire rolls; it also supplies the traction current.

inflated guiding tire

Tire mounted at right angles to the carrying tire; it rolls against the guiding bar to guide the truck.

inflated carrying tire

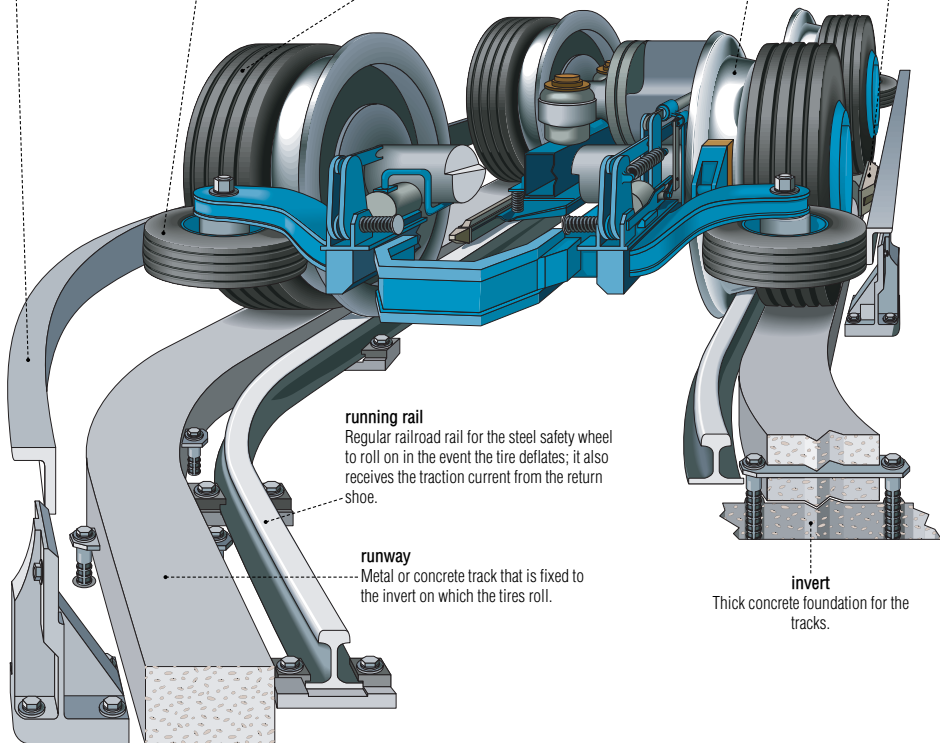
Nitrogen-filled tire that supports and conveys the car.

sliding block

Shoe taking the current from the guiding and current bar.

steel safety wheel

Auxiliary regular train wheel that comes in contact with the running rail in the event the tire deflates and during switching.

**running rail**

Regular railroad rail for the steel safety wheel to roll on in the event the tire deflates; it also receives the traction current from the return shoe.

runway

Metal or concrete track that is fixed to the invert on which the tires roll.

invert

Thick concrete foundation for the tracks.

Electrically powered vehicle for transporting people; it rolls on tracks embedded in city streets and on the edge of roadways.

pantograph

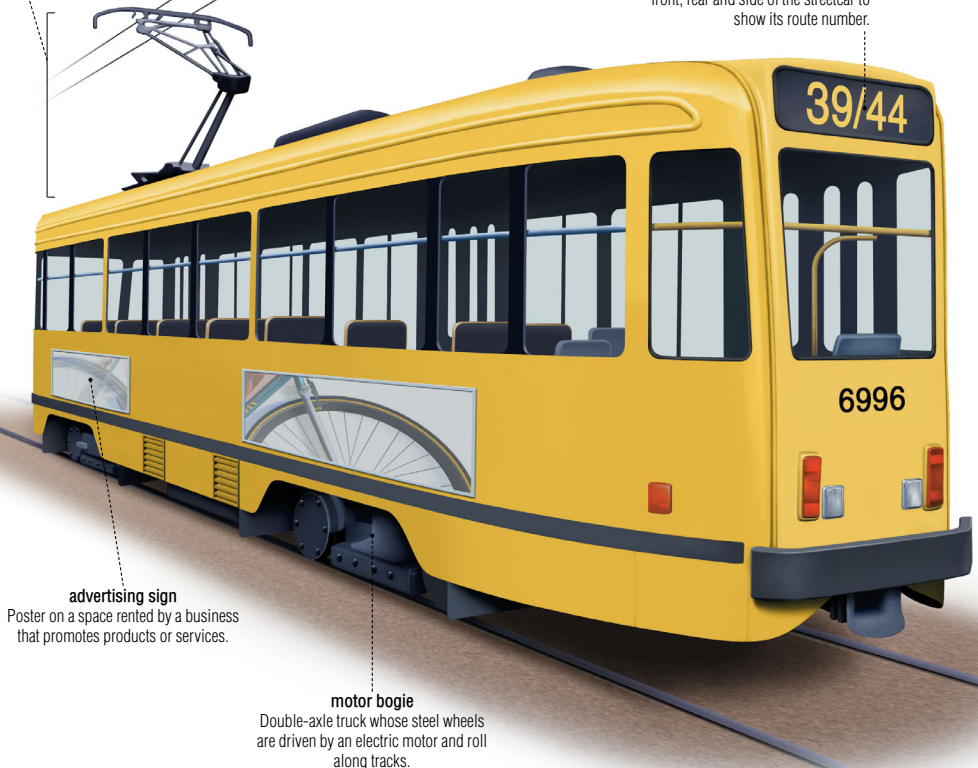
Articulating mechanism on the roof of the streetcar that collects electricity from an overhead catenary.

catenary

One or more overhead wires supplying electricity to the streetcar.

route sign

Screen that is usually placed on the front, rear and side of the streetcar to show its route number.

**advertising sign**

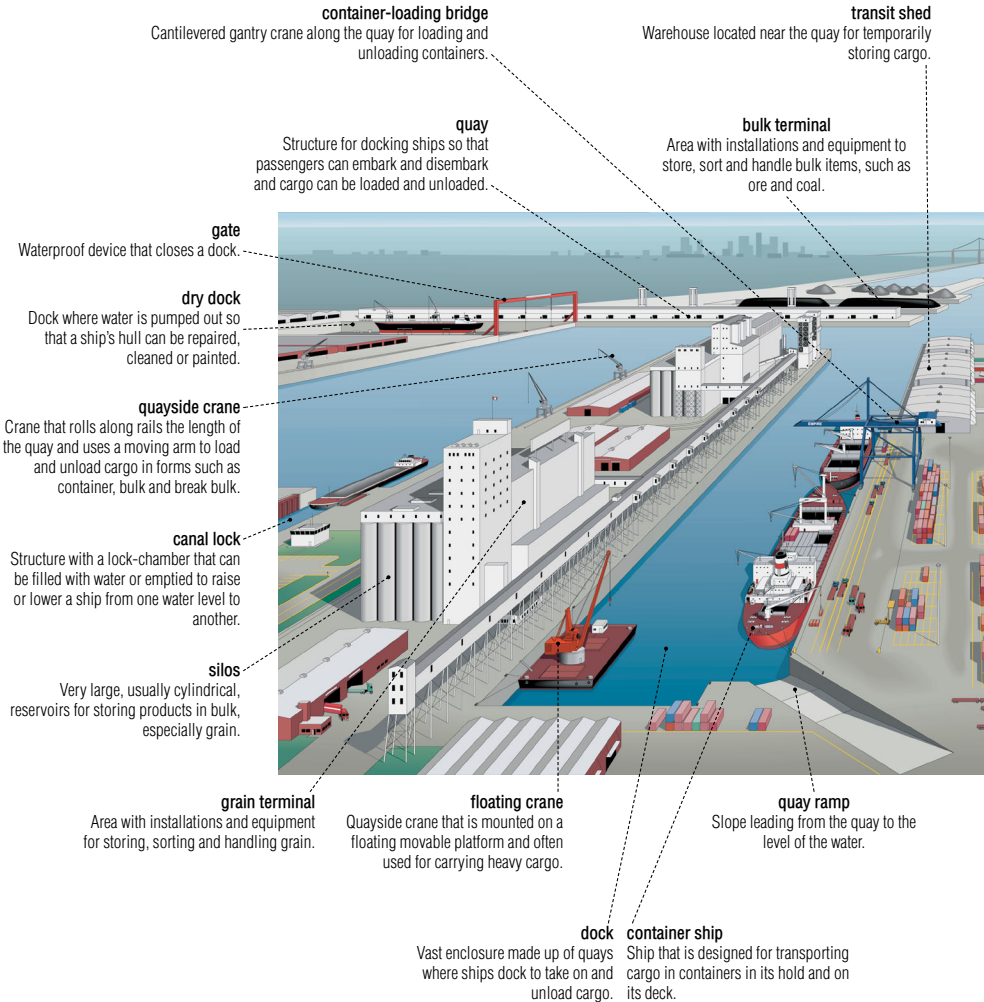
Poster on a space rented by a business that promotes products or services.

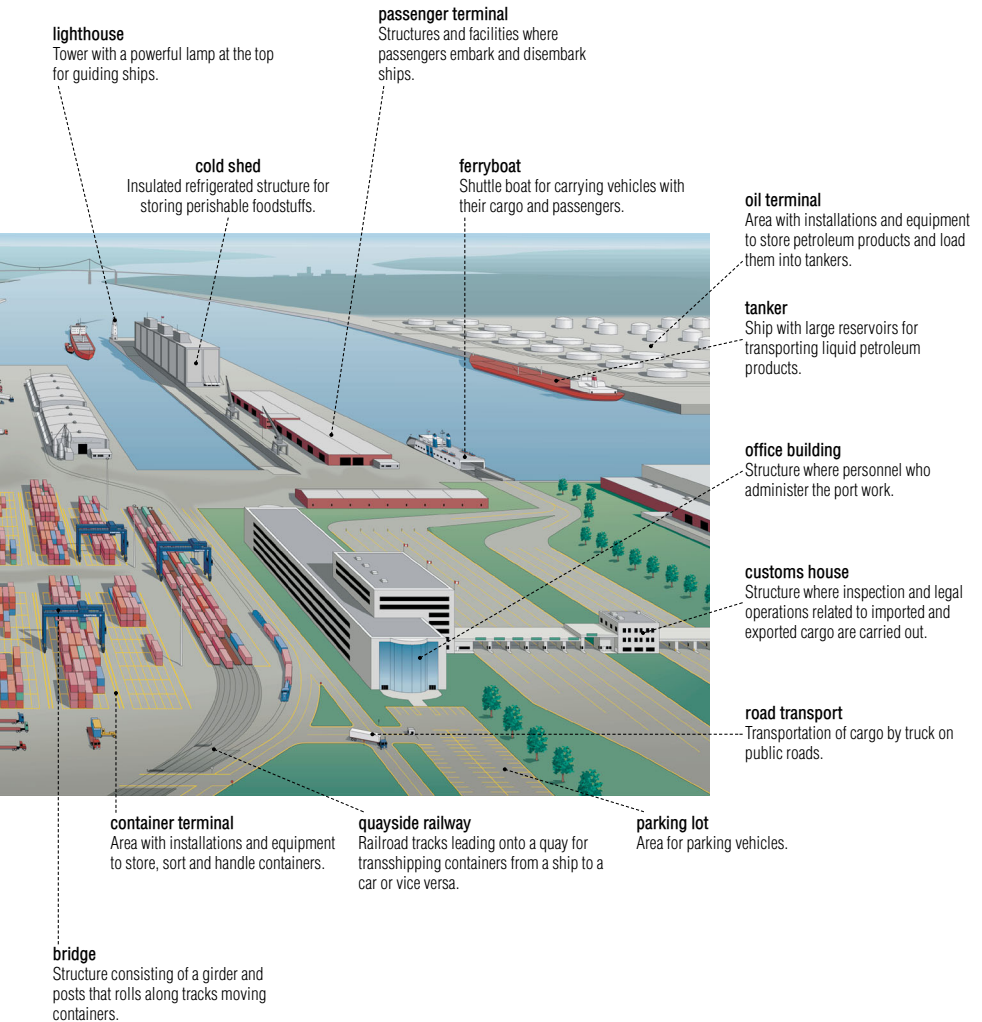
motor bogie

Double-axle truck whose steel wheels are driven by an electric motor and roll along tracks.

harbor

Site for refueling and repairing ships, loading and unloading cargo and embarking and disembarking passengers.





lighthouse

Tower with a powerful lamp at the top for guiding ships.

passenger terminal

Structures and facilities where passengers embark and disembark ships.

cold shed

Insulated refrigerated structure for storing perishable foodstuffs.

ferryboat

Shuttle boat for carrying vehicles with their cargo and passengers.

oil terminal

Area with installations and equipment to store petroleum products and load them into tankers.

tanker

Ship with large reservoirs for transporting liquid petroleum products.

office building

Structure where personnel who administer the port work.

customs house

Structure where inspection and legal operations related to imported and exported cargo are carried out.

road transport

Transportation of cargo by truck on public roads.

container terminal

Area with installations and equipment to store, sort and handle containers.

quayside railway

Railroad tracks leading onto a quay for transshipping containers from a ship to a car or vice versa.

parking lot

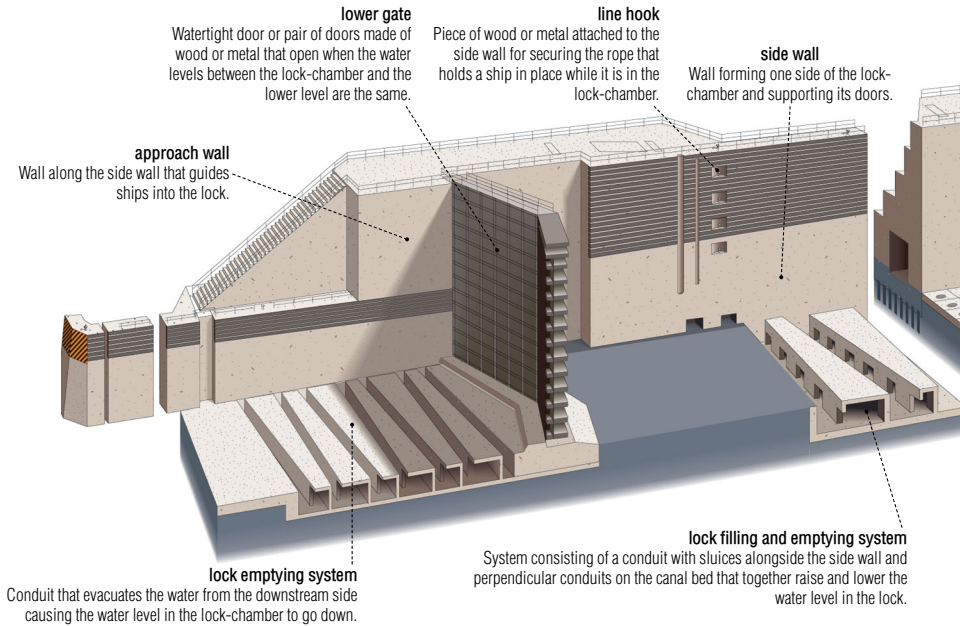
Area for parking vehicles.

bridge

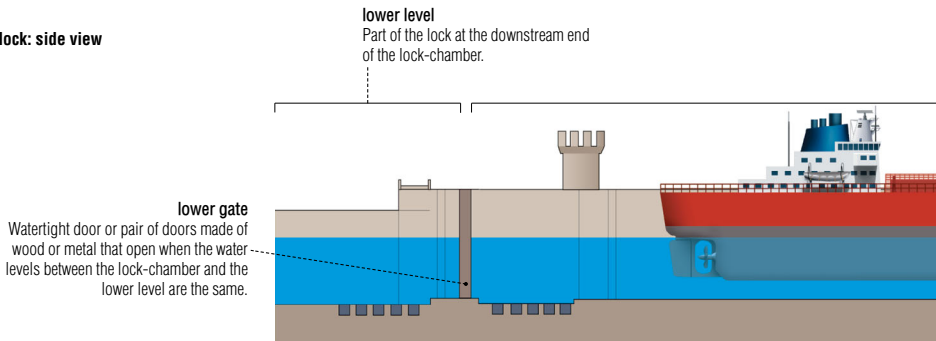
Structure consisting of a girder and posts that rolls along tracks moving containers.

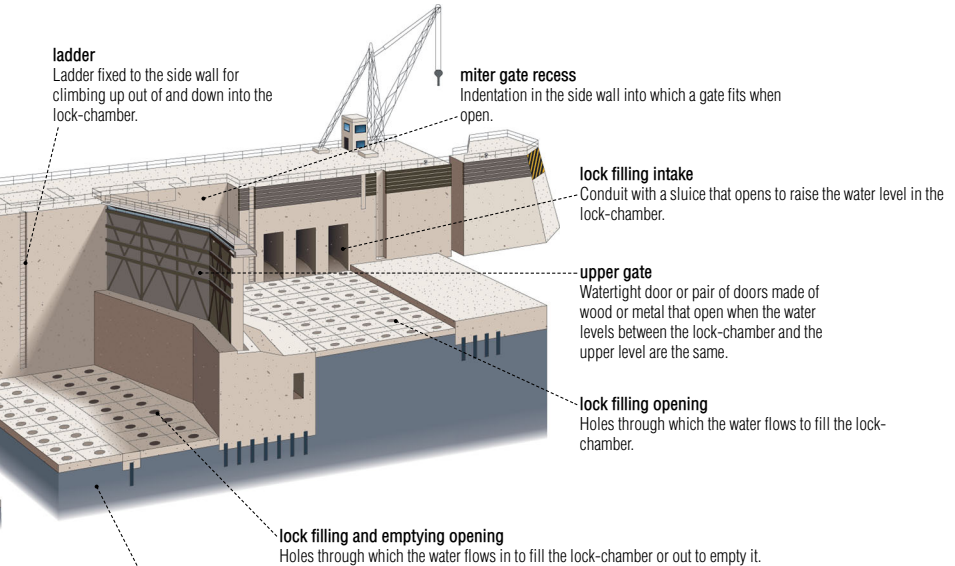
canal lock

Structure with a lock-chamber that can be filled with water or emptied to raise or lower a ship from one water level to another.



canal lock: side view





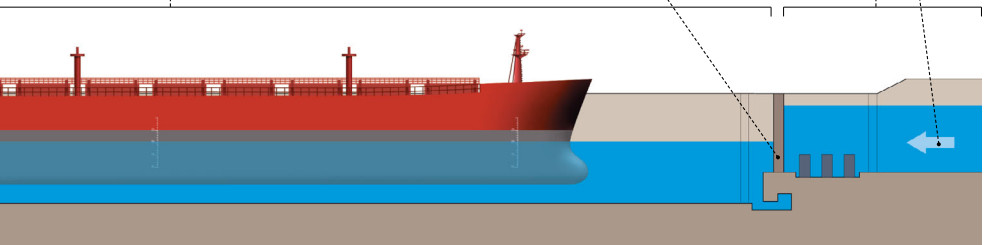
canal bed
Thick concrete base that makes up the lock's foundation.

flow
Natural current moving down the grade from upstream to downstream.

lock-chamber
Central part of the lock where the water level is raised and lowered depending on the heading of the ship.

upper gate
Watertight door or pair of doors made of wood or metal that open when the water levels between the lock-chamber and the upper level are the same.

upper level
Part of the lock at the upstream end of the lock-chamber.

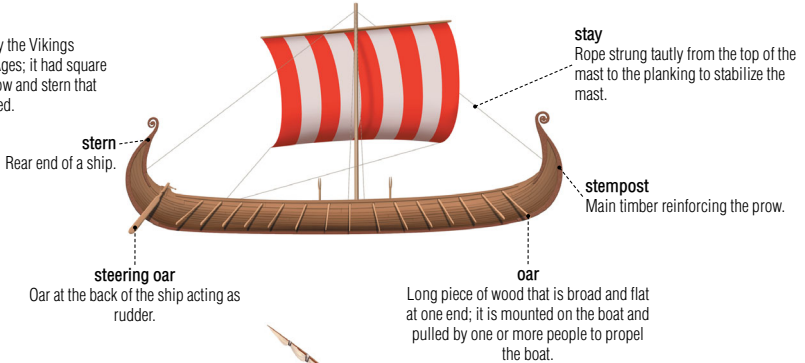


ancient ships

Over the course of history, navigation has played a key role in discovering new lands and in developing trade between peoples.

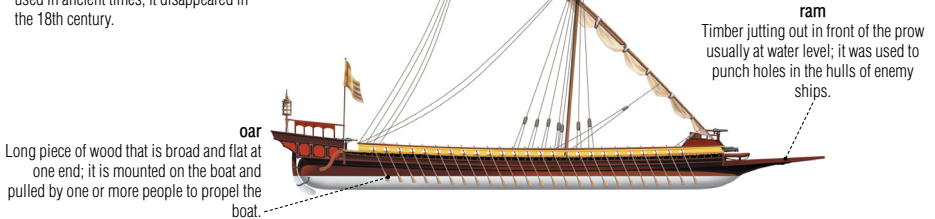
longship

Sailing ship used by the Vikings during the Middle Ages; it had square sails, oars and a prow and stern that were usually sculpted.



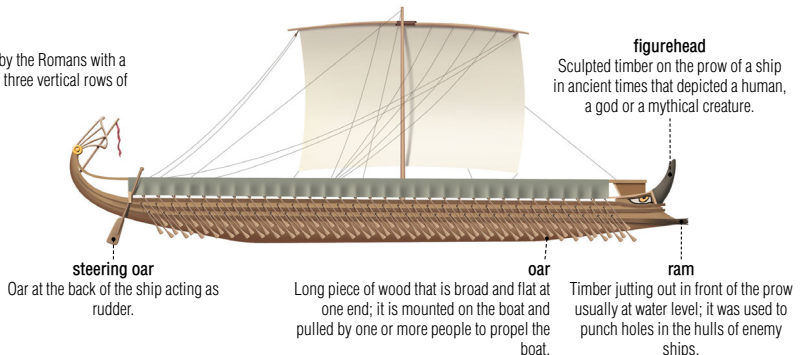
galley

Warship with a sail and oars that was used in ancient times; it disappeared in the 18th century.



