

Annex A

SAMPLE OF THE CERTIFICATE OF AIRWORTHINESS

No.	ARUBA DEPARTMENT OF CIVIL AVIATION Ministry of Transport and Communications CERTIFICATE OF AIRWORTHINESS		This certificate must be in the aircraft when operated
1. Nationality and Registration Marks	2. Manufacturer and Manufacturer's Designation of Aircraft	3. Aircraft Serial No.	
4. Categories		Class	
5. This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7 December 1944, and the regulations given by or by virtue of the Aviation Act of Aruba, in respect of the abovementioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent approved Flight Manual.			
Date of issue		The Director of Civil Aviation	
Expiry date		Signature	

DCA FORM INS-4.010

**SPECIAL REGULATIONS FOR
WINGED AIRCRAFT IN CATEGORY T**

Part I

Departure from FAR—25

Paragraphs 25,1 (b) and 25,2 of section A—General are not applicable.

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English supplements to FAR—25

1. **Performance**

Information on wet landing distance shall be supplied; in addition to dry take-off data, information shall be supplied to enable take-off data to be selected suitable for runways other than dry.

Acceptable means of compliance (A.M.C.)

A wet runway is defined as a runway that is thoroughly soaked with no major areas of measurable depth of water covering the runway.

For landing distance on a wet runway a 15% increment may be applied on the dry landing distance presented in the Aeroplane Flight Manual, provided this landing distance includes the correction factor of FAR 121.195(b).

For take-off it is intended to cover also the case of runways contaminated with standing water, slush and/or snow. The precise method of compliance is to be decided in consultation with the Department of Civil Aviation of Aruba.

2. **Flight qualities**

2.1. **Stickforce (g)**

Within the flight envelope stickforces shall increase progressively with normal accelerations and speeds. The stickforces shall be not so heavy, that they hamper the handling qualities of the aeroplane and not so light, that they can easily lead to overstressing of the airframe.

A.M.C.

Information should be provided on the relation of stickforce versus loadfactor throughout the flight envelope for at least the most critical conditions and configurations. Calculated data supported by flighttest is acceptable.

2.2. Control during turns

It should be possible to roll the aeroplane from 30 degrees bank to 30 degrees bank in the reverse direction, within 11 seconds in the take-off and 7 seconds in the landing configuration.

A.M.C.

Test conditions:

- take-off flight path configuration, one engine inoperative with speed V_2 and take-off power or thrust;
- landing configuration with speed $1.3 V_s$.

2.3. High speed characteristics

Maximum operational altitudes shall be established, which provide sufficient manoeuvrability under operational circumstances.

A.M.C.

For various weights the altitudes should be defined as function of the velocity where the initial buffet will occur when applying a g-load of 1.3.

2.4. Out-of-trim conditions

In case of the possibility of inadvertent operation of a system, such as a powered trim system, the following should be considered:

- a. the disturbances that this inadvertent operation can cause;
- b. the reduction in manoeuvrability, which can result from an unwanted mistrionming; and
- c. the combined effect of the above two factors upon the ability to return to normal flight.

A.M.C.

Compliance with FAR 25.255 Amendment 42 is considered acceptable.

3. Structures

3.1. Fail-safe and safe life

Those parts of the structure, whose failure could result in catastrophic failure of the aeroplane, must be evaluated both for fail-safe and safe life. In the event that any repeated loadtesting, necessary to support this evaluation is not concluded at the issuance of the type certificate, at least one year of safe operation should be substantiated at the time of certification. In order not to invalidate the type-certificate the fatigue substantiation should stay sufficiently ahead of the service exposure of the leadaeroplane.

The fail-safe strength should be at least 100% of limit load.

Note: This requirement emphasizes the fact that safe life and fail-safe characteristics are complementary. Especially it is necessary to bear in mind that factors, other than those covered by design, might seriously compromise the strength of a structure that was only shown to have a safe-life. On the other hand, the actual strength of a structure which is only shown to be fail-safe, might be compromised, if components had unduly short lives.

