

pressure is maintained above most vaporforming conditions while fuel inlet pressure is low enough to allow use of a diaphragm pump. The servo system feature also checks vapor lock and associated starting problems.

The servo regulator meters fuel flow proportionally with air-flow and maintains the mixtures as manually set for all engine speeds. The fuel flow divider receives metered fuel and distributes fuel to each cylinder fuel nozzle.

The fuel flow portion of the manifold pressure fuel flow gauge is connected to the flow divider and monitors fuel pressure. This instrument converts fuel pressure to an indication of fuel flow in gallons per hour and percentage of rated horsepower.

The alternate air source of the induction system contains a door that functions automatically and/or manually. If the primary source is obstructed, the door will open automatically. It may be opened manually by moving the selector on the right side of the quadrant. The primary source should always be used for take-off.

STRUCTURES

All structures are of aluminum alloy construction and are designed to ultimate load factors well in excess of normal requirements. All exterior surfaces are primed with etching primer and painted with acrylic lacquer.

The wings are attached to each side of the fuselage by inserting the butt ends of the respective main spars into a spar box carry-through, an integral part of the fuselage structure, thus providing in effect a continuous main spar which splices at each side of the fuselage. There are also fore and aft attachments at the rear spar and at an auxiliary front spar.

The wing airfoil section is a laminar flow type, NACA652-415 with the maximum thickness about 40% aft of the leading edge. This permits the main spar carry-through structure to be located under the rear seat providing unobstructed cabin floor space ahead of the rear seat.

LANDING GEAR

The Cherokee Arrow is equipped with a retractable tricycle landing gear which is hydraulically actuated by an electrically power reversible pump. The pump is controlled by a selector switch on the instrument panel to the left of the control quadrant. The landing gear is retracted or extended in about seven seconds.

Some aircraft also incorporate a pressure sensing device in the system which lowers the gear regardless of gear selector position, depending upon airspeed and engine power (propeller slipstream). Gear extension is designed to occur, even if the selector is in the up position, at airspeeds below approximately 105 mph with power off. The device also prevents the gear from retracting at airspeeds below approximately 85 mph with full power, though the selector switch may be in the up position. This speed increases with reduced power and/or increased altitude. The gear will not retract above a speed of approximately 125 to 130 mph. The sensing device operation is controlled by differential air pressure across a flexible diaphragm which is mechanically linked to a hydraulic valve and an electrical switch which actuates the pump motor. A high pressure and static air source for actuating the diaphragm is provided in a mast mounted on the left side of the fuselage above the wing. Manual override of the device is provided by an emergency gear lever located between the front seats to the left of the flap handle.

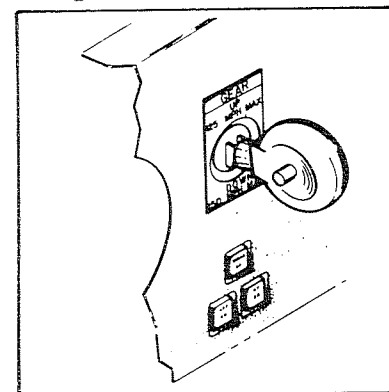
The emergency gear lever, when held in the raised position, can be used to override the system, and gear position is controlled by the selector switch regardless of airspeed, power combinations. The lever must also be held in the raised position when gear up stalls are practiced.

The emergency gear lever, when used for emergency extension of the gear, manually releases hydraulic pressure to permit the gear to free fall with spring assistance on the nose gear. The lever must be held in the downward position for emergency extension.

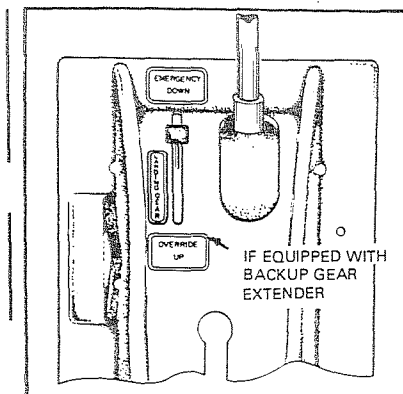
Gear down and locked positions are indicated by three green lights located below the selector, and a yellow light for in transit positions is located at the top of the panel. All lights out indicate the gear is up.

Two micro-switches in the throttle quadrant activate a warning horn and a red Warning Gear Up light under the following conditions:

(1) Gear up and power reduced below approximately 14 inches of manifold pressure.



Landing Gear Selector



Emergency Gear Lever

The nose gear is steerable through a 60 degree arc through use of the rudder pedals. As the nose gear retracts, the steering linkage disengages to reduce rudder pedal loads in flight. The nose wheel is equipped with a hydraulic shimmy dampener.

The oleo struts are of the air-oil type, with normal extension being 2.75 inches for the nose gear and 2.0 inches for the main gear under normal static load (empty weight of airplane plus full fuel and oil).

The standard brake system includes toe brakes on the left set of rudder pedals and a hand brake located below and near the center of the instrument panel. The toe brakes and the lever have their own brake cylinders, but they both use a common reservoir. The parking brake is incorporated in the lever brake and is

(2) On aircraft equipped with the backup gear extender, if the system has extended the landing gear and the landing gear selector is UP, except with full throttle.

(3) Gear selector switch is UP while on the ground.

On aircraft which are NOT equipped with the backup gear extender, an additional switch is installed which activates the warning horn and light whenever the flaps are extended beyond the approach position (10°) and the landing gear are not down and locked.