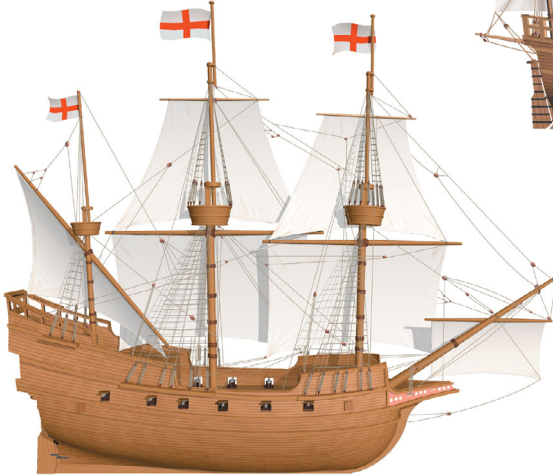
trireme

Warship used by the Romans with a ram, a sail and three vertical rows of oars.

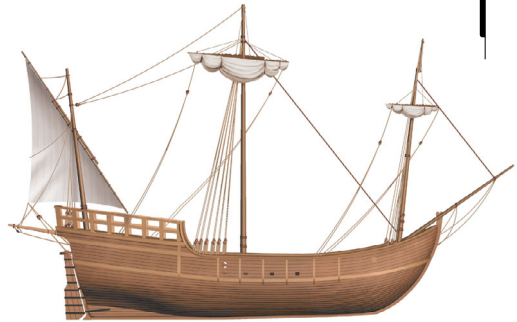


galleon

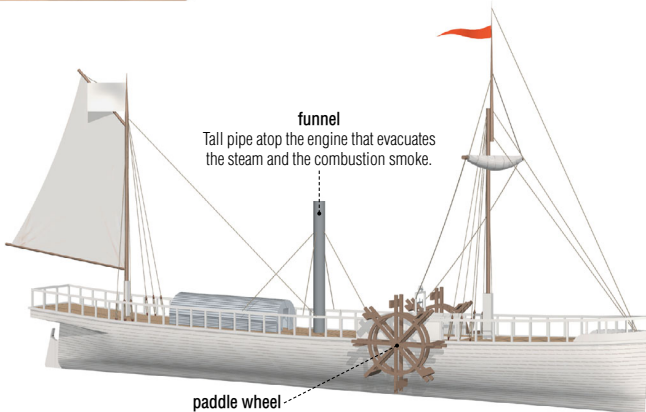
Large warship with sails that was used by the Spanish in the 17th and 18th centuries for trading with the colonies.

**caravel**

Fast ship with three or four masts; it was used especially in the 15th and 16th centuries for exploration.

**side-wheeler**

Ship used in the 19th century that was propelled by steam, which turned two paddle wheels.

**funnel**

Tall pipe atop the engine that evacuates the steam and the combustion smoke.

paddle wheel

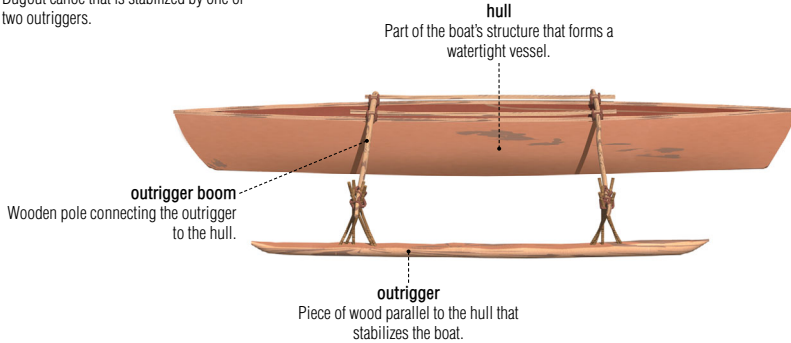
Wheel with blades that propels the boat; it is driven by a steam engine.

traditional ships

Boats characteristic of various parts of the world for a number of generations; they are used as a means of transportation, for fishing, commerce and exploration.

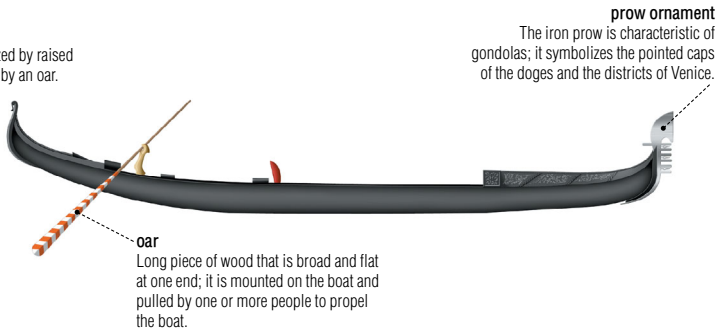
outrigger canoe

Dugout canoe that is stabilized by one or two outriggers.



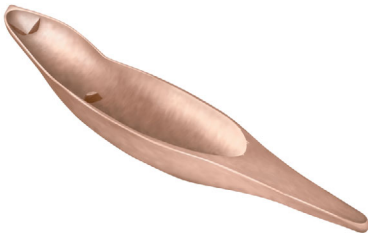
gondola

Venetian boat characterized by raised curved ends and steered by an oar.



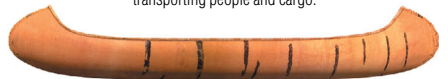
dugout canoe

Light boat used in Africa and Oceania that is made from one piece of wood and is propelled by a paddle or a sail.



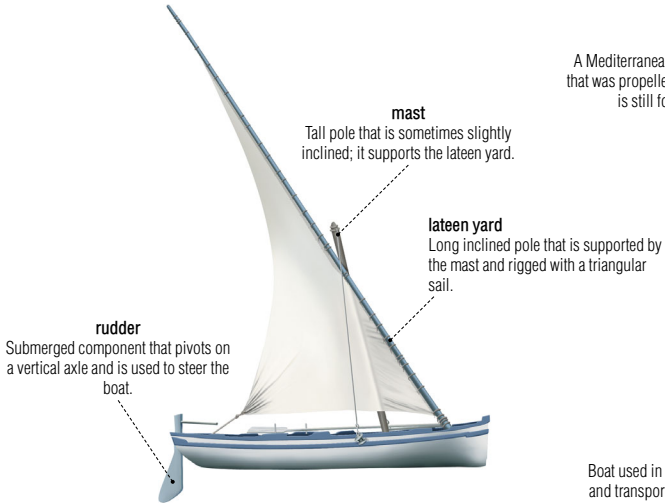
canoe

Light boat used by Native Americans; it is propelled by a paddle and is used for transporting people and cargo.

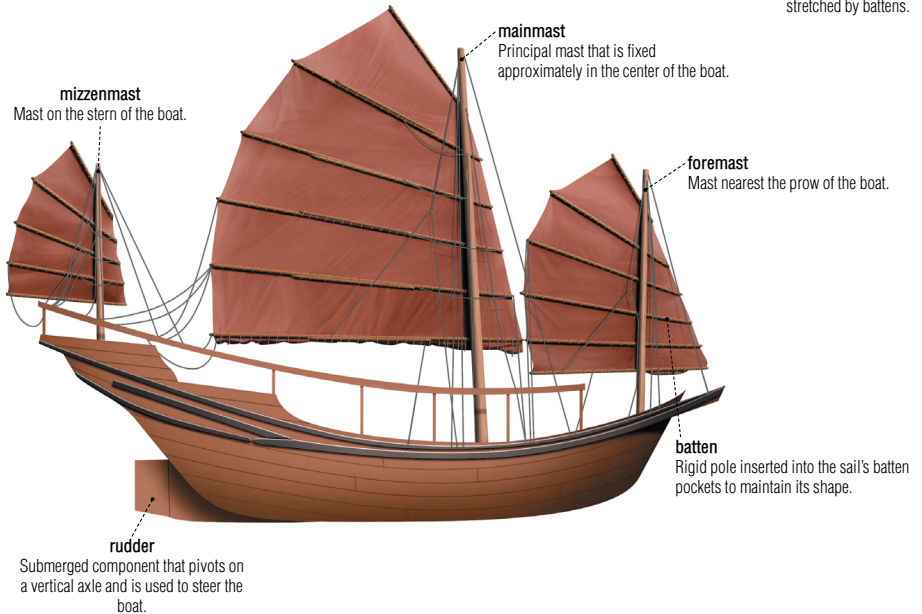


felucca

A Mediterranean boat of ancient times that was propelled by a sail or an oar; it is still found today on the Nile.

**junk**

Boat used in the Far East for fishing and transporting cargo; its sails are made of matting or canvas and are stretched by battens.



four-masted bark

Sailboat with four masts and square sails except for the jiggermast, which carries a gaff sail.

masting and rigging

Masting: masts, yards, ropes and other movable sailing equipment that support and manipulate the rigging.

mizzenmast

One of the principal masts of the ship; it is located aft of the mainmast between the ship's center of gravity and its rudder.

mainmast

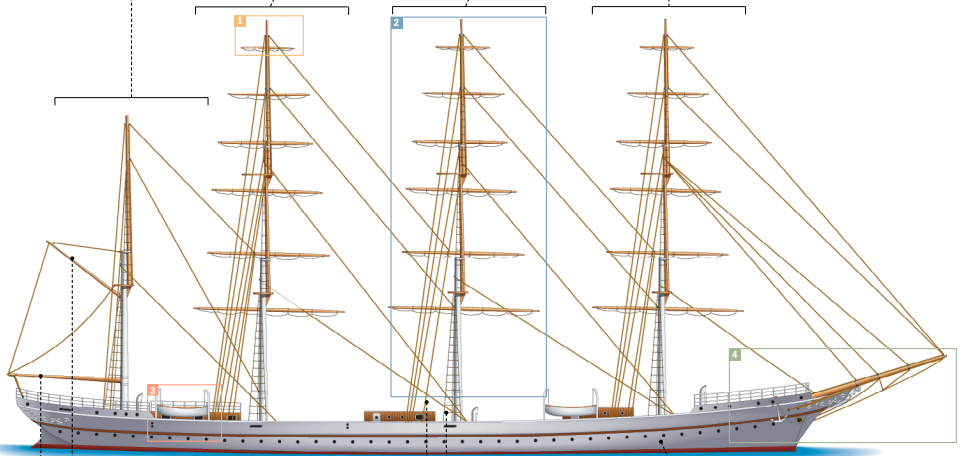
One of the principal parts of the ship; it is located closest to the center of gravity.

foremast

Mast nearest the prow of the boat.

jiggermast

Mast located aft on the four-masted bark.



gaff

Diagonal yard aft of a mast and supporting the top part of a gaff sail.

shroud

Heavy taut rope between a mast and the side of the ship; it secures and supports the mast on the sides.

side

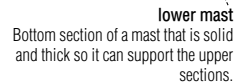
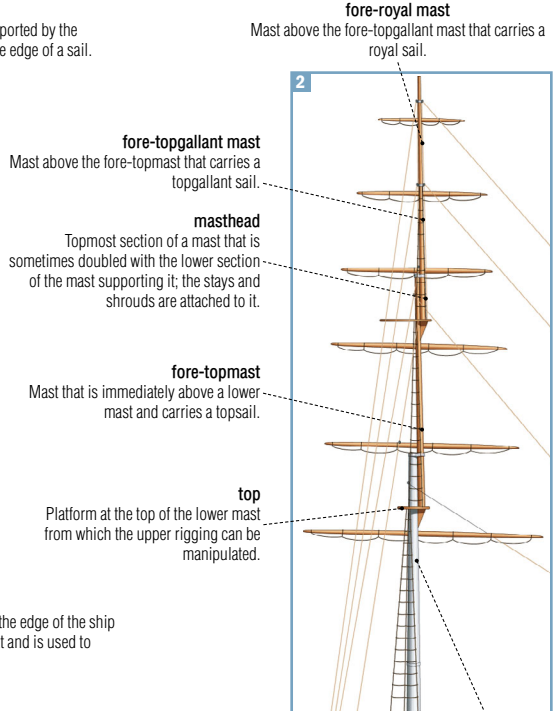
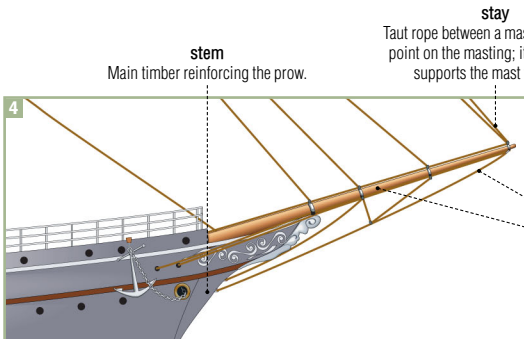
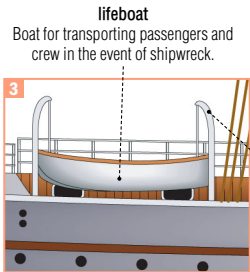
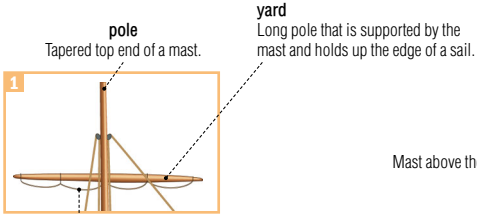
Longitudinal surface of the ship.

gaff sail boom

Horizontal yard articulating on a mast; it keeps the bottom edge of a sail taut.

backstay

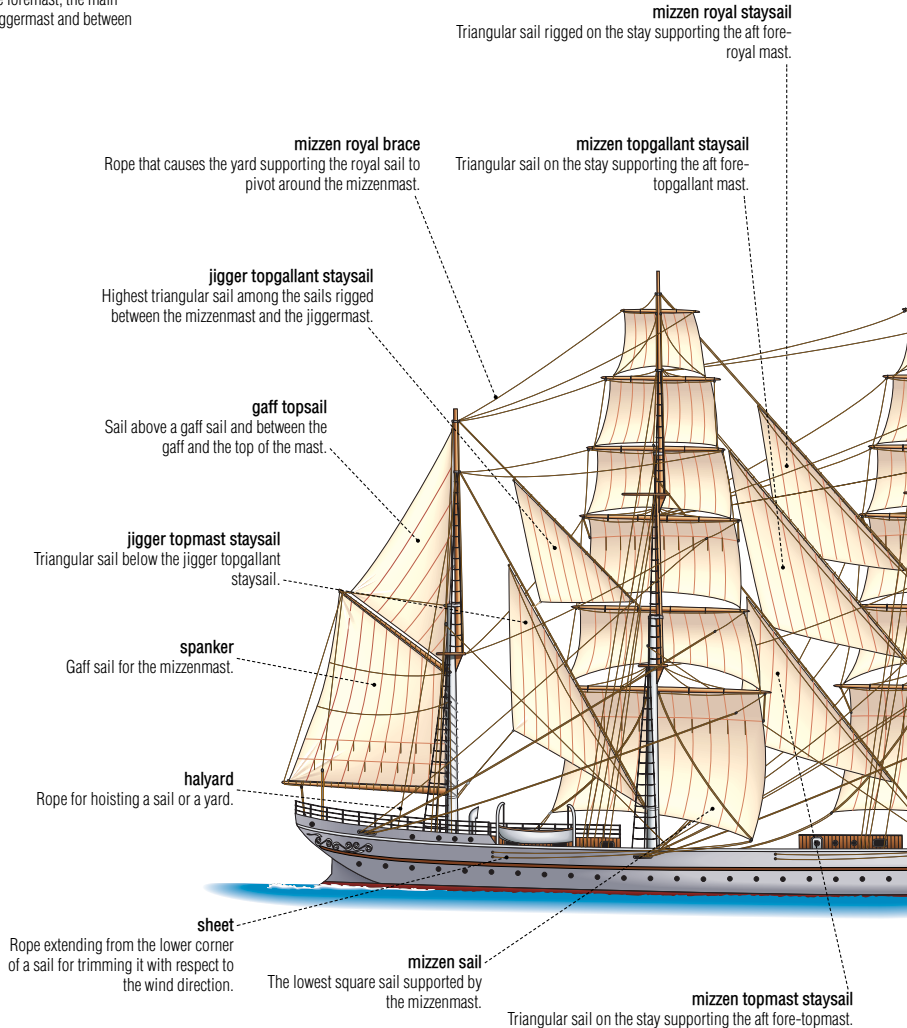
Long taut rope between the mast and the deck; it secures and supports the mast athwartships and aft.

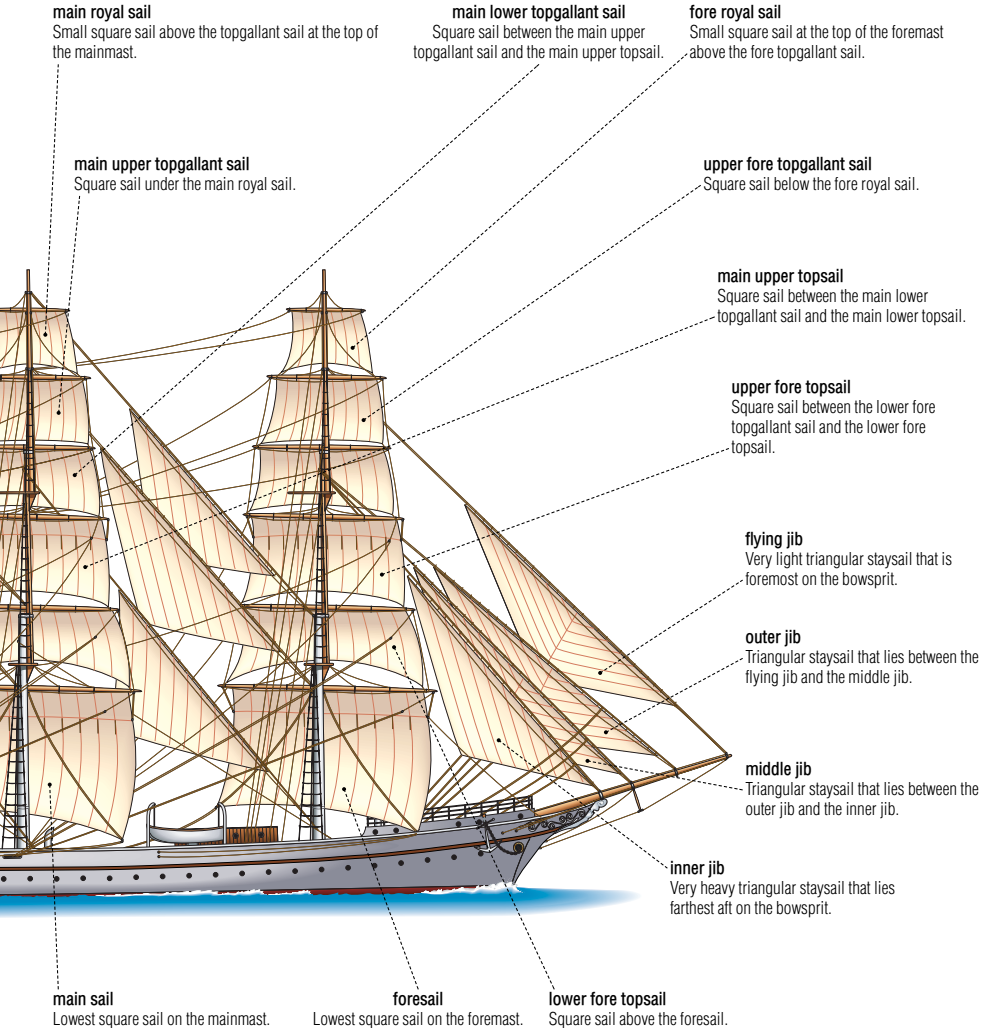


four-masted bark

sails

A sailboat's sails that are rigged on the bowsprit, the foremast, the main masts, the jiggermast and between these masts.



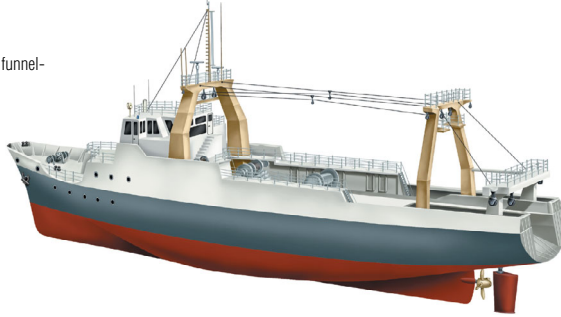


examples of boats and ships

Boats and ships: floating structures for underwater exploration and transporting passengers and cargo across water.

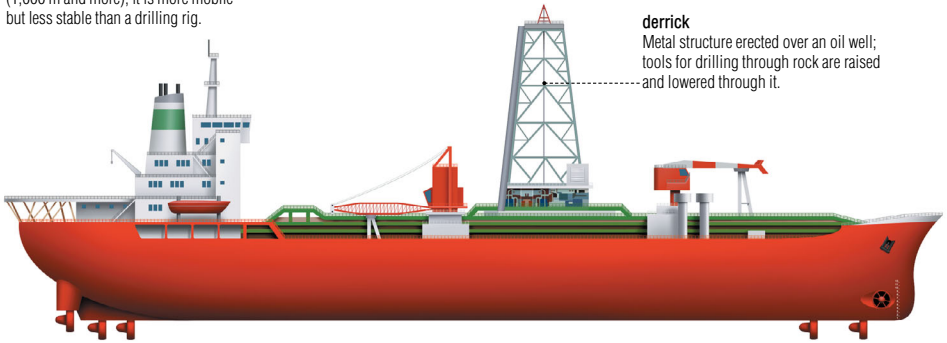
trawler

Fishing boat that tows a large funnel-shaped net (trawl).



drill ship

Ship for drilling for oil in deep water (1,000 m and more); it is more mobile but less stable than a drilling rig.