3.2. Round-the-clock gust conditions

For empennage arrangements, where the horizontal tail surfaces have appreciable dihedral or are supported by vertical tail surfaces, the surfaces and supporting structure must be designed for gust velocities, specified below, acting at any orientation at right angles to the flight path:

- a. Positive (up) and negative (down) rough air gusts of 66 fps at V_B must be considered at altitudes between sea-level and 20.000 ft; the gust velocity may be reduced linearly from 66 fps at 20.000 ft to 38 fps at 50.000 ft;
- b. Positive and negative gusts of 50 fps at V_C must be considered at altitudes between sealevel and 20.000 ft; the gust velocity may be reduced linearly from 50 fps at 20.000 ft to 25 fps at 50.000 ft;
- c. Positive and negative gusts of 25 fps at V_D must be considered at altitudes between sealevel and 20.000 ft; the gust velocity may be reduced linearly from 25 fps at 20.000 ft to 12.5 fps at 50.000 ft.

Note: Due account should be taken of the appropriate aerodynamic distribution and the response of the aeroplane.

3.3. Dynamic calculations

If it can be expected that, due to the dynamic stability and flexibility characteristics of the aeroplane, continuous turbulence may generate critical design conditions, this type of turbulence should be investigated with power spectral methods. When yawdampers or other stability augmenting-devices are installed, the continuous gust characteristics should be investigated both with these devices on and off.

A.M.C.

Appendix G, to FAR 25, is acceptable to show compliance with this special condition. However, in case the design envelope analysis criteria are used and a value of $U\sigma$ is selected less than 85 fps under the provisions of Appendix G(b)(3)(c), particular emphasis will be put on the assessment to support this choice.

4. **Design and construction**

4.1. Bird strike damage

The aeroplane must be designed to assure capability of continued safe flight and landing of the aeroplane after impact with a 4 lb bird, when the velocity of the aeroplane (relative to the bird along the aeroplane's flight path) is equal to V_C at sealevel or $0.85 V_C$ at 8000 ft, whichever is the more critical. Compliance may be shown by analysis only when based on tests carried out on sufficiently representative structures of similar design.

A.M.C.

Consideration should be given in the early stages of the design to the installation of items in essential services, such as control system components, and items which, if damaged, could cause a hazard, such as electrical equipment. As far as practicable, such items should not be installed immediately behind areas, liable to be struck by birds.

4.2. Flutter

Full scale flight flutter tests at speeds up to V_{DF}/M_{DF} for the critical aeroplane flutter modes must be conducted when:

- a. M_D is equal to or greater than 0.8 M;
- b. the adequacy of flutter analysis and wind tunnel tests have not been established by previous experience with aircraft having similar design features; or
- c. the conditions specified in sub-paragraph (1) or (2) of this paragraph exist and modifications to the type design have a significant effect on the critical flutter modes.

5. Equipment, systems and installations**5.1. Altimeters**

All flight and navigation instruments must perform its intended function under any foreseeable operating condition. The presentation must be clear and unambiguous.

A.M.C.

In pressurized aircraft the use of so called three pointer altimeters is prohibited. For aircraft, certified for a minimum crew of one pilot, this additional technical requirement is applicable to that pilot station only.

5.2. Hand fire extinguishers

Hand fire extinguishers and their extinguishing agents must be of a type, approved by the Department of Civil Aviation.

A.M.C.

FAA Advisory Circular 20-42 C is an acceptable means of compliance for this additional technical requirement, with the exception that use of powder agents is not permitted in crew compartments or confined areas.

6. Category II and III operations

With respect to the airworthiness certification criteria of aeroplanes for category II and III operations, AC 120-29, AC 120-28C, AC 20-57A and the following additional requirements apply.

6.1. For category II operations the following applies:

- a. autopilot runaway testing according to the deviation profile method, minimum disengage height determination and relevant aeroplane flight manual information has to be in accordance with FAA AC 25.1329-IA;
- b. attitude gyro indicators with calibrated pitch markings only for go-around guidance are not permitted;
- c. go-around guidance should not lead to an unsafe flight condition during the go-around phase;

A.M.C.

Go-around guidance with a fixed pitch attitude reference should be assessed during minimum thrust/weight conditions with one engine inoperative. The guidance may not lead to an unacceptable speed decay.

- d. a radio altimeter with dual displays has to be used as a minimum;

- e. as a minimum, fail-passive autoland is required for wide-body aircraft;
- f. an aural autopilot disconnect warning must be provided.

