91.33 POWERED CIVIL AIRCRAFT WITH STANDARD CATEGORY U.S. AIRWORTHINESS CERTIFICATES; INSTRUMENT AND EQUIPMENT REQUIREMENTS

(a) *General.* Except as provided in paragraphs (c)(3) and (e) of this section, no person may operate a powered civil aircraft with a standard category U.S. airworthiness certificate in any operation described in paragraphs (b) through (f) of this section unless that aircraft contains the instruments and equipment specified in those paragraphs (or FAA-approved equivalents) for that type of operation, and those instruments and items of equipment are in operable condition.

(b) *Visual flight rules (day).* For VFR flight during the day, the following instruments and equipment are required:

(1) Airspeed indicator.
(2) Altimeter.
(3) Magnetic direction indicator.
(4) Tachometer for each engine.
(5) Oil pressure gauge for each engine using pressure system.
(6) Temperature gauge for each liquid-cooled engine.
(7) Oil temperature gauge for each air-cooled engine.
(8) Manifold pressure gauge for each altitude engine.
(9) Fuel gauge indicating the quantity of fuel in each tank.
(10) Landing gear position indicator, if the aircraft has a retractable landing gear.
(11) If the aircraft is operated for hire over water and beyond power-off gliding distance from shore, approved flotation gear readily available to each occupant, and at least one pyrotechnic signaling device.
(12) Except as to airships, an approved safety belt for all occupants who have reached their second birthday. After December 4, 1981, each safety belt must be equipped with an approved metal to metal latching device. The rated strength of each safety belt shall not be less than that corresponding with the ultimate load factors specified in the current applicable aircraft airworthiness requirements considering the dimensional characteristics of the safety belt installation for the specific seat or berth arrangement. The webbing of each safety belt shall be replaced as required by the Administrator.
(13) For small civil airplanes manufactured after July 18, 1978, an approved shoulder harness for each front seat. The shoulder harness must be designed to protect the occupant from serious head injury when the occupant experiences the ultimate inertia forces specified in §23.561(b)(2) of this chapter. Each shoulder harness installed at a flight crewmember station must permit the crewmember, when seated and with his safety belt and shoulder harness fastened, to perform all functions necessary for flight operations. For purposes of this paragraph —
  (i) The date of manufacture of an airplane is the date the inspection acceptance records reflect that the airplane is complete and meets the FAA Approved Type Design Data; and
  (ii) A front seat is a seat located at a flight crewmember station or any seat located alongside such a seat.
(14) For normal, utility, and acrobatic category airplanes with a seating configuration, exluding pilot seats, of nine or less, manufactured after December 12, 1986, a shoulder harness for —
  (i) Each front seat that meets the requirements of §23.785(g) and (h) of this chapter in effect on December 12, 1985;
  (ii) Each additional seat that meets the requirements of §23.785(g) of this chapter in effect on December 12, 1985.

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(c) *Visual flight rules (night).* For VFR flight at night the following instruments and equipment are required:

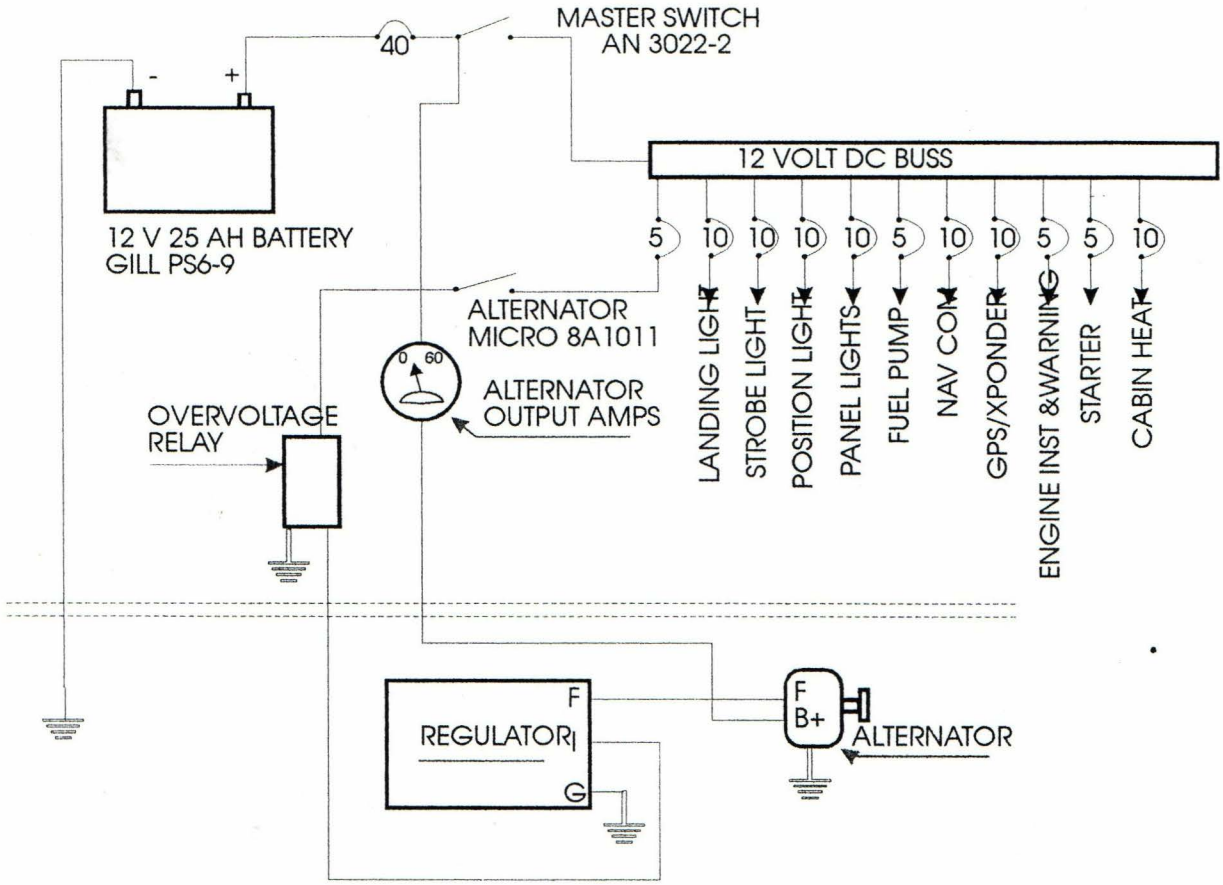
(1) Instruments and equipment specified in paragraph (b) of this section.
(2) Approved position lights.
(3) An approved aviation red or aviation white anti-collision light system on all U.S. registered civil aircraft. Anti-collision light systems initially installed after August 11, 1971, on aircraft for which a type certificate was issued or applied for before August 11, 1971, must at least meet the anti-collision light standards of Parts §23, §25, §27, or §29, as applicable, that were in effect on August 10, 1971, except that the color may be either aviation red or aviation white. In the event of failure of any light of the anti-collision light system, operations with the aircraft may be continued to a stop where repairs or replacement can be made.
(4) If the aircraft is operated for hire, one electric landing light.
(5) An adequate source of electrical energy for all installed electric and radio equipment.
(6) One spare set of fuses, or three spare fuses of each kind required.

(d) *Instrument flight rules.* For IFR flight the following instruments and equipment are required:

(1) Instruments and equipment specified in paragraph (b) of this section and for night flight, instruments and equipment specified in paragraph (c) of this section.
(2) Two-way radio communications system and navigational equipment appropriate to the ground facilities to be used.
(3) Gyroscopic rate-of-turn indicator, except on the following aircraft:
  (i) Large airplanes with a third attitude instrument system usable through flight attitudes of 360 degrees of pitch and roll and installed in accordance with §121.305(j) of this chapter; and
  (ii) Rotorcraft, type certificated under Part 29 of this chapter, with a third attitude instrument system usable through flight attitudes of ±80 degrees of pitch and ±120 degrees of roll and installed in accordance with §§29.1303(g) of this chapter.
(4) Slip-skid indicator.
(5) Sensitive altimeter adjustable for barometric pressure.
(6) A clock displaying hours, minutes, and seconds with a sweep-second pointer or digital presentation.
(7) Generator of adequate capacity.
(8) Gyroscopic bank and pitch indicator (artificial horizon).
(9) Gyroscopic direction indicator (directional gyro or equivalent.)

(e) *Flight at and above 24,000 feet MSL.* If VOR Navigational equipment is required under paragraph (d)(2) of this section, no person may operate a U.S. registered civil aircraft within the 50 states, and the District of Columbia, at or above 24,000 feet MSL unless that aircraft is equipped with approved distance measuring equipment (DME). When DME required by this paragraph fails at and above 24,000 feet MSL, the pilot in command of the aircraft shall notify ATC immediately, and may then continue operations at and above 24,000 feet MSL to the next airport of intended landing at which repairs or replacement of the equipment can be made.

(f) *Category II operations.* For Category II operations the instruments and equipment specified in paragraph (d) of this section and Appendix A to this part are required. This paragraph does not apply to operations conducted by the holder of a certificate issued under Part 121 of this chapter.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FUEL PUMP
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