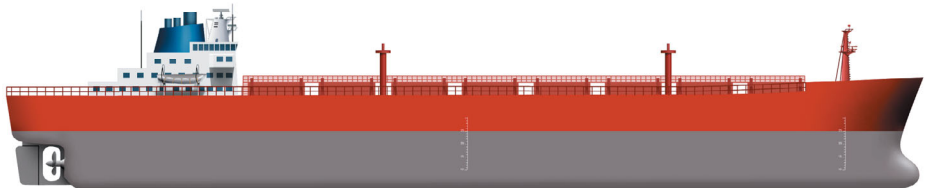


derrick

Metal structure erected over an oil well; tools for drilling through rock are raised and lowered through it.

bulk carrier

Ship for transporting raw dry materials, such as grain, coal and ore.



tug

Boat propelled by powerful engines that is used to tow boats and other floating craft to help them maneuver or to rescue them.

**wheelhouse**

Cabin that houses the pilot and the navigation instruments.

rudder blade

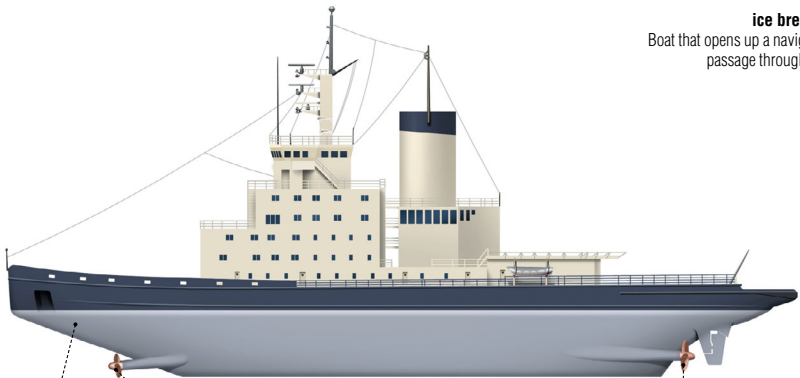
Part of the rudder that receives the thrust from the propeller in order to steer the boat.

propeller

Device with blades integrated onto a shaft that is driven by the engine to provide thrust and thus impel the ship.

ice breaker

Boat that opens up a navigable passage through ice.

**stem**

Reinforced part of the boat's prow that crushes the ice with its weight and then pushes it aside to open a channel.

stem propeller

Screw that pulls up water from under the ice sheet to weaken its support thus making it easier to break and move.

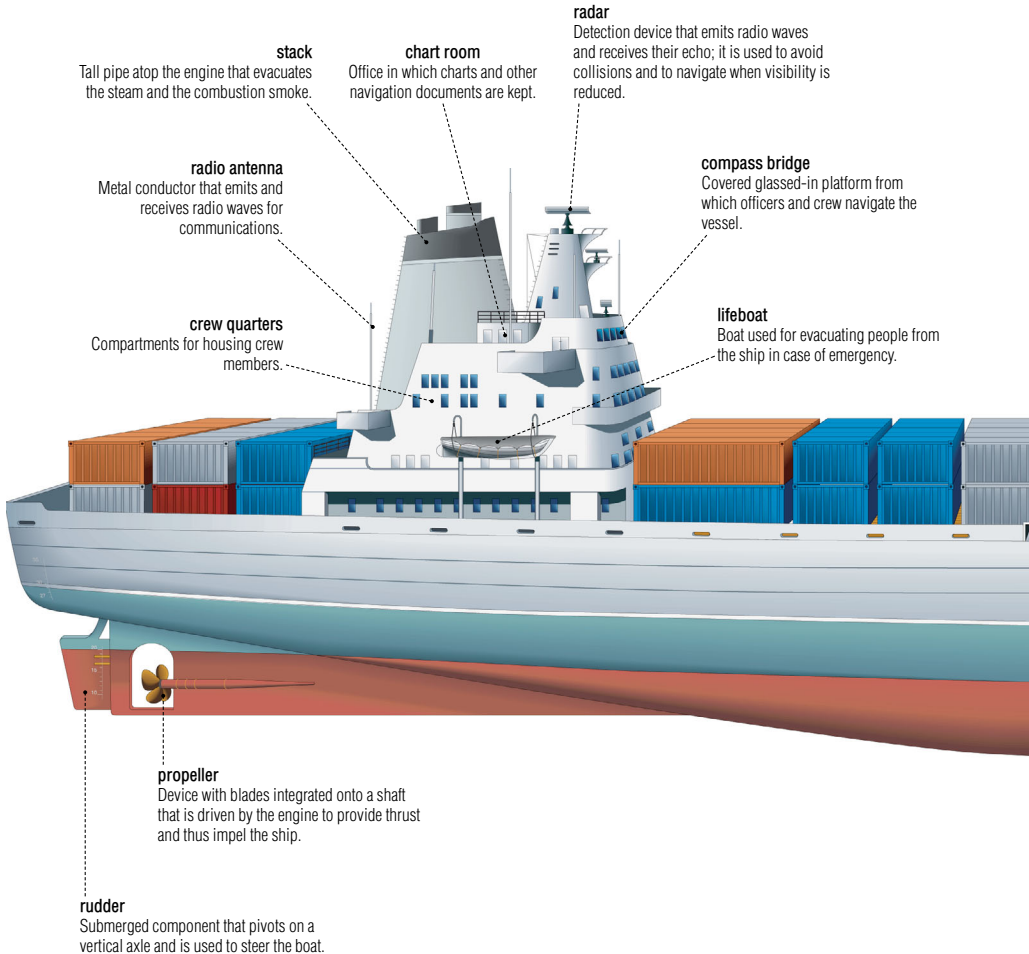
rear propeller

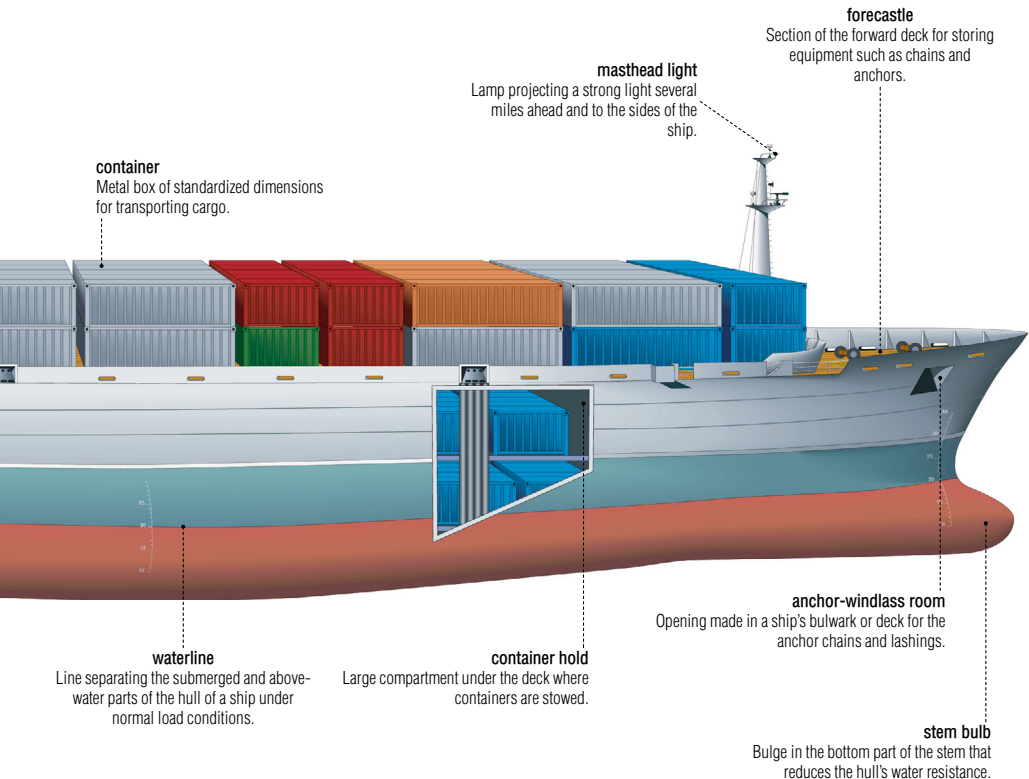
Screw driven by a powerful engine to propel the ice breaker.

examples of boats and ships

container ship

Ship that is designed for transporting cargo in containers in its hold and on its deck.





examples of boats and ships

hovercraft

Propeller vehicle that moves above water (or land) by gliding on a cushion of air it creates by blowing downward.

rudder

Pivoting part behind the propeller blast for steering the hovercraft.

propeller duct

Metal part that surrounds the propeller and increases its power by concentrating its air intake.

dynamics propeller

Device that is made up of blades integrated with a shaft; it pushes air behind the hovercraft thus causing a forward movement.

control deck

Compartment from which the pilots operate the hovercraft.

navigation light

Lamp that is visible from afar to signal the hovercraft's presence.

passenger cabin

Compartment where the passengers sit during the trip.

blade lift fan

Device blowing air downward under the hovercraft to keep it levitated.

skirt finger

Flexible and pliable extension to the skirt that adapts to the surface of the water.

baggage racks

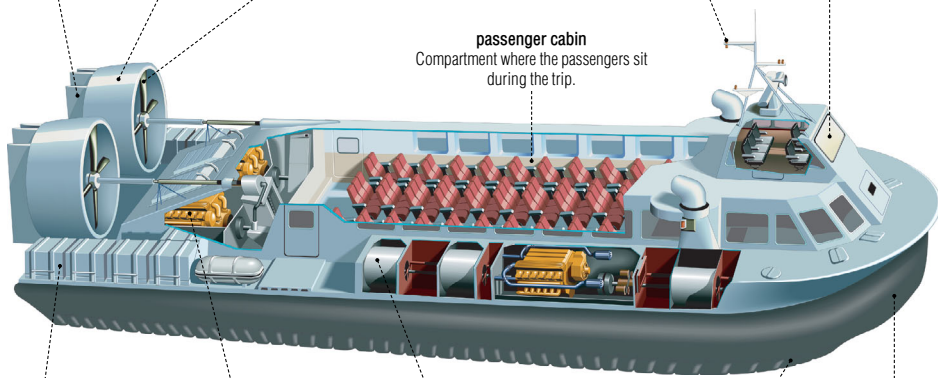
Compartment for storing luggage.

diesel propulsion engine

Power source using the combustion of an air/fuel mixture to drive the propellers.

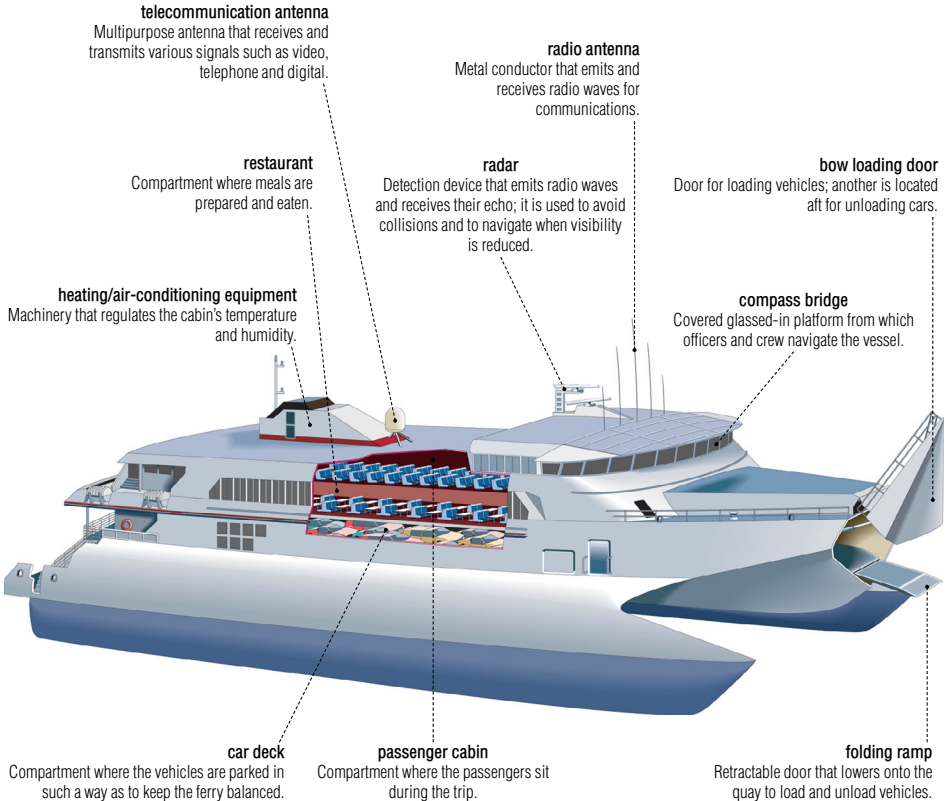
flexible skirt

Rubber flexible side that surrounds the edge of the hull to trap the air blown down by the lift fan; this increases pressure, which in turn causes lift.



ferry boat

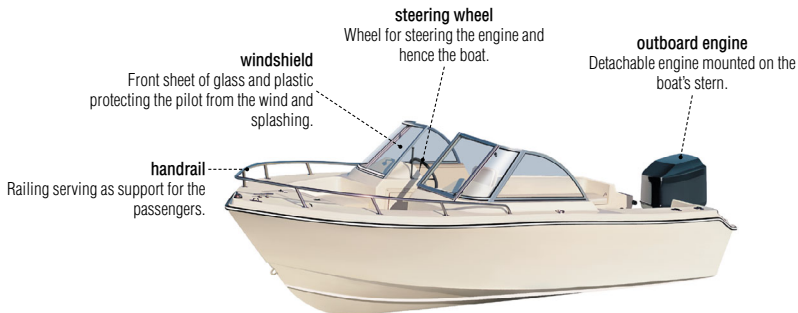
Shuttle boat for carrying vehicles with their cargo and passengers.



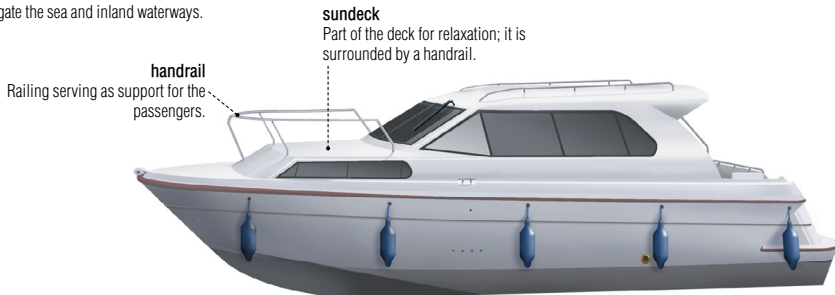
examples of boats and ships

runabout

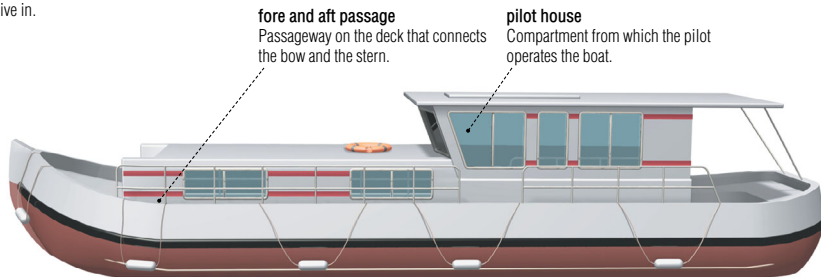
Pleasure boat with an outboard engine for cruising and waterskiing on inland waterways.

**motor yacht**

Pleasure boat of various sizes and speeds with a cabin fit to live in; it can navigate the sea and inland waterways.

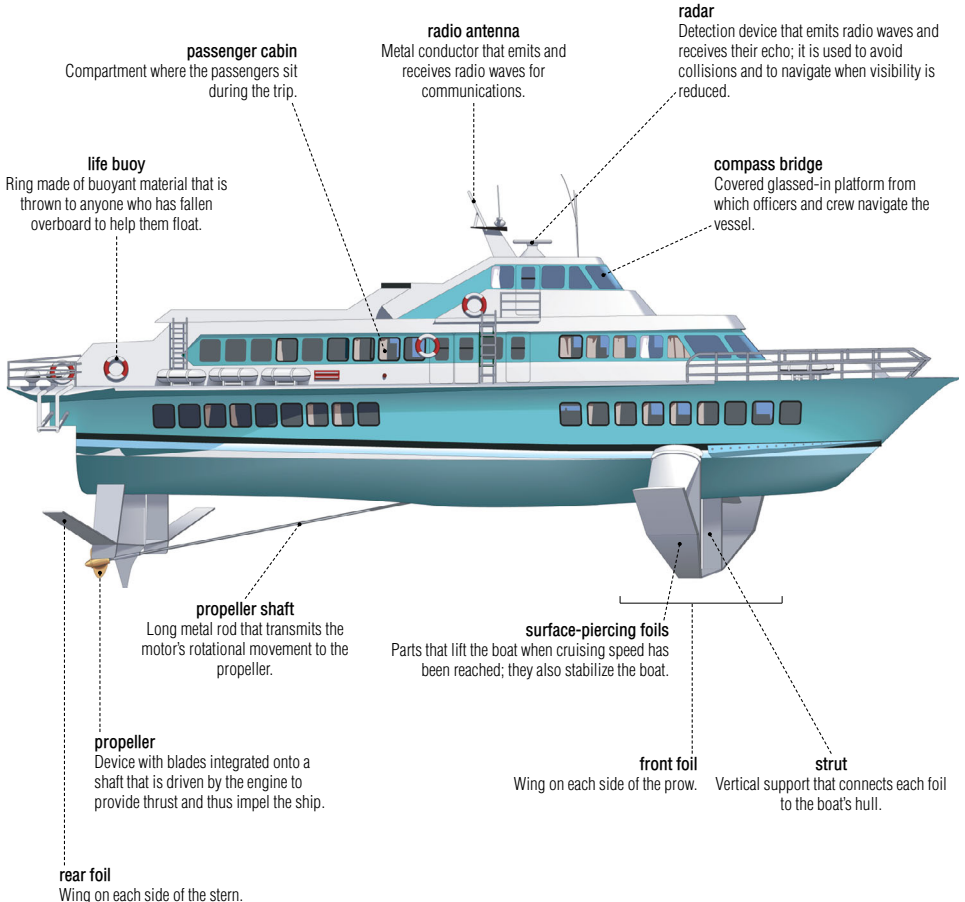
**houseboat**

Motorized pleasure boat for navigating inland waterways; it is characterized by a long deck and a cabin fit to live in.



hydrofoil boat

Fast boat with foils, which lift and support the hull above water when cruising speed is reached.



passenger cabin

Compartment where the passengers sit during the trip.

radio antenna

Metal conductor that emits and receives radio waves for communications.

radar

Detection device that emits radio waves and receives their echo; it is used to avoid collisions and to navigate when visibility is reduced.

life buoy

Ring made of buoyant material that is thrown to anyone who has fallen overboard to help them float.

compass bridge

Covered glassed-in platform from which officers and crew navigate the vessel.

propeller shaft

Long metal rod that transmits the motor's rotational movement to the propeller.

surface-piercing foils

Parts that lift the boat when cruising speed has been reached; they also stabilize the boat.

propeller

Device with blades integrated onto a shaft that is driven by the engine to provide thrust and thus impel the ship.

front foil

Wing on each side of the prow.

strut

Vertical support that connects each foil to the boat's hull.