6.2. For category III operations the following:

- a. autopilot runaway testing according to the deviation profile method, minimum disengage height determination and relevant aeroplane flight manual information has to be in accordance with the FAA AC 25.1329-IA;
- b. attitude gyro indicators with calibrated pitch markings only for go-around guidance are not permitted;
- c. go-around guidance should not lead to an unsafe flight condition during the go-around phase.

A.M.C.

Go-around guidance with a fixed pitch attitude reference should be assessed during minimum thrust/weight conditions with one engine inoperative. The guidance may not lead to an unacceptable speed decay.

**SPECIAL REGULATIONS FOR
WINGED AIRCRAFT IN CATEGORIES N, U, A AND C**

Part I

Departure from FAR-23

Paragraphs 23.1(b) and 23.2 of Section A—General are not applicable, while in paragraph 23.3(d) the regulations for aircraft in category C are only applicable on two-engined aircraft.

Part II

English supplements to Far-23

1. General

- 1.1 Aeroplanes in the normal, utility and acrobatic categories must comply with the additional technical requirements mentioned under sections 2, 3, 4, 5.2, 5.3, 6.2 and 6.3 below.
- 1.2 In addition to 1.1., commuter category aeroplanes must comply with the additional technical requirements mentioned under sections 5.1 and 6.1 below.
- 1.3 In addition to 1.1. and 1.2., aeroplanes with a passenger seating configuration, excluding pilot seats, of 10 seats or more, must comply with the additional technical requirements mentioned under section 7 below.

2. Flight

- 2.1. Stall warning (ref. JAR 23.207(b))
The stall warning may be furnished either through the inherent aerodynamic qualities of the aeroplane or by a device that will give clearly distinguishable indications under expected conditions of flight. However, a visual stall warning device that requires the attention of the crew within the cockpit is not acceptable by itself.

3. Powerplant

3.1. Fuel system (ref. JAR 23.1309(b)(3))

Warning information must be provided to alert the crew to unsafe system operations conditions and to enable them to take appropriate corrective actions.

Acceptable means of compliance (A.M.C.)

If in a multi-engined aeroplane more than one engine can draw fuel from one tank, sufficient provisions (for instance, a low level fuel warning) must be incorporated to safeguard against a multi-engine failure due to fuel starvation.

3.2. Powerplant fire protection (ref. JAR 23.1189(c))

Power-operated valves must have means to indicate to the flight crew, when the valve has reached the selected position.

4. **Design and construction**

4.1. Lightning protection (ref. JAR 23.867)

- a. The aeroplane must be protected against catastrophic effects from lightning.
- b. For metallic components, compliance with paragraph (a) of this section may be shown by:
 - 1°. bonding the components properly to the airframe, or
 - 2°. designing the components so that a strike will not endanger the aeroplane.
- c. For nonmetallic components, compliance with paragraph (a) of this section may be shown by:
 - 1°. designing the components to minimize the effect of a strike, or
 - 2°. incorporating acceptable means of diverting the resulting electrical current so as not to endanger the aeroplane.

4.2. Seats, safety belts and harnesses

Each front seat/restraintsystem and each seat/restraintsystem that makes more than an 18 degree angle with the vertical plane, containing the centerline, must consist of a seat, safety belt and shoulder harness, that is designed to provide occupant protection under the emergency landing conditions required in JAR 23.561(b)(2) as referenced below.

The occupants experiences the static inertia loads corresponding to the following ultimate load factors:

- upward, 3.0g for normal, utility and commuter category aeroplanes, or 4.5g for acrobatic aeroplanes;
- forward, 9.0g;
- sideways, 1.5g.

For a seat restraintsystem that makes more than an 18 degree angle with the vertical

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plane, containing the centerline, an energy absorbing rest that will support the arms, shoulders, head and spine, providing occupant protection under the emergency landing conditions required in JAR 23.561(b)(2) as referenced above, may be used (in addition to the required safety belt) instead of a shoulder harness.

5. **Equipment, systems and installations**

5.1 Hand fire extinguishers (ref. JAR 23.851)

Hand fire extinguishers and their extinguishing agents must be of a type, approved by the Department of Civil Aviation. The operation of hand extinguishers must be straight forward and easy, whereby the design must allow onehand aiming and triggering and intermittent operation.

The following extinguisher agents are approved:

- water with a suitable anti-freeze agent;
- carbon dioxide;
- bromotrifluoromethane (BF);
- bromochlorodifluoromethane (BCF).