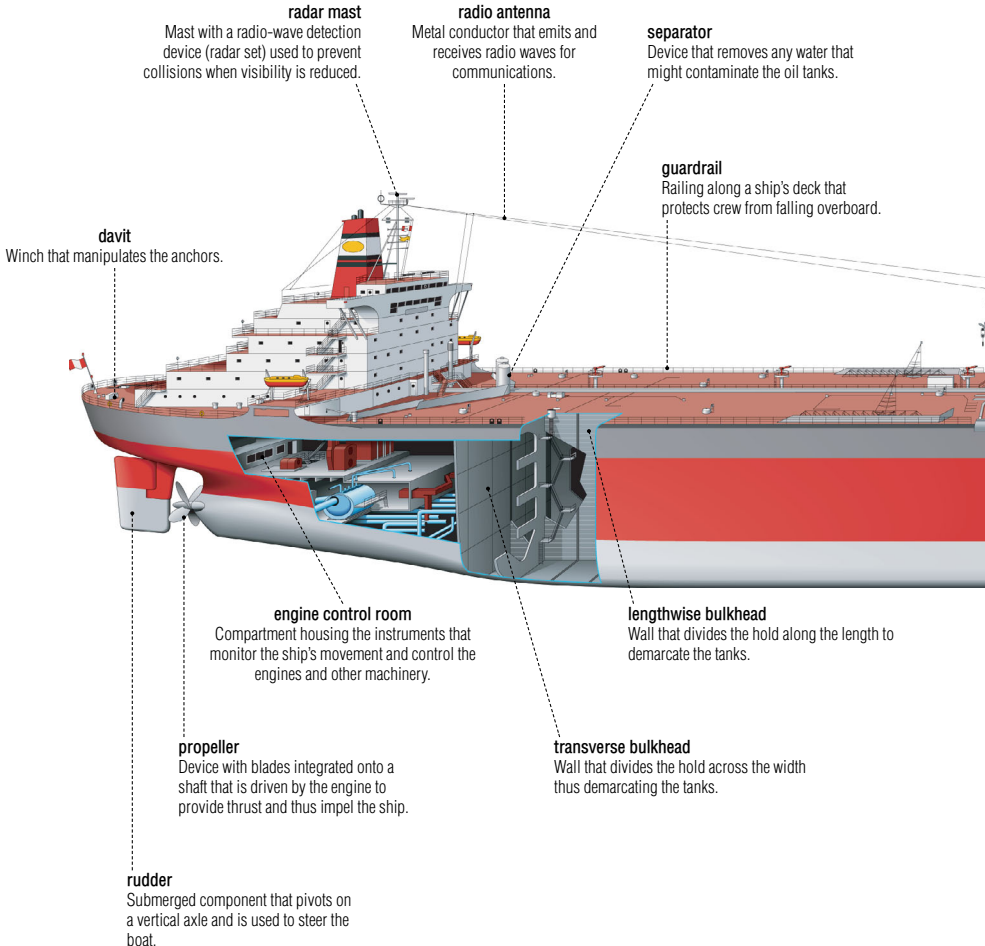
rear foil

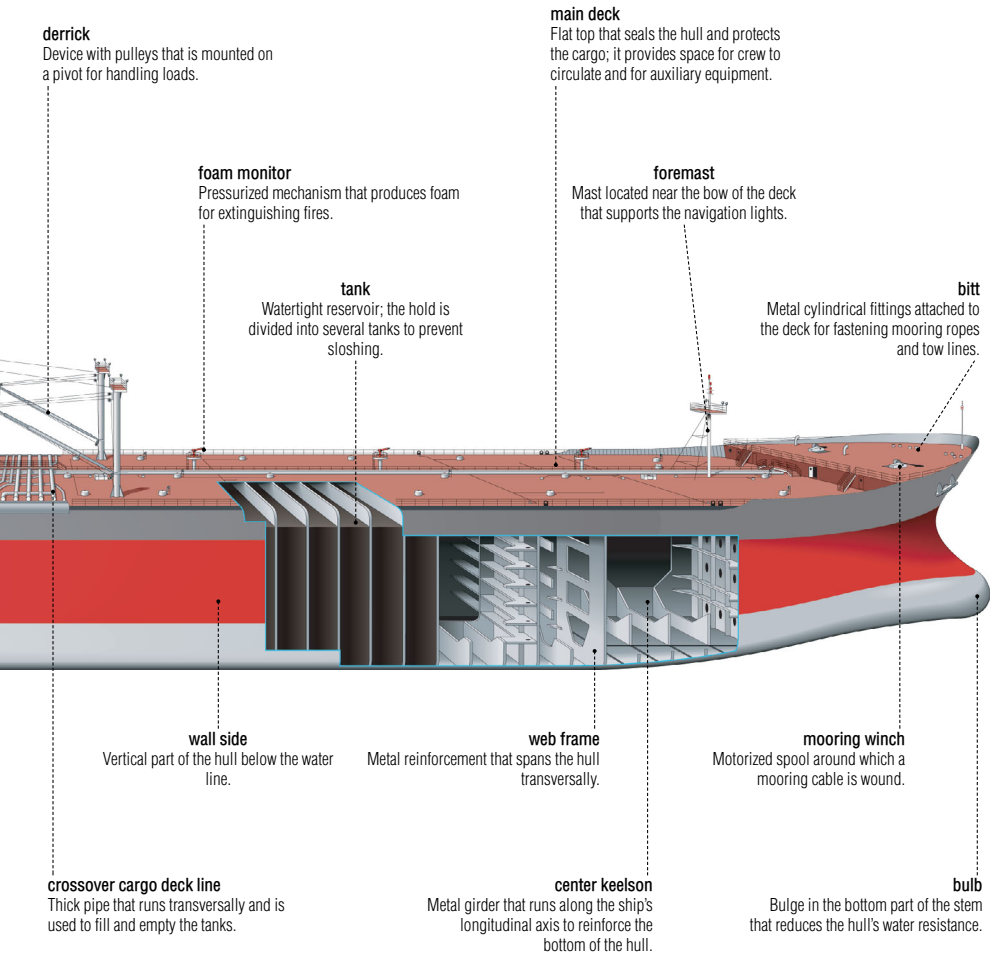
Wing on each side of the stern.

examples of boats and ships

tanker

Ship with large reservoirs for transporting liquid petroleum products.

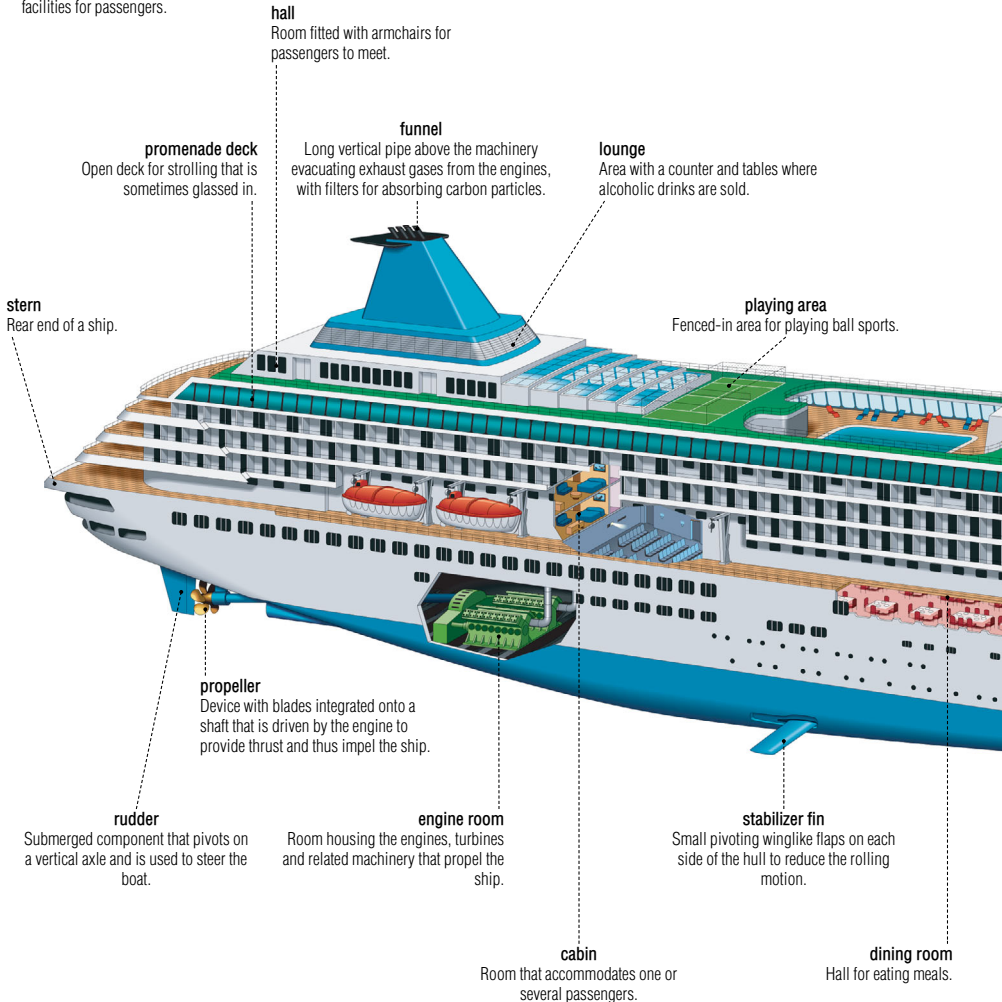




examples of boats and ships

passenger liner

Large cruise ship, fitted like a luxury hotel and with diverse recreation facilities for passengers.



hall
Room fitted with armchairs for passengers to meet.

promenade deck
Open deck for strolling that is sometimes glassed in.

funnel
Long vertical pipe above the machinery evacuating exhaust gases from the engines, with filters for absorbing carbon particles.

lounge
Area with a counter and tables where alcoholic drinks are sold.

stern
Rear end of a ship.

playing area
Fenced-in area for playing ball sports.

propeller
Device with blades integrated onto a shaft that is driven by the engine to provide thrust and thus impel the ship.

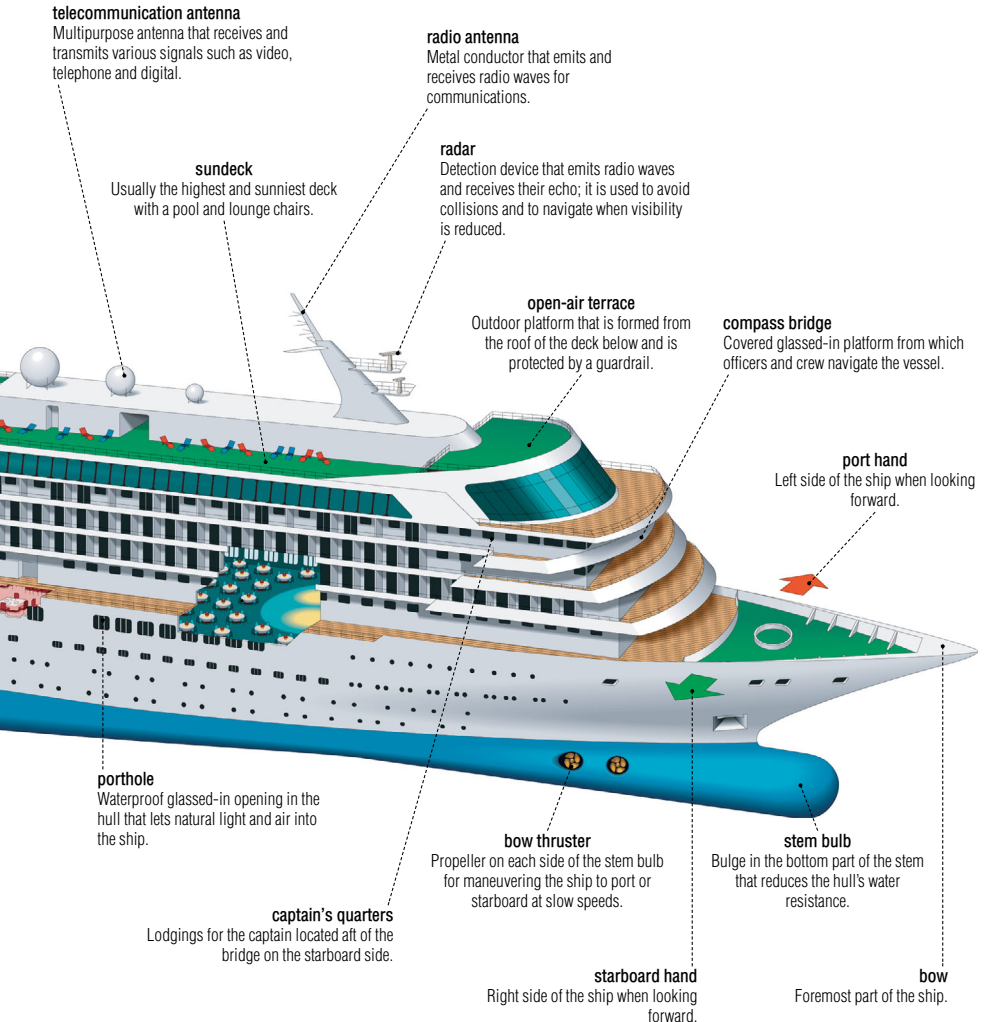
rudder
Submerged component that pivots on a vertical axle and is used to steer the boat.

engine room
Room housing the engines, turbines and related machinery that propel the ship.

stabilizer fin
Small pivoting winglike flaps on each side of the hull to reduce the rolling motion.

cabin
Room that accommodates one or several passengers.

dining room
Hall for eating meals.

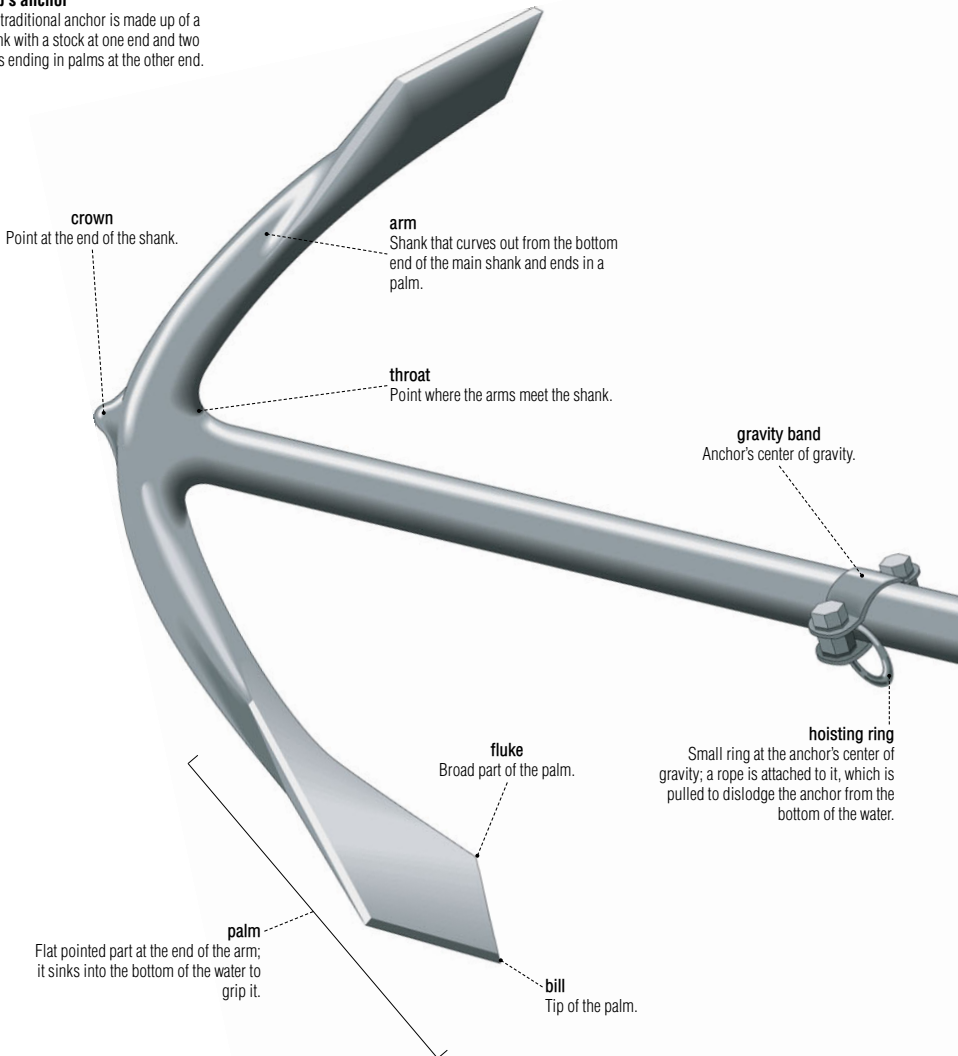


anchor

Usually steel part that is attached to a chain or cable; it hooks onto the bottom of a body of water to keep the boat from moving.

ship's anchor

The traditional anchor is made up of a shank with a stock at one end and two arms ending in palms at the other end.





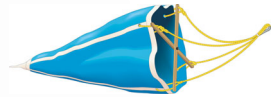
plow anchor

Anchor with a plow-shaped arm that pivots on the shank and hooks onto most bottoms.



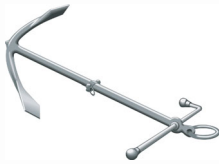
stockless anchor

Relatively light anchor with a pair of pivoting flukes that fold along the shank.



sea anchor

Solid cone-shaped canvas sack that is dragged behind a boat to counter heaving and strong winds.



stocked anchor

Relatively heavy and bulky anchor with a stock and two arms ending in flukes.



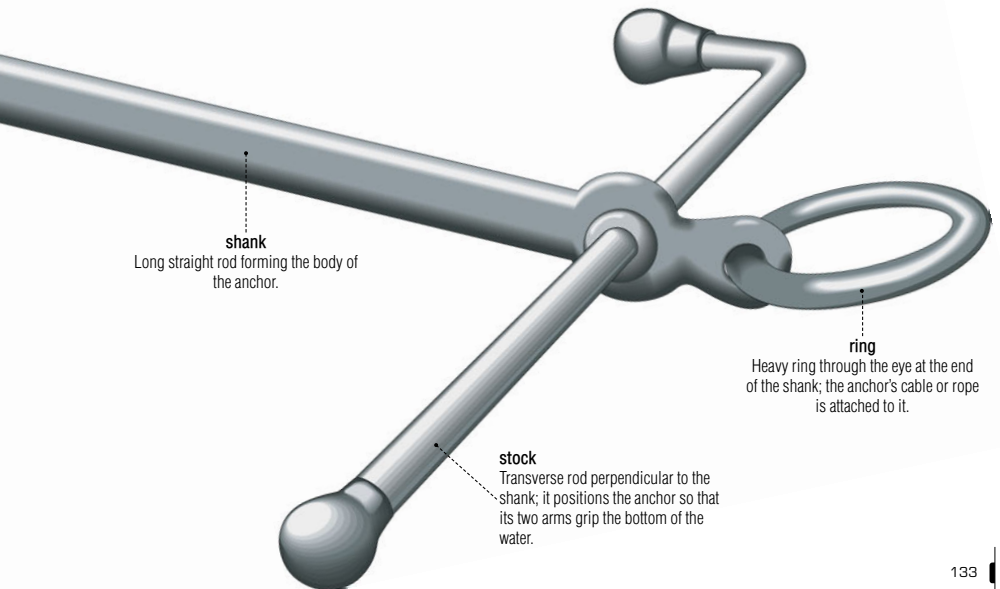
grapnel

Small anchor with four, sometimes folding, cruciform arms.



mushroom anchor

Anchor with a large crown instead of arms.



shank

Long straight rod forming the body of the anchor.

ring

Heavy ring through the eye of the shank; the anchor's cable or rope is attached to it.

stock

Transverse rod perpendicular to the shank; it positions the anchor so that its two arms grip the bottom of the water.

life-saving equipment

Instruments and equipment for signaling a boat's presence and for saving people from drowning.

life raft

Inflatable boat where passengers can take refuge in case of emergency.



canopy

Covering that automatically deploys to protect against wind, rain and spray.

boarding ladder

Nylon straps that form steps for climbing into the life raft.

inflation system

Device containing pressurized air that automatically inflates the buoyancy tubes when the life raft is launched.

buoyancy tube

Inflatable tube that serves as a hull to make the raft float.

fog horn

Instrument that makes a regulation sound when visibility is reduced to indicate the presence of a boat.



trumpet

Bell mouth that amplifies the sound emitted by a diaphragm when compressed air passes over it.

canister

Small container of compressed air.

antenna

Metal rod that emits the radio signal into the atmosphere.

distress beacon

Device that automatically transmits a radio distress signal giving its precise position.



strobe

Lamp that produces an intense light from a gas, which glows between two electrodes.

life jacket

Buoyant vest filled with air or plastic foam that is used to keep a person afloat.



buckle

Fastener with two elements that hook together and unfasten when pressed.

belt

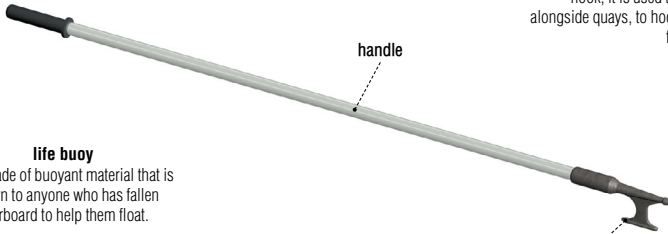
Nylon strap that adjusts to the wearer's size to keep the life jacket in place.

leg strap

Adjustable nylon belt that goes between the legs to prevent the life jacket from riding up.

boat hook

Usually telescopic pole with a tip and a hook; it is used to maneuver a boat alongside quays, to hook an object and to fathom the bottom.



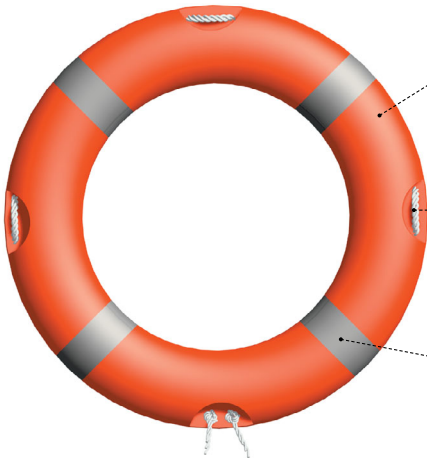
handle

hook

Curved end for hooking a rope or fishing an object out of the water.

life buoy

Ring made of buoyant material that is thrown to anyone who has fallen overboard to help them float.



ring

Rigid buoyant circle that a person in the water slips under the arms.

rope

Nylon rope that can be caught with the boat hook to hoist a person out of the water.

retro-reflective tape

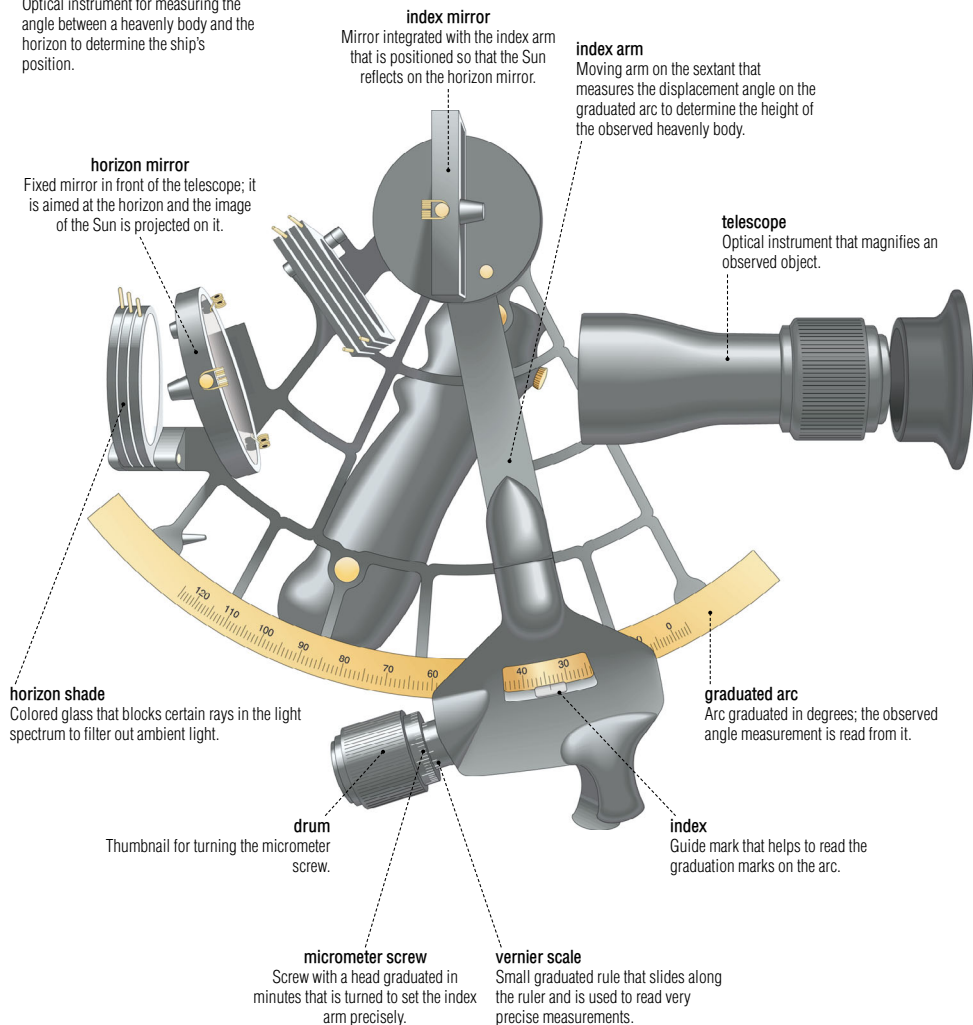
Tape that reflects light, making it easier to find a person in the water.

navigation devices

Examples of instruments that are used on a ship to determine its position and to chart and stay a course.

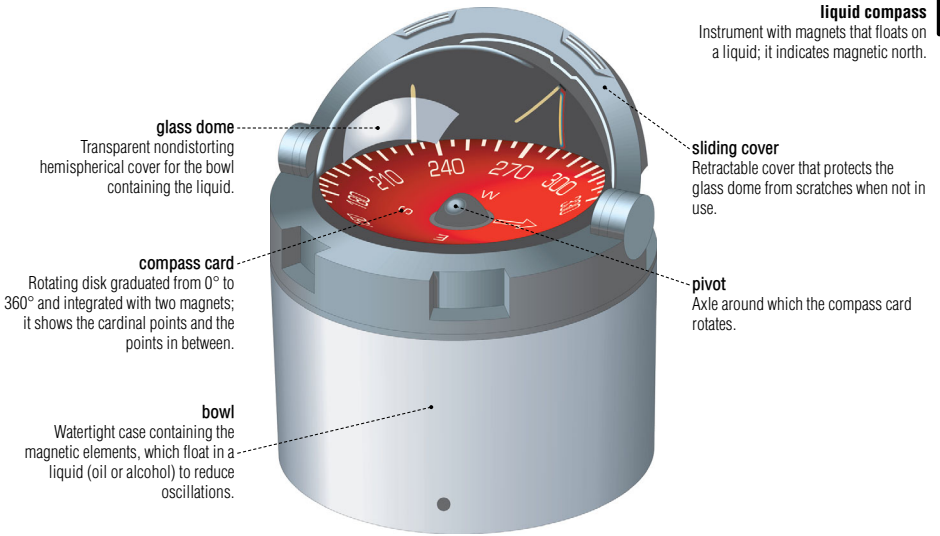
sextant

Optical instrument for measuring the angle between a heavenly body and the horizon to determine the ship's position.



liquid compass

Instrument with magnets that floats on a liquid; it indicates magnetic north.



glass dome

Transparent nondistorting hemispherical cover for the bowl containing the liquid.

sliding cover

Retractable cover that protects the glass dome from scratches when not in use.

compass card

Rotating disk graduated from 0° to 360° and integrated with two magnets; it shows the cardinal points and the points in between.

pivot

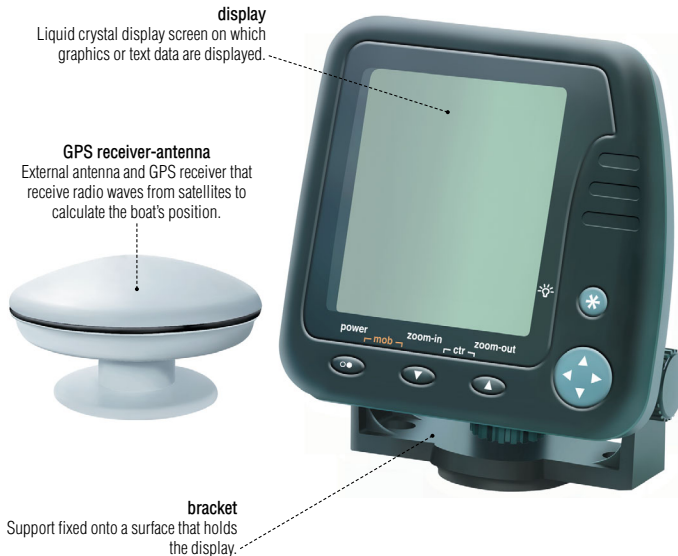
Axle around which the compass card rotates.

bowl

Watertight case containing the magnetic elements, which float in a liquid (oil or alcohol) to reduce oscillations.

satellite navigation system

Device that uses radio signals transmitted by a network of satellites to plot a boat's position and course on a chart.



display

Liquid crystal display screen on which graphics or text data are displayed.

GPS receiver-antenna

External antenna and GPS receiver that receive radio waves from satellites to calculate the boat's position.

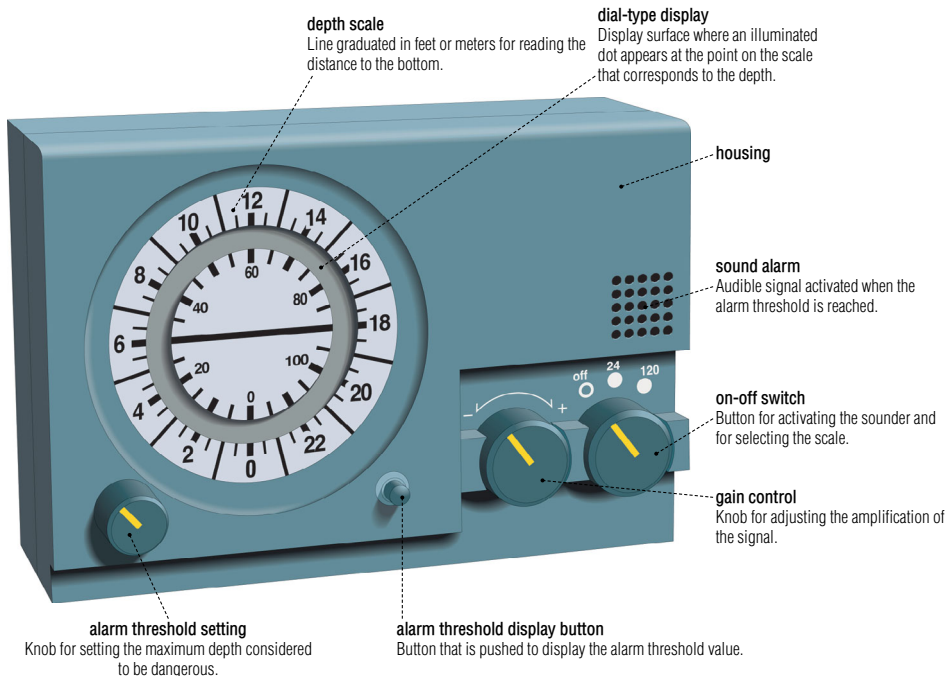
bracket

Support fixed onto a surface that holds the display.

navigation devices

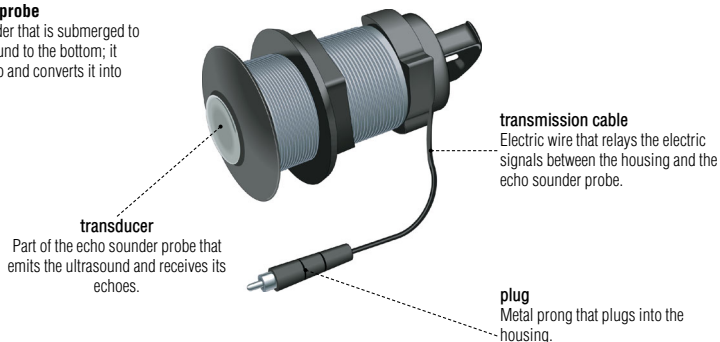
echo sounder

Device that uses ultrasound to measure the depth of the water below the boat.



echo sounder probe

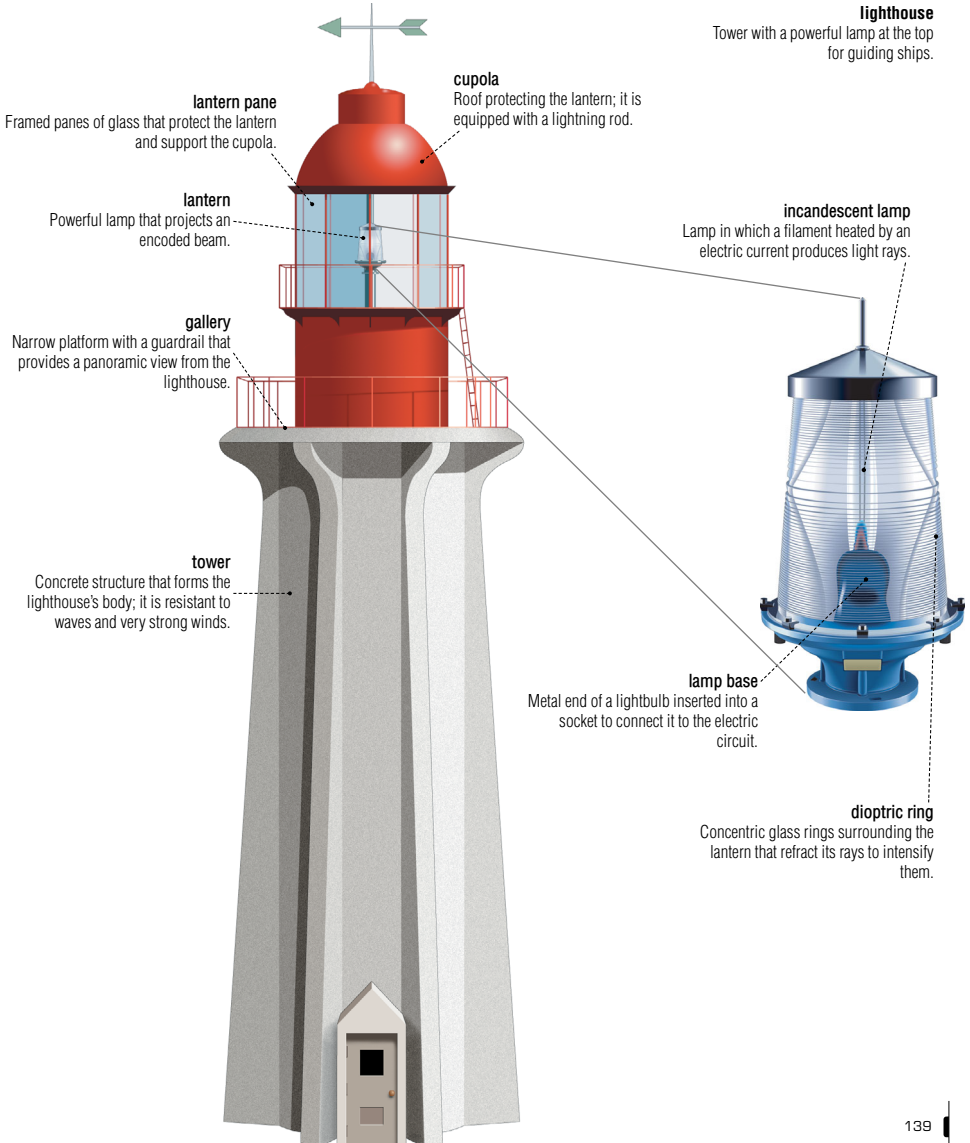
Part of the sounder that is submerged to send the ultrasound to the bottom; it receives the echo and converts it into sound.



Beacons and devices located on the sea, coasts and waterways that emit light, sound and radio waves to aid navigation.

lighthouse

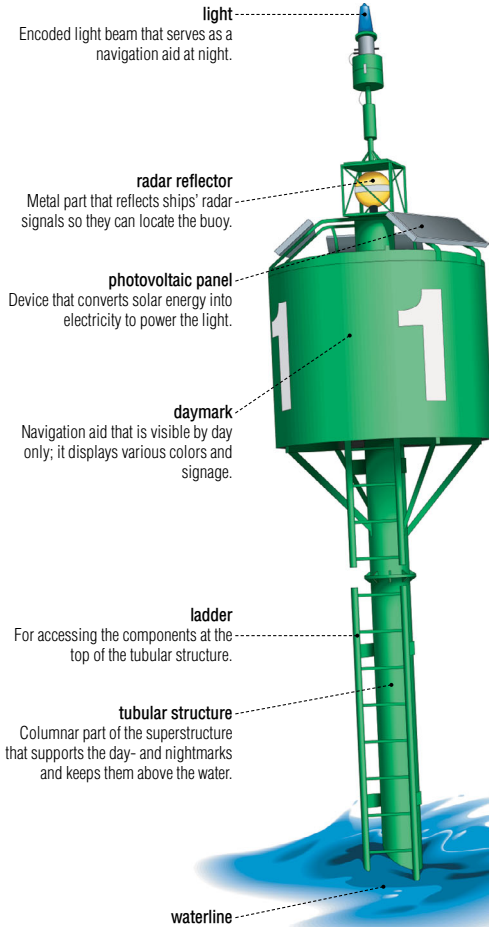
Tower with a powerful lamp at the top for guiding ships.



maritime signals

high focal plane buoy

Floating beacon whose light is especially high above the surface of the water.



pillar buoy

Floating beacon with a pylon-shaped superstructure.



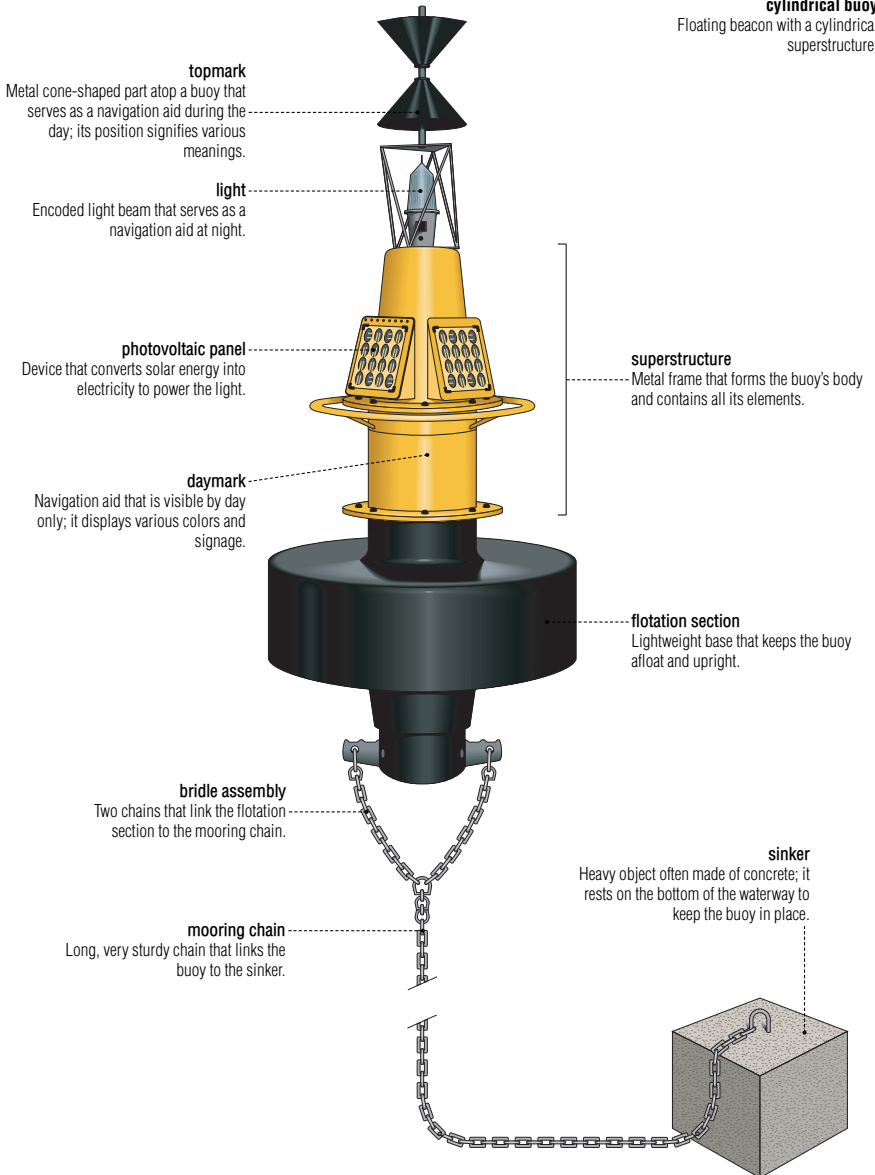
conical buoy

Floating beacon with a cone-shaped superstructure.



cylindrical buoy

Floating beacon with a cylindrical superstructure.

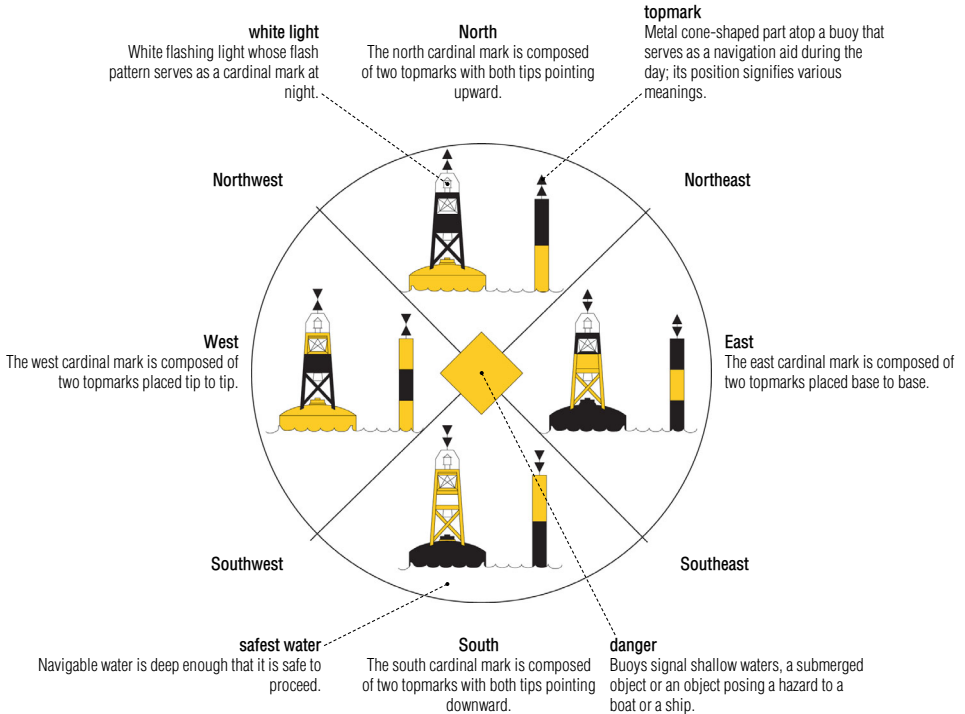


maritime buoyage system

Buoys, beacons and lights located along coasts and waterways to guide ships and boats.

cardinal marks

Buoys of standardized colors, topmarks and lights whose placement alone or in a pattern corresponds to the divisions of a compass.



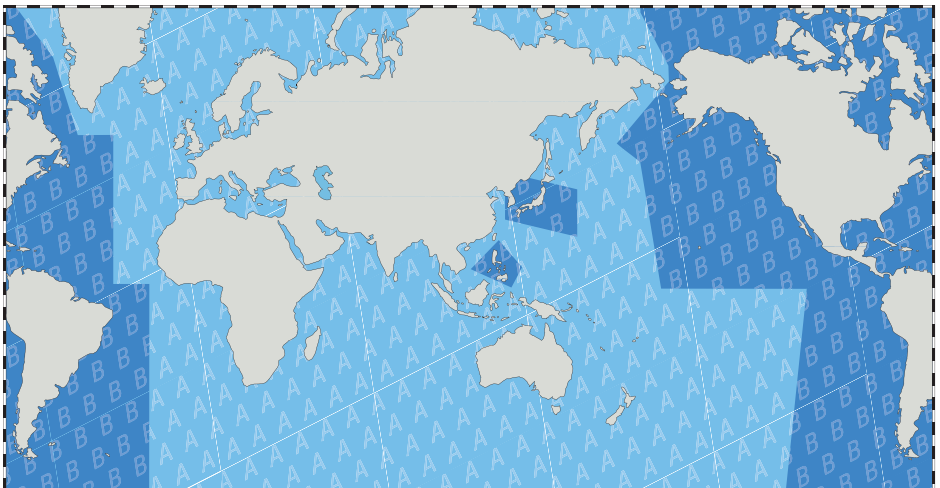
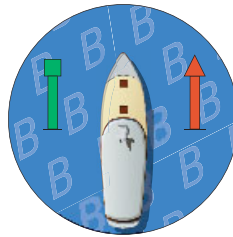
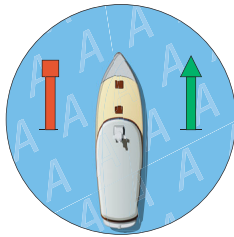
buoyage regions

The color of the buoys that indicate starboard and port is the opposite in various parts of the world.



port hand
Left side of the ship when looking forward.