For commuter category aeroplanes, the following applies:

- a. at least one hand fire extinguisher must be readily accessible in the pilot compartment, and
- b. at least one hand fire extinguisher must be located conveniently in the passenger compartment,
- c. for hand fire extinguishers, the following applies:
 - 1°. the types and quantities of each extinguishing agent used must be appropriate to the kinds of fire likely to occur where that agent is to be used, and
 - 2°. each extinguisher for use in a personnel compartment must be designed to minimize the hazard of toxic gas concentrations.

5.2. Electrical systems

5.2.1. Starter circuit (ref. JAR 23.1365(f))

Where the starter circuit cannot be protected by a circuit protection device or other overload protection it shall not cause a fire hazard under fault conditions.

A.M.C.

Acceptable means of compliance with this requirement are:

- a manual starter isolation switch in series with the starter relay, or
- two starter relays in series, or
- a visual indication on the instrument panel when and as long as the starter circuit is under current (indication must not be dimmable), or
- any other, approved by the Department of Civil Aviation method.

5.2.2. Ni-cad battery installations (ref. JAR 23.1353(g))

Nickel—cadmium battery installations capable of being used to start an engine or auxiliary power unit must have:

- a. a system to control the charging rate of the battery automatically so as to prevent battery overheating, or
- b. a battery temperature sensing and over temperature warning system with a means for disconnecting the battery from its charging source in the event of an over temperature condition, or
- c. a battery failure sensing and warning system with a means for disconnecting the battery from its charging source in the event of battery failure.

5.3 Flight and navigation instruments

All flight and navigation instruments must perform its intended function under any foreseeable operating condition. The presentation must be clear and unambiguous.

A.M.C.

In pressurized aircraft the use of so called three pointer altimeters is prohibited. For aircraft certified for a minimum crew of one pilot, this additional technical requirement is applicable to that pilot station only.

6. **Structures**

6.1. Bird strike damage (ref. JAR 23.775(g)(1))

For commuter category aeroplanes windshield panes, directly in front of the pilot(s) in the normal conduct of their duties, and the supporting structure for these panes must withstand, without penetration, the impact of a two-pound bird, when the velocity of the aeroplane, relative to the bird along the aeroplanes flight path, is equal to the aeroplanes maximum approach flap speed.

6.2. Fatigue evaluation (ref. JAR 23.571(a)(1), JAR 23.572(a)(1))

6.2.1. Pressurized cabin

The strength, detail design and fabrication of the pressure cabin must be evaluated as follows.

A fatigue strength investigation, in which the structure is shown by tests or by analysis, supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected in service.

6.2.2. Wing, empennage and associated structures

Unless it is shown that the structure, operating stress level, materials and expected uses are comparable, from a fatigue standpoint, to a similar design that has had extensive satisfactory service experience, the strength, detail design and fabrication of those parts of the airframe structure, whose failure would be catastrophic, must be evaluated as follows.

A fatigue strength investigation, in which the structure is shown by tests or by analysis supported by test evidence to be able to withstand the repeated loads of variable magnitude expected in service.

6.3. Fail-safe flutter (ref. JAR 23.629(d) and (f)(2))

For aeroplanes that do not meet the criteria a, b and c below, freedom from flutter, control reversal and divergence up to V_d/M_d must be shown after the failure, malfunction or disconnection of any single element in the primary flight control system, any tab control system or any flutter damper:

- a. V_d/M_d for the aeroplane is less than 260 knots (EAS) and less than Mach 0.5;
- b. the wing and aileron flutter prevention criteria, as represented by the wing torsional stiffness and aileron balance criteria, are limited to use to aeroplanes without large mass concentrations (such as engines, floats, or fuel tanks in outer wing panels) along the wing span; and
- c. the airplane:
 - 1°. does not have a T-tail or other unconventional tail configurations;
 - 2°. does not have unusual mass distributions or other unconventional design features that effect the applicability of the criteria; and
 - 3°. has fixed-fin and fixed stabilizer surfaces.

7. **Aeroplanes with a passenger seating configuration, excluding pilot seats, of 10 seats or more**

Aeroplanes that have a passenger seating configuration, excluding pilot seats, of 10 seats or more, must comply with FAR 135.169(b) and (c), Amendment 21.