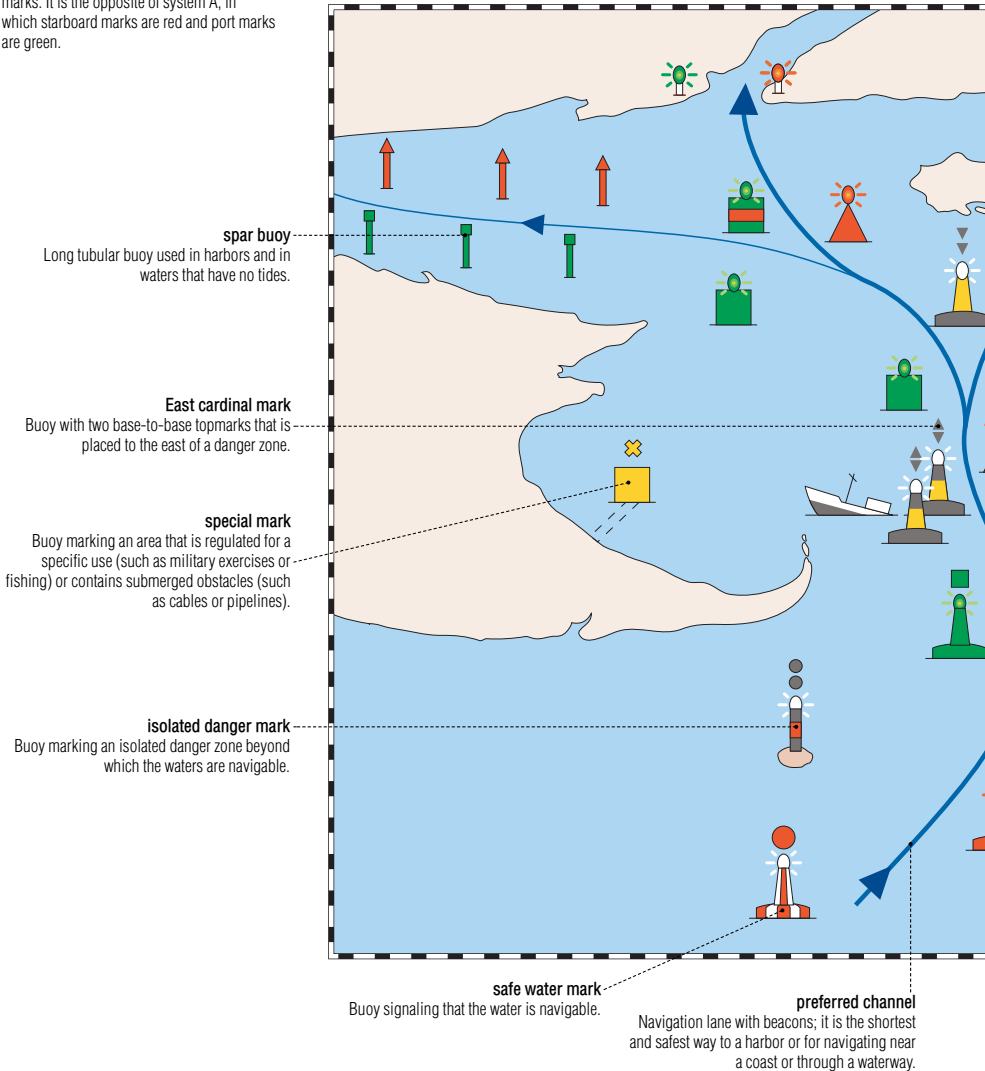
starboard hand
Right side of the ship when looking forward.

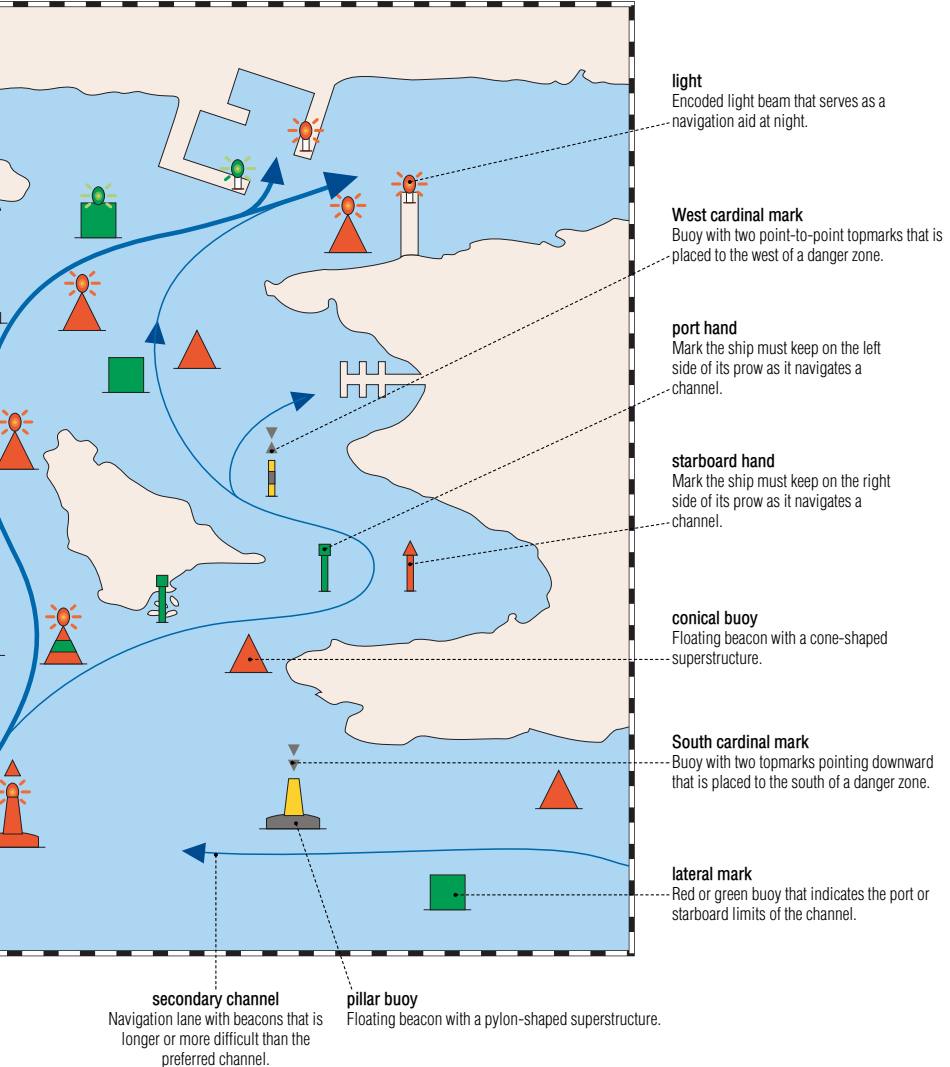


maritime buoyage system

daymarks (region B)

System B combines lateral and cardinal marks. It is the opposite of system A, in which starboard marks are red and port marks are green.

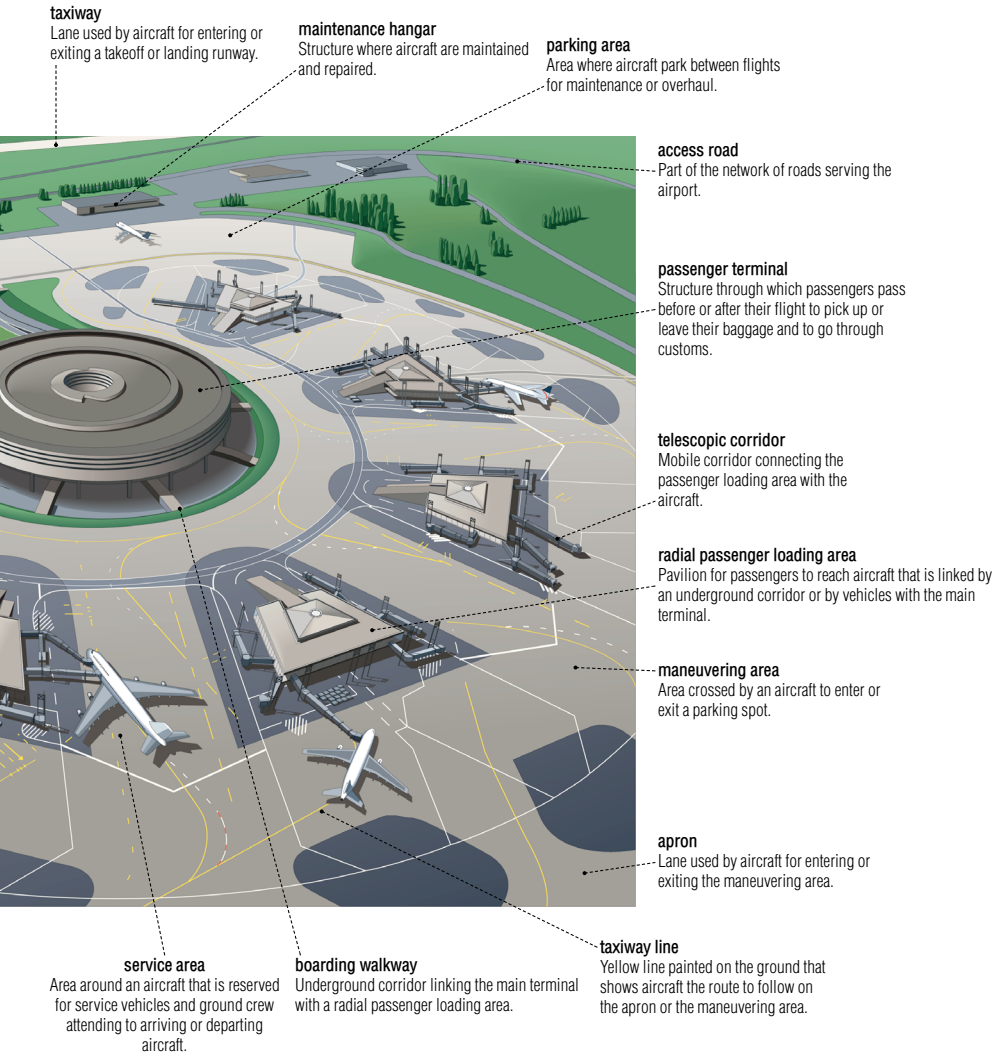




airport

Location that contains all the technical and commercial facilities needed to support air traffic.





security check

Mandatory checkpoint for passengers before boarding where their identification and luggage are inspected.

observation deck

Mezzanine that is open to the public and overlooks the departure and arrival area and the runways.

passport control

Booth where passengers show their passports before entering or leaving the boarding room.

duty-free shop

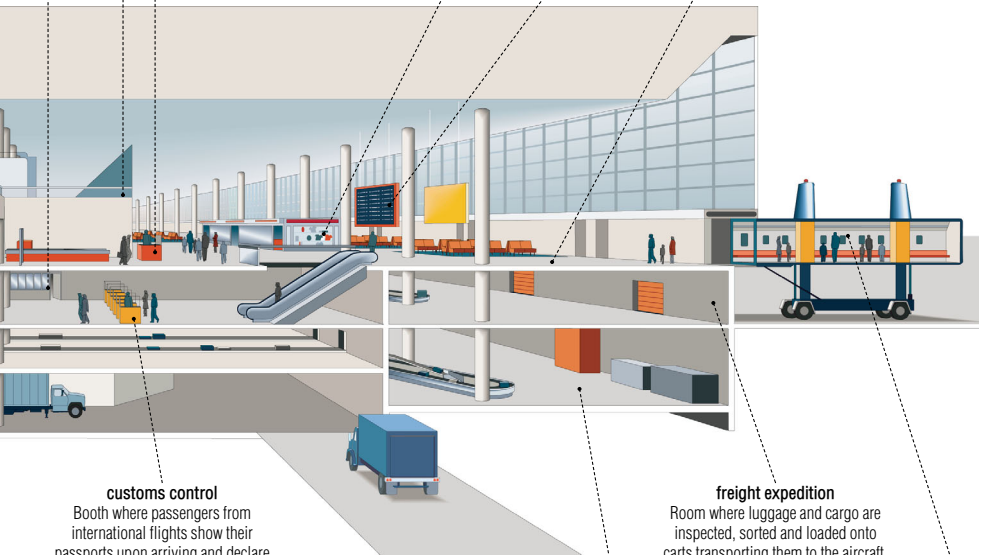
Store located near the boarding room where tax-free goods are sold (e.g., perfume, alcohol, leather goods).

flight information board

Panel listing and updating all the airport's arrivals and departures as well as the flight departure gate numbers.

boarding room

Room where passengers wait before boarding.



customs control

Booth where passengers from international flights show their passports upon arriving and declare any imported merchandise.

freight expedition

Room where luggage and cargo are inspected, sorted and loaded onto carts transporting them to the aircraft.

freight reception

Room where luggage and cargo that have been unloaded from the cargo hold are transferred to the conveyor belt, which in turn moves them to the baggage claim area.

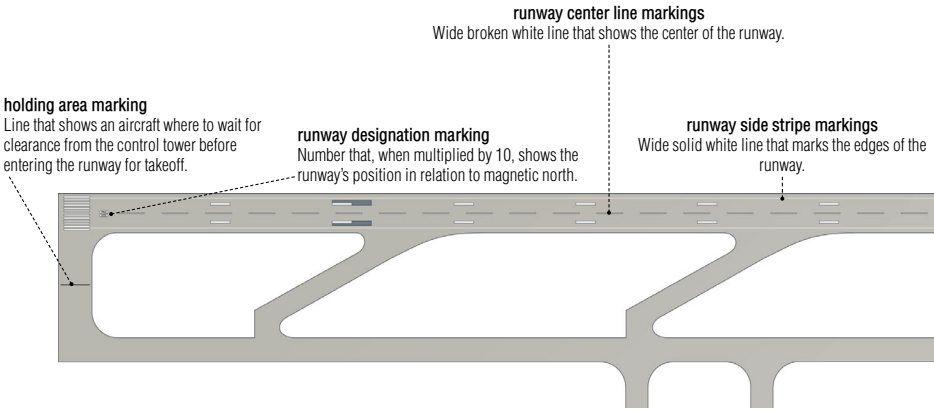
passenger transfer vehicle

Vertically adjustable vehicle with a cabin for transporting passengers between the aircraft and the terminal.

airport

runway

Strip of land on which an aircraft speeds up before takeoff or brakes after landing.



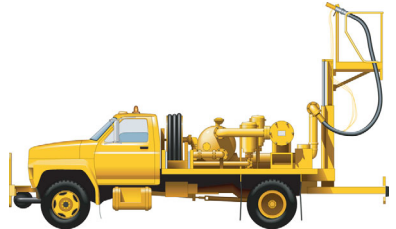
ground airport equipment

Equipment and materials for preparing an aircraft for its next flight; this includes cleaning, performing checks, refueling and boarding.



air start unit

Vehicle that is equipped with an air compressor driven by a gas turbine; it pumps air into the aircraft's jet engines to start them.



jet refueler

Truck that pumps fuel from underground tanks into the aircraft's tanks.



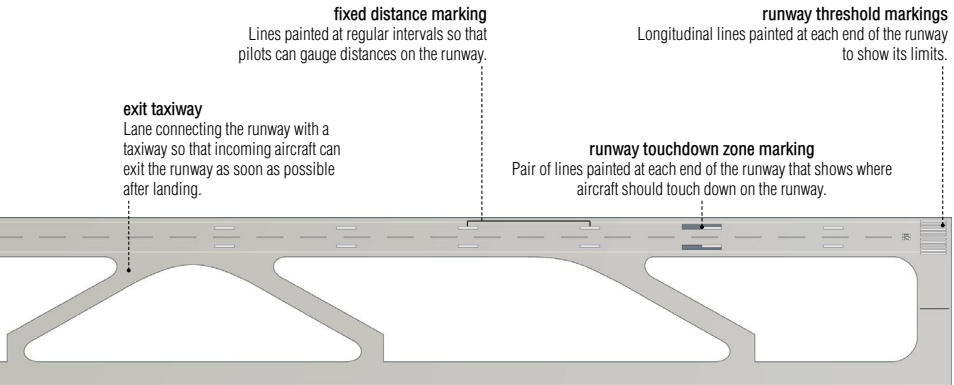
potable water truck

Truck that fills the aircraft's water tanks with drinking water.

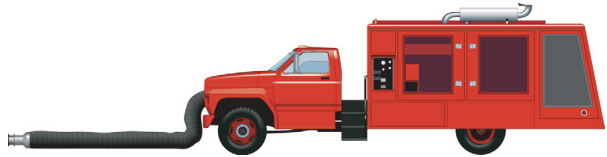


electrical power unit

Vehicle that is equipped with a transformer to provide electricity to the aircraft when its auxiliary generator set is at rest.



lavatory truck
Truck that empties and cleans the aircraft's toilets.



ground air conditioner
Truck that contains a device for treating the aircraft's interior air (ventilation and cooling or heating) when the aircraft is at rest.



tow bar
Device that connects the tow tractor to the aircraft's front landing gear.



tow tractor
Very heavy vehicle that pulls or pushes an aircraft onto the maneuvering area or the parking area.

**wheel chock**

Object that is placed against the landing gear's wheels to keep the aircraft stationary when on the ground.

**aircraft maintenance truck**

Vehicle that is used by technical maintenance crew when servicing an aircraft.

**universal step**

Mobile staircase that is positioned manually at an aircraft door to allow passengers to enter or exit.

**tripod tail support**

Adjustable tripod that supports part of the aircraft (the tail or a wing) when maintenance or repairs are carried out.

**container/pallet loader**

Vehicle whose articulated arms raise and lower a level platform for loading and unloading heavy cargo such as containers and cargo on pallets.

**mobile passenger stairs**

Truck that carries a telescopic staircase, which is positioned at an aircraft door to allow passengers to enter or exit.

**boom truck**

Vehicle that is equipped with a bucket at the end of an articulating pivoting arm; technicians stand in it to work on aircraft.

**baggage trailer**

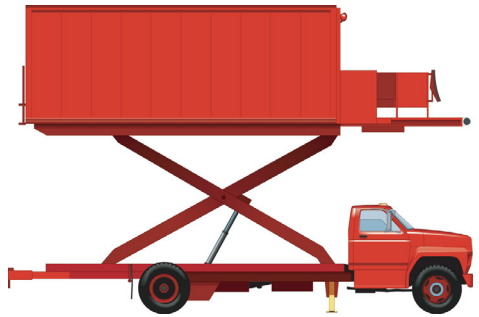
Flat trailer or cart that carries containers in which baggage is transported from the terminal to the aircraft.

**tow tractor**

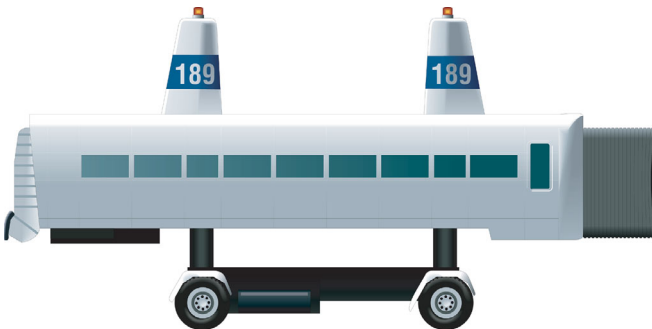
Vehicle that pulls the baggage trailer.

**baggage conveyor**

Conveyor belt of adjustable height for loading and unloading baggage and cargo.

**catering vehicle**

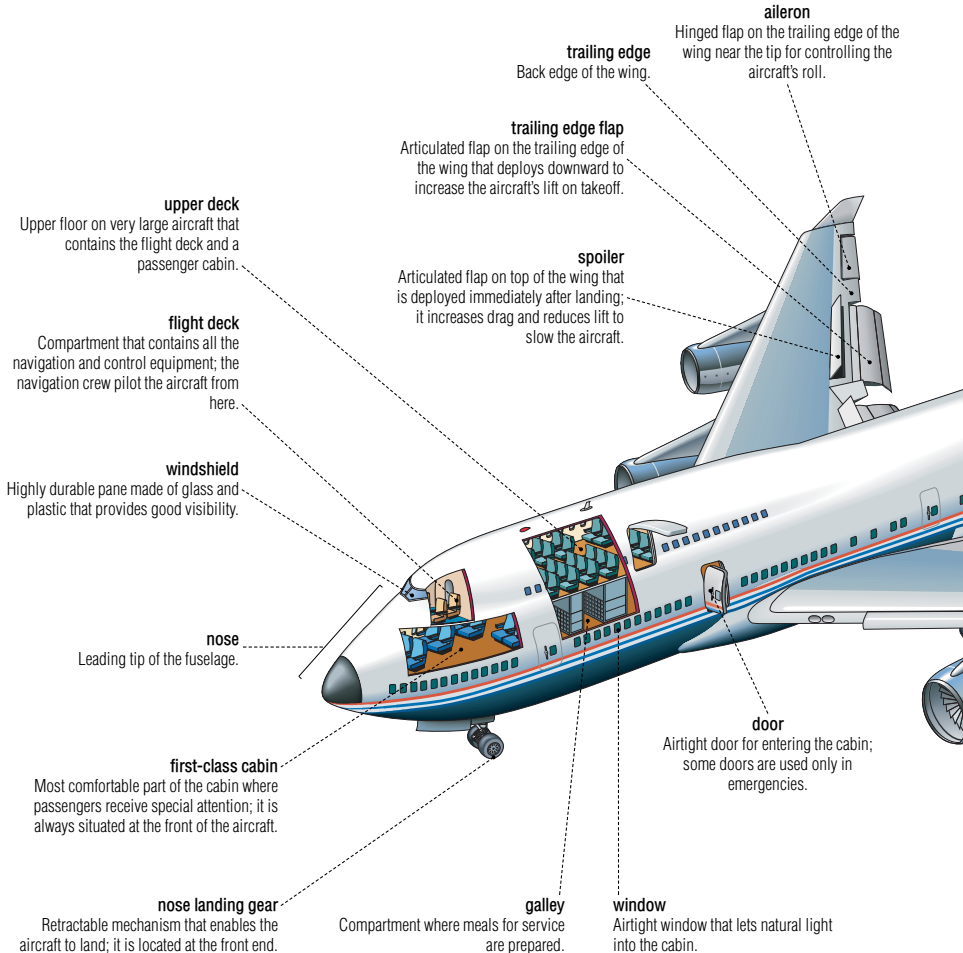
Truck whose box can be lifted up to the aircraft; it delivers the food and drink to be served to passengers.

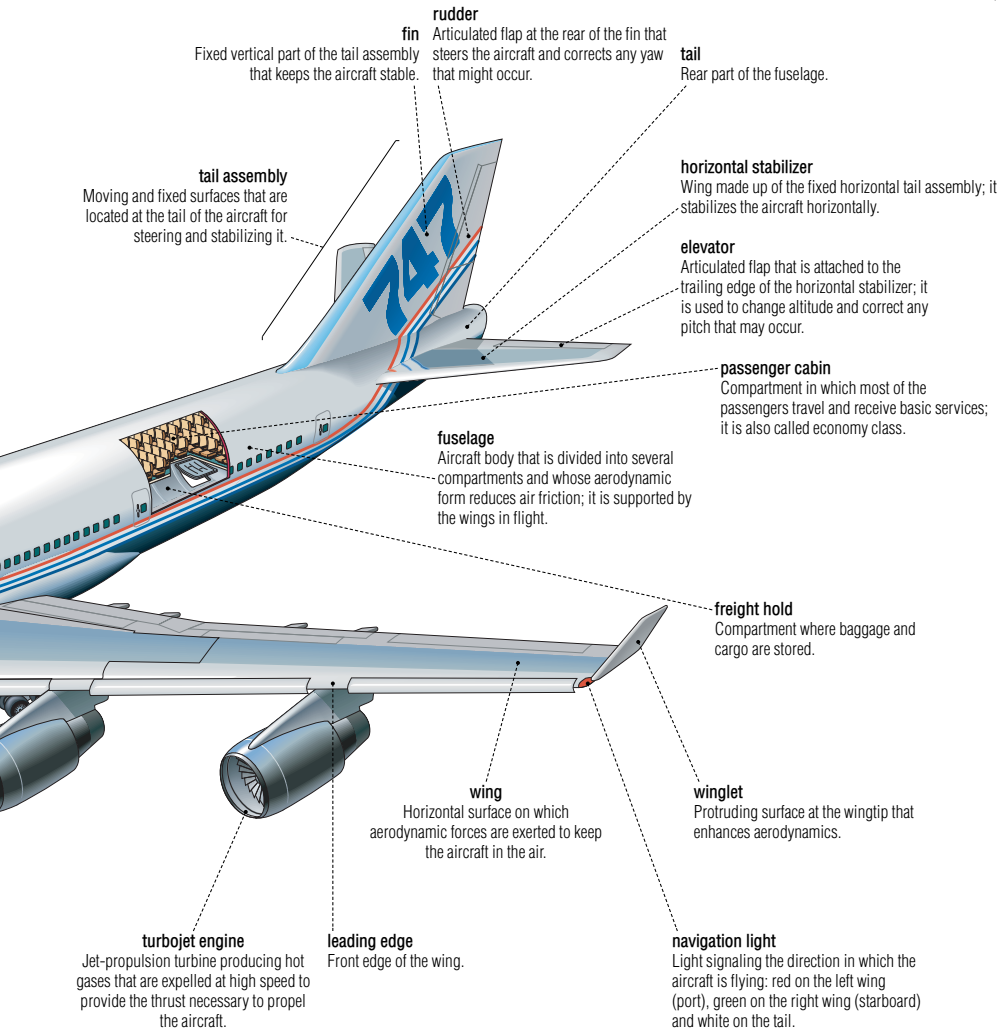
**passenger transfer vehicle**

Vertically adjustable vehicle with a cabin for transporting passengers between the aircraft and the terminal.

long-range jet

Aircraft that transports passengers and cargo traveling long distances at high altitudes (between 30,000 and 40,000 ft).





rudder

Articulated flap at the rear of the fin that steers the aircraft and corrects any yaw that might occur.

fin

Fixed vertical part of the tail assembly that keeps the aircraft stable.

tail

Rear part of the fuselage.

tail assembly

Moving and fixed surfaces that are located at the tail of the aircraft for steering and stabilizing it.

horizontal stabilizer

Wing made up of the fixed horizontal tail assembly; it stabilizes the aircraft horizontally.

elevator

Articulated flap that is attached to the trailing edge of the horizontal stabilizer; it is used to change altitude and correct any pitch that may occur.

passenger cabin

Compartment in which most of the passengers travel and receive basic services; it is also called economy class.

fuselage

Aircraft body that is divided into several compartments and whose aerodynamic form reduces air friction; it is supported by the wings in flight.

freight hold

Compartment where baggage and cargo are stored.

wing

Horizontal surface on which aerodynamic forces are exerted to keep the aircraft in the air.

winglet

Protruding surface at the wingtip that enhances aerodynamics.

turbojet engine

Jet-propulsion turbine producing hot gases that are expelled at high speed to provide the thrust necessary to propel the aircraft.

leading edge

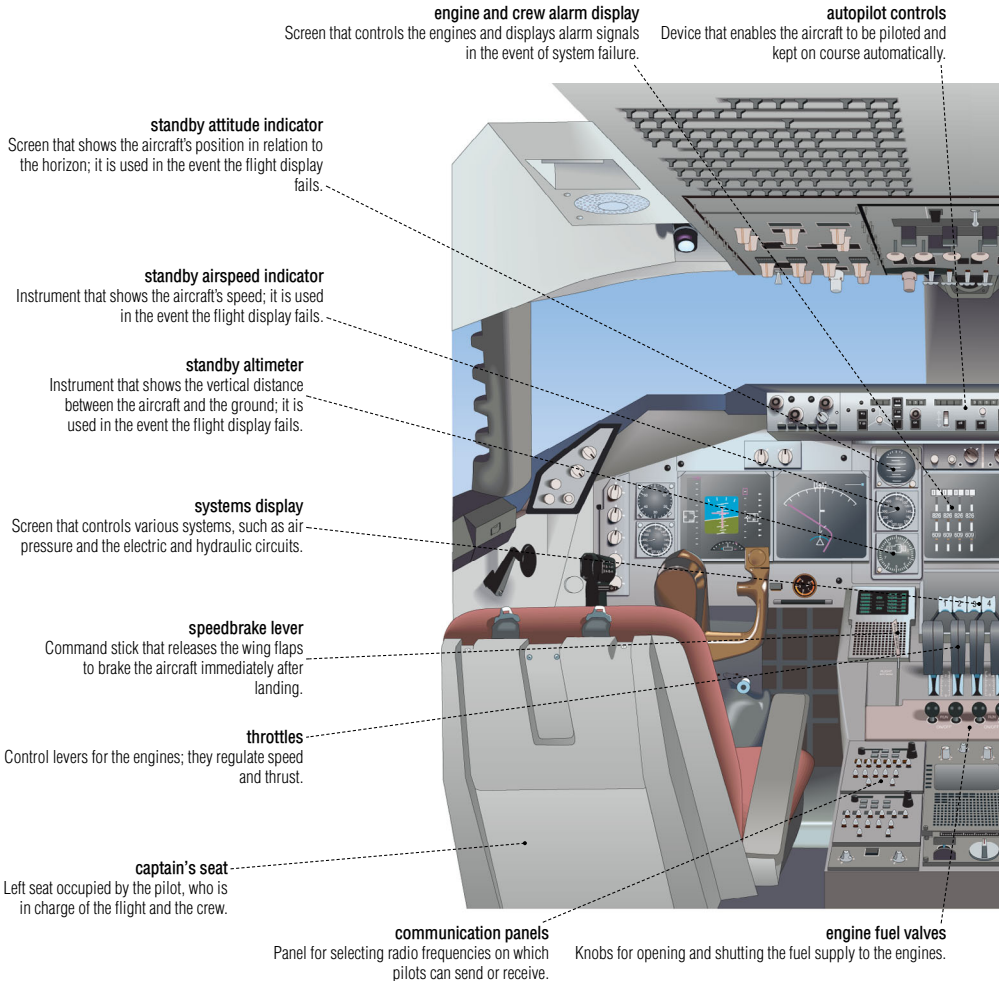
Front edge of the wing.

navigation light

Light signaling the direction in which the aircraft is flying: red on the left wing (port), green on the right wing (starboard) and white on the tail.

flight deck

Compartment that contains navigation equipment and controls and from which the crew pilots the aircraft.



engine and crew alarm display

Screen that controls the engines and displays alarm signals in the event of system failure.

autopilot controls

Device that enables the aircraft to be piloted and kept on course automatically.

standby attitude indicator

Screen that shows the aircraft's position in relation to the horizon; it is used in the event the flight display fails.

standby airspeed indicator

Instrument that shows the aircraft's speed; it is used in the event the flight display fails.

standby altimeter

Instrument that shows the vertical distance between the aircraft and the ground; it is used in the event the flight display fails.

systems display

Screen that controls various systems, such as air pressure and the electric and hydraulic circuits.

speedbrake lever

Command stick that releases the wing flaps to brake the aircraft immediately after landing.

throttles

Control levers for the engines; they regulate speed and thrust.

captain's seat

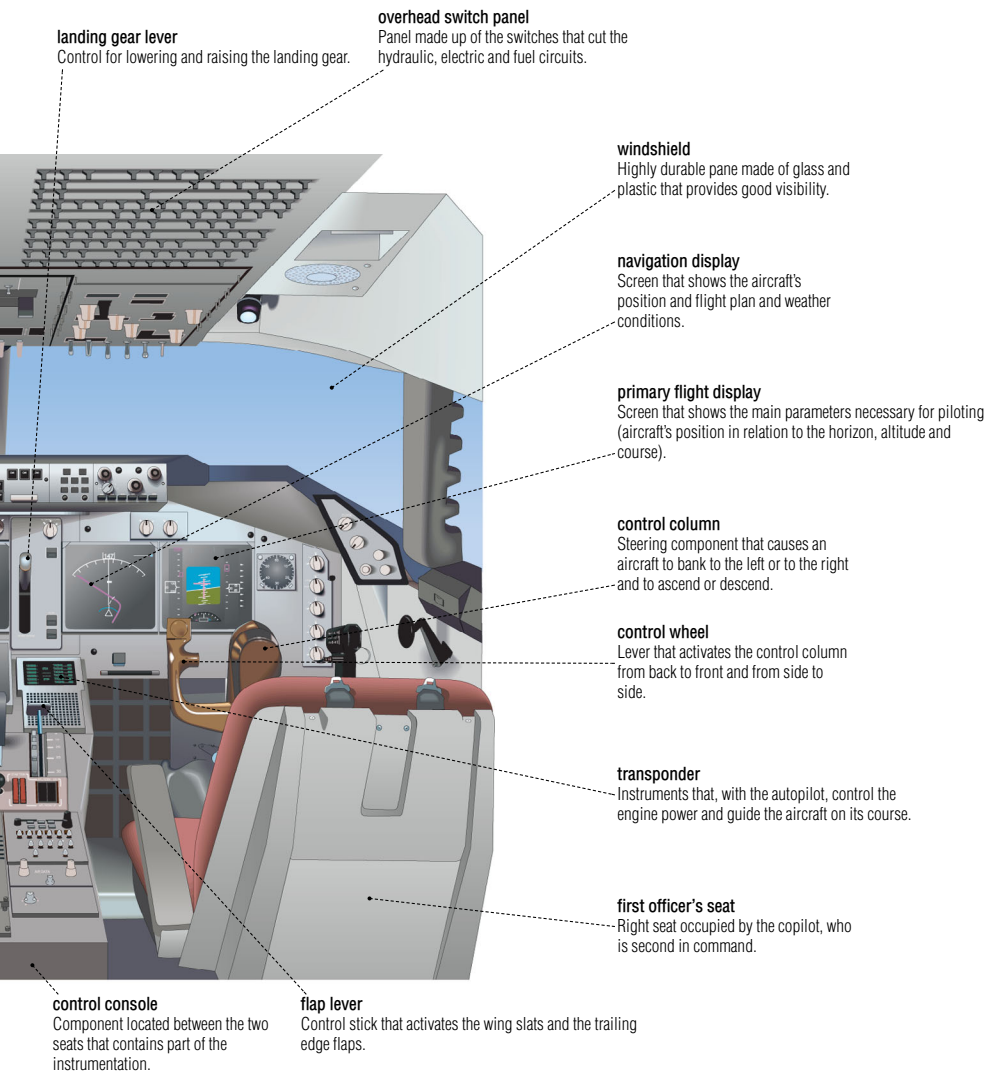
Left seat occupied by the pilot, who is in charge of the flight and the crew.

communication panels

Panel for selecting radio frequencies on which pilots can send or receive.

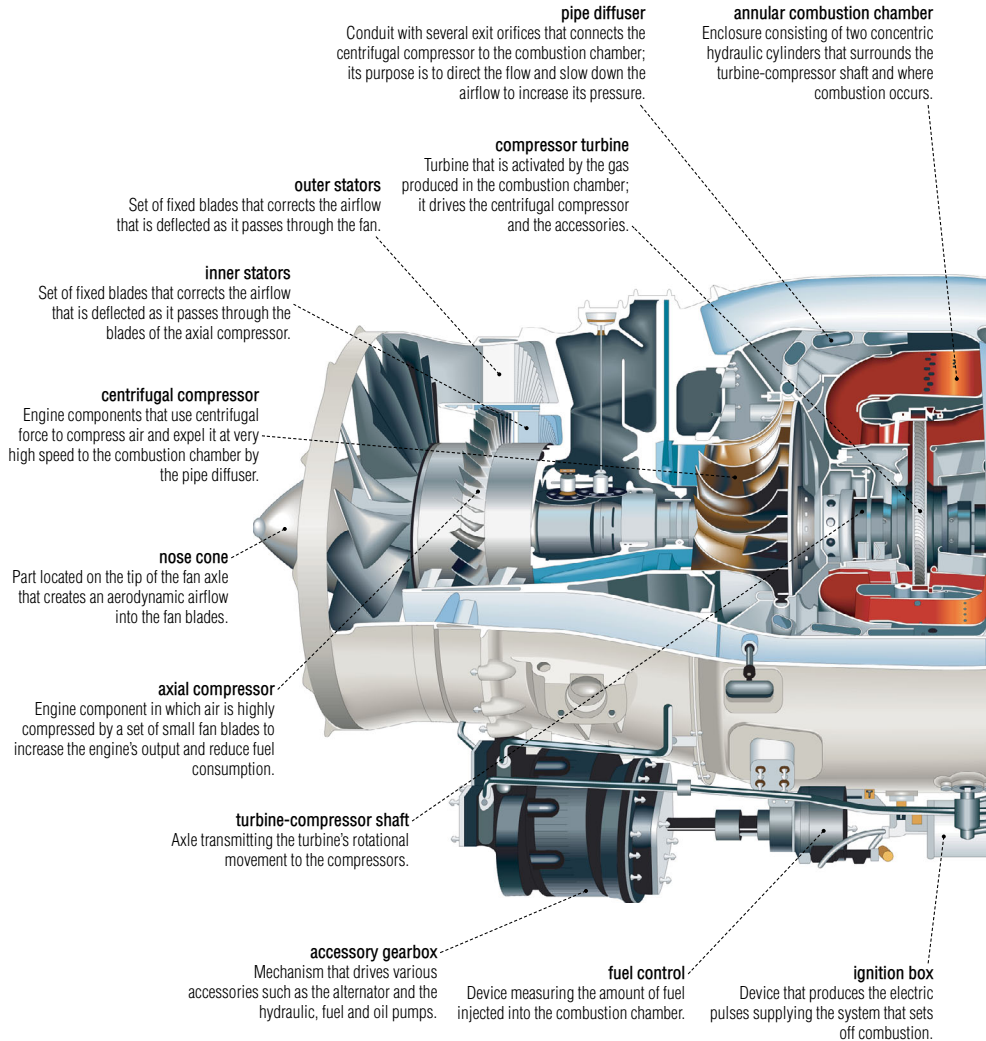
engine fuel valves

Knobs for opening and shutting the fuel supply to the engines.



turbofan engine

Jet engine with a fan and two airflows; one airflow passes through the combustion chamber and the other bypasses it.



power turbine

Turbine that is driven by the gases expelled by the combustion chamber; it drives the axial compressor and the fan. It is independent of the compressor turbine.

bypass duct

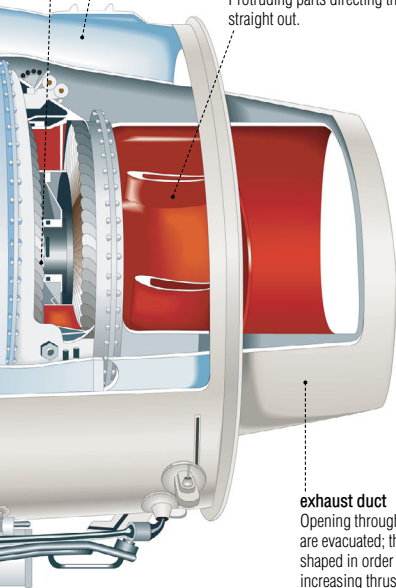
Channel that conducts some of the air sucked in by the fan, which contributes to the engine's thrust.

exhaust guide vanes

Protruding parts directing the exhaust gases straight out.

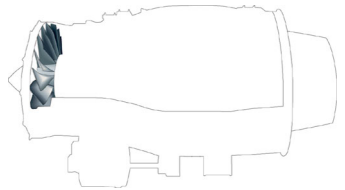
exhaust duct

Opening through which the exhaust gases are evacuated; the duct is usually cone-shaped in order to narrow the gas flow, thus increasing thrust.



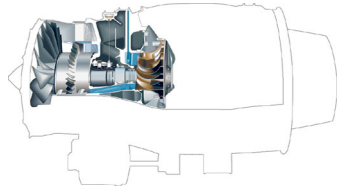
fan

Blower sucking air into the turbofan engine.



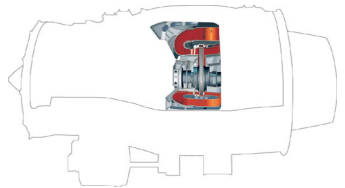
compression

Phase during which some of the air flowing through the engine is compressed before it enters the combustion chamber.



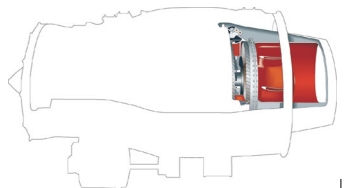
combustion

Phase during which the compressed air enters the combustion chamber, where it is mixed with fuel and ignited.



exhaust

Phase during which the air expands and produces a thrust that activates the turbines and propels the turbofan engine.

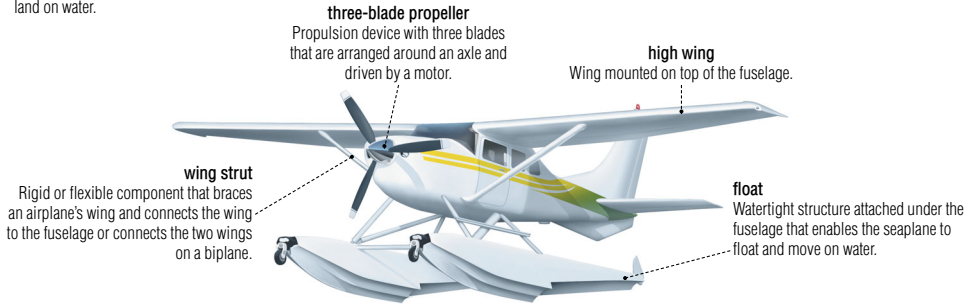


examples of airplanes

Ever since the first airplane, *Éole*, in 1890, the shape of aircraft has evolved constantly as new aerodynamic discoveries were made and engine power increased.

float seaplane

Airplane designed to take off from and land on water.



biplane

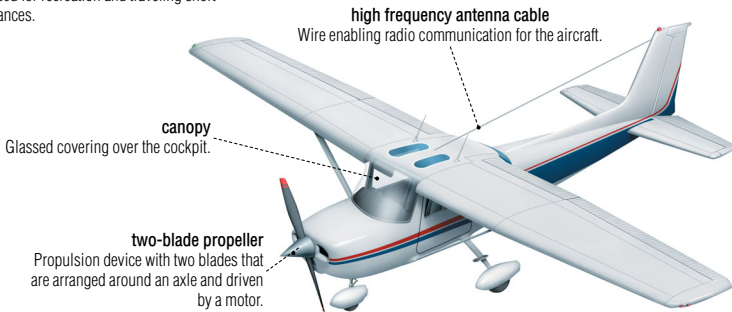
Airplane with two superimposed and parallel sets of wings.

wings
Surfaces upon which aerodynamic forces are exerted to cause the airplane to fly.



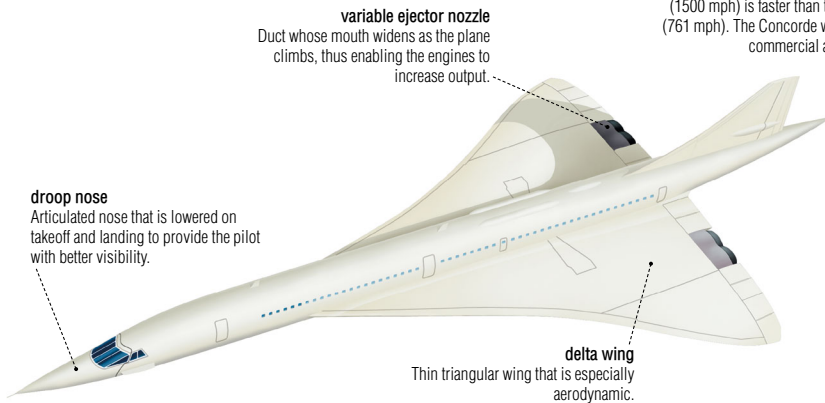
light aircraft

Airplane that usually has a single engine and cruises between 90 and 150 mph; it is used for recreation and traveling short distances.

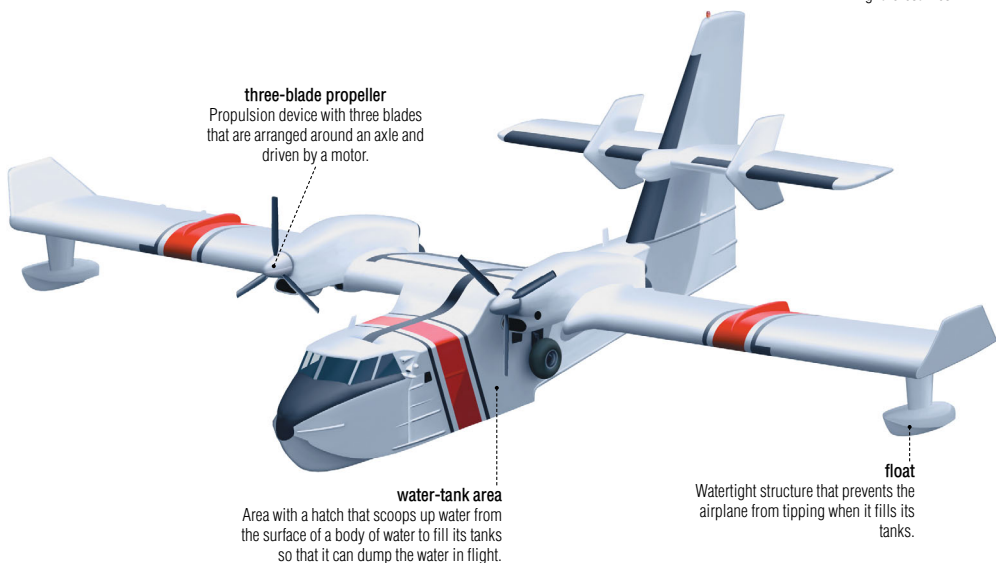


supersonic jetliner

Passenger aircraft whose cruising speed (1500 mph) is faster than the speed of sound (761 mph). The Concorde was the best known commercial aircraft of this type.

**amphibious fire-fighting aircraft**

Airplane with large water tanks; it is used to fight forest fires.



examples of airplanes

business aircraft

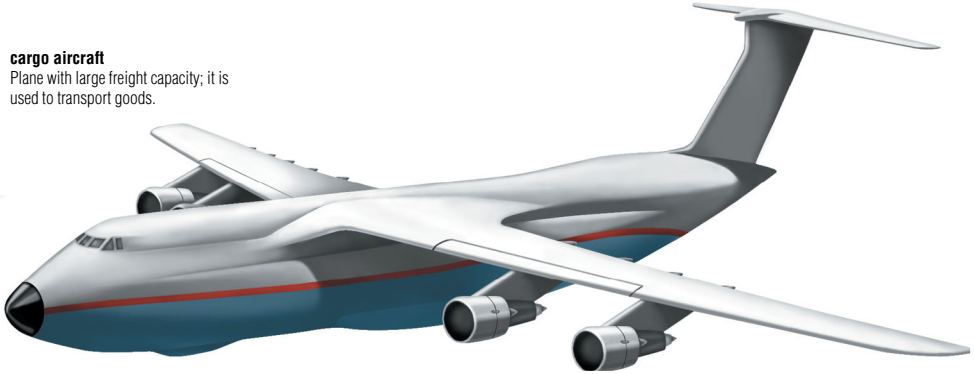
Airplane with a limited number of seats; it is usually used by heads of corporations for business trips.

**winglet**

Protruding surface at the wingtip that enhances aerodynamics.

cargo aircraft

Plane with large freight capacity; it is used to transport goods.

**superjumbo jet**

Airplane that can transport a large number of passengers (more than 500).



swiveling nozzle

Duct that can be pointed downward to increase the engine's vertical thrust during vertical landing and takeoff.

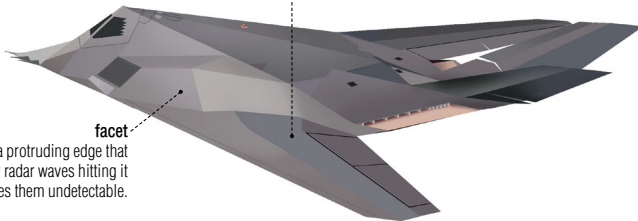


vertical take-off and landing aircraft

Airplane that can move vertically in order to take off from and land on short runways; it is usually used in combat.

radar-absorbent material

Material that absorbs radar waves before they strike any metal part of the aircraft in order to muffle the sound of the echo.



stealth aircraft

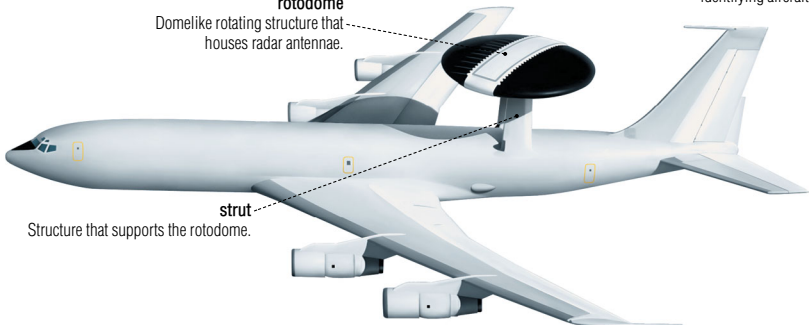
Aircraft that cannot be detected by radar because of the radar-absorbing facets covering its fuselage.

facet

Flat surface with a protruding edge that disperses any radar waves hitting it and makes them undetectable.

rotodome

Domelike rotating structure that houses radar antennae.



radar aircraft

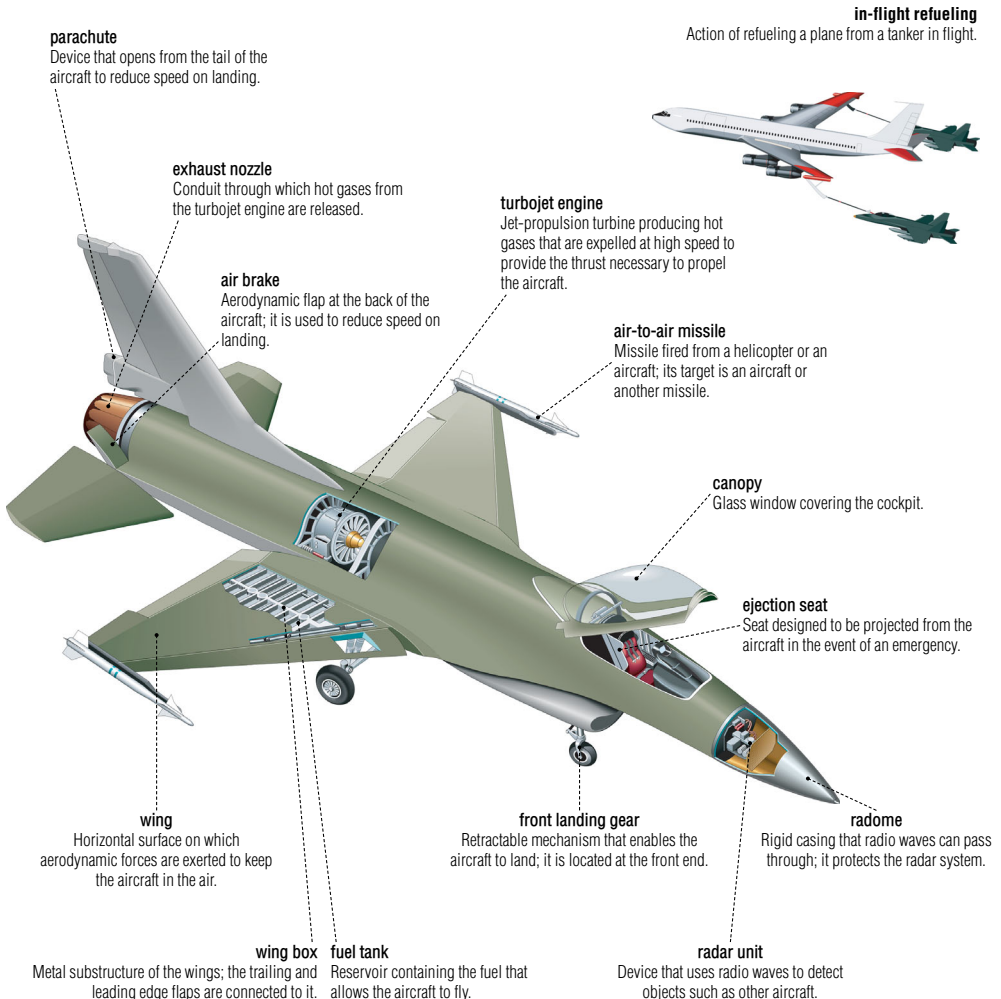
Surveillance aircraft for locating and identifying aircraft in flight.

strut

Structure that supports the rotodome.

combat aircraft

Military aircraft used for attack purposes.



parachute

Device that opens from the tail of the aircraft to reduce speed on landing.

exhaust nozzle

Conduit through which hot gases from the turbojet engine are released.

air brake

Aerodynamic flap at the back of the aircraft; it is used to reduce speed on landing.

turbojet engine

Jet-propulsion turbine producing hot gases that are expelled at high speed to provide the thrust necessary to propel the aircraft.

air-to-air missile

Missile fired from a helicopter or an aircraft; its target is an aircraft or another missile.

canopy

Glass window covering the cockpit.

ejection seat

Seat designed to be projected from the aircraft in the event of an emergency.

wing

Horizontal surface on which aerodynamic forces are exerted to keep the aircraft in the air.

front landing gear

Retractable mechanism that enables the aircraft to land; it is located at the front end.

radome

Rigid casing that radio waves can pass through; it protects the radar system.

wing box

Metal substructure of the wings; the trailing and leading edge flaps are connected to it.

fuel tank

Reservoir containing the fuel that allows the aircraft to fly.

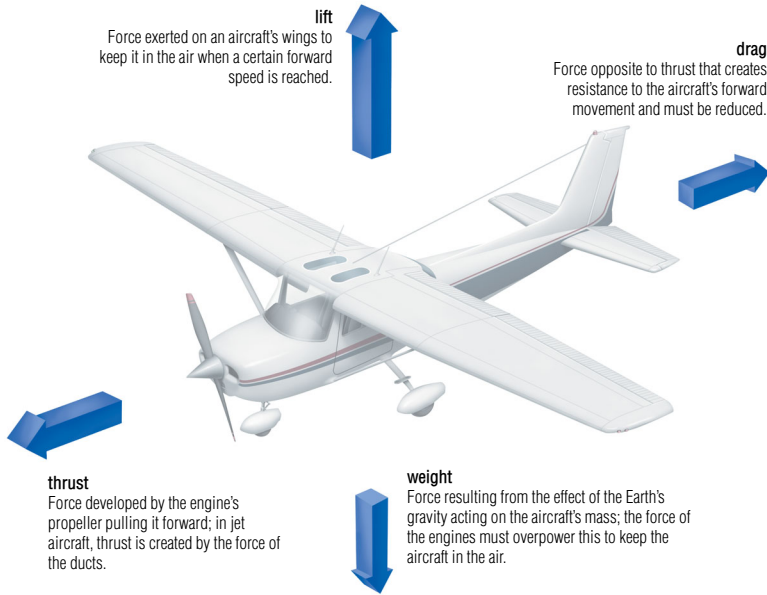
radar unit

Device that uses radio waves to detect objects such as other aircraft.

in-flight refueling
Action of refueling a plane from a tanker in flight.

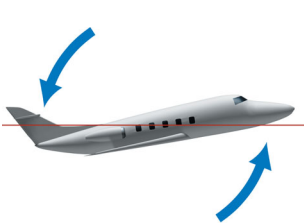
forces acting on an airplane

Physical phenomena that affect the movement of an aircraft in flight.



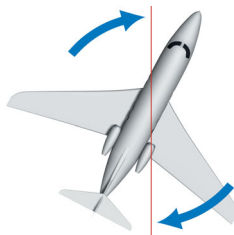
movements of an airplane

Changes exerted on an aircraft in flight that affect its behavior; a pilot must know how to correct them.



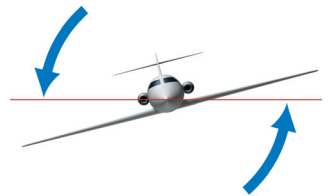
pitch

Rotational movement of an aircraft around its transverse axis; it is caused by an imbalance of pressure on the nose and tail.



yaw

Aircraft's rotational motion around its vertical axis; it is caused by an imbalance of pressure on the leading edges of the wings.

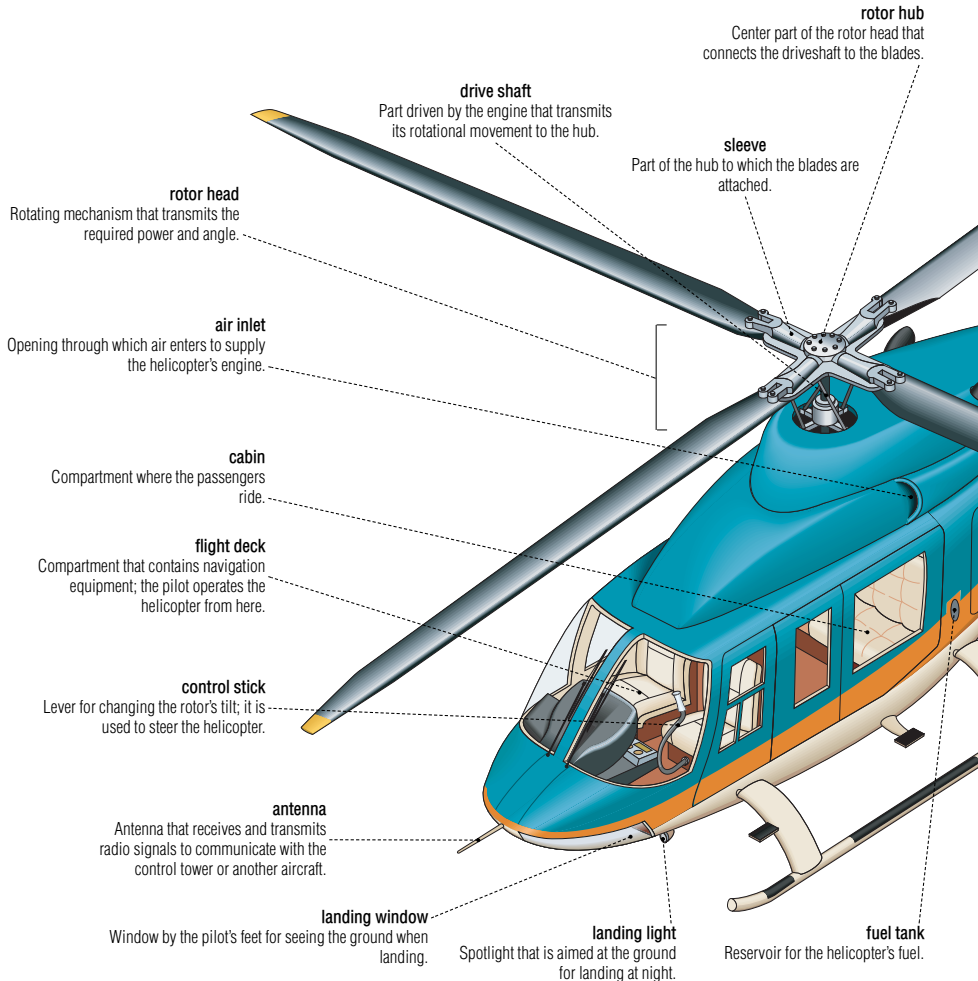


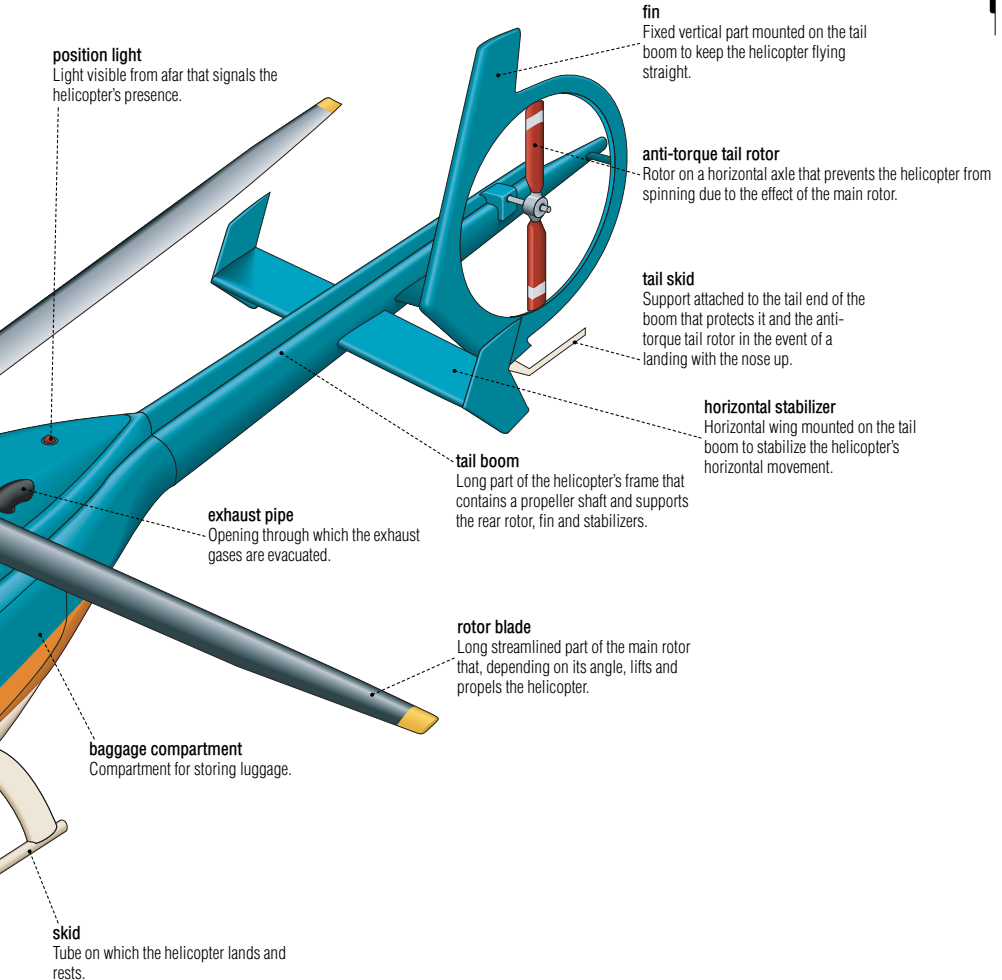
roll

Rotational movement of an aircraft around its longitudinal axis; it is caused by an imbalance in the lift of the wings.

helicopter

Aircraft whose lift agent is a rotor on a vertical axle.



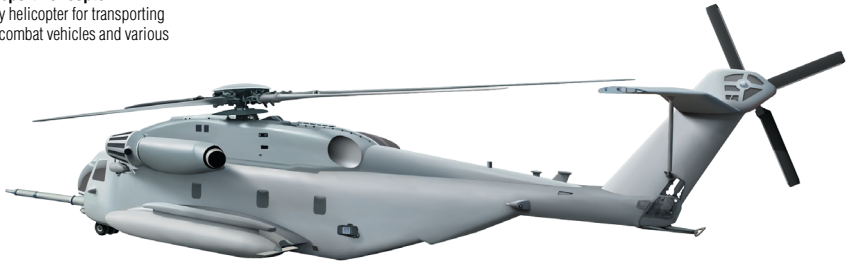


examples of helicopters

Because they can take off and land vertically, helicopters are more effective than airplanes in certain situations.

tactical transport helicopter

Armed military helicopter for transporting troops, small combat vehicles and various objects.



water bomber helicopter

Helicopter with a water tank that is used to fight forest fires.



belly tank

Tank filled with water by a long pipe hanging underneath; it uses a hatch to empty the water in flight.

ambulance helicopter

Helicopter for transporting the sick and injured and providing medical assistance.



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