Additionally, compliance must be shown with the following JAR-23 paragraphs (issue 1):

- JAR 23.783 Doors
- JAR 23.851 Fire extinguishers
- JAR 23.853 Passenger and crew compartment interiors
- JAR 23.1309 Equipment, systems and installations
- JAR 23.1457 Cockpit voicerecorders
- JAR 23.1459 Flightrecorders

In lieu of the referenced FAR Part 25 paragraphs in SFAR 41C, the following JAR-25 paragraphs apply:

- JAR 25.121(d) Discontinued approach
- JAR 25.1533(a)(2) Additional operations limitations maximum landing weights
- JAR 25.105(d) Take-off data
- JAR 25.111 Take-off path
- JAR 25.113(a) Take-off distance and take-off run
- JAR 25.115 Net take-off flight path
- JAR 25.335(d) Designed speed for maximum gust intensity
- JAR 25.341(a)(1) Gust loads
- JAR 25.351(b) Yawing conditions, lateral gust
- JAR 25.831(b) Ventilation
- JAR 25.903(c) Control of engine rotation
- JAR 25.903(e) Restart capability
- JAR 25.1521(e) Powerplant limitations, ambient temperature.

**SPECIAL REGULATIONS FOR
TYPE-HELICOPTERS IN DE CATEGORY A OF B**

Part I

Departure from FAR-29

Section A-General is not applicable, while the regulations in paragraph 29-141 are substituted by regulations to be stipulated by the Director.

Part II

English supplement to Far-29

1. **Lighting Protection**

The airplane with its systems must be designed to prevent catastrophic effect of a lightning strike, or acceptable means must be incorporated to prevent catastrophic effect.

2. **Powerplant**

2.1. Fuel system

If in a multi-engined aircraft more than one engine can draw fuel from one tank, sufficient provisions must be incorporated to safeguard against a multi-engine failure due to fuel starvation.

2.2 Powerplant fire protection

Flammable fluid shut-off mean power operated valves must have means to indicate the flight crew, when the valve has reached the selected position.

2.3 Transmission

For gear boxes in the transmission system the following applies:

- a. in case of loss of the lubricant, the pilot must get (a) clear indication(s) or warnin(s) of this malfunction;
- b. the flight manual must contain data on the remaining safe endurance of the flight after the appearance of these indication(s) or warning(s).

3. ***Equipment***

3.1. Hand fire extinguishers

Hand fire extinguishers and their extinguishing agents must be of a type, approved by the Department of Civil Aviation.

The following extinguishers agents are approved:

- water with a suitable anti-freeze agent,
- carbon dioxide,
- bromotrifluoromethane (BF),
- bromochlorodifluoromethane (BCF),

The type and quantities of agent(s) are to depend on the number of location of fire extinguishers on board and likely kind(s) of fire(s).

3.2. Electrical systems

3.2.1. Starter relays

Failure of the starter relay contacts to open on release of the cockpit starter switch may not result in overheating of electrical cables or the starter motor.

3.2.2 Ni-cad battery installations

Nickel-cadmium battery installations, capable of being used to start an aircraft engine or auxiliary power unit must comply with FAA AD nr 72-19-4 f(1) through f(3).

3.2.3 Electrical connections

Electrical connections must be such, that the risk to work loose through vibrations or through pulling forces in wiring as may, eventually unwillingly, be applied during inspection and maintenance or through movements or accelerations in flight, is minimal.

SPECIAL REGULATIONS FOR HELICOPTERS IN CATEGORY N

Part I

Paragraphs 27.1 (b) and 27.2 of Section A-General are not applicable.

Part II

English supplement to Far-27

1. Lighting Protection (ref. JAR 27.610)

- a. The rotorcraft must be protected against catastrophic effect from lightning.
- b. For metallic components compliance with sub-paragraph (a) may be shown by:
 - 1°. electrically bonding the components properly to the airframe or
 - 2°. designing the components so, that a strike will not endanger the rotorcraft.
- c. For non-metallic components compliance with sub-paragraph (3) may be shown by:
 - 1°. designing the components to minimize the effect of a strike or
 - 2°. incorporating acceptable means of diverting the resulting electrical current so as not to endanger the rotorcraft.

2. Powerplant

2.1. Unusable fuel (ref. JAR 27.959)

The unusable fuel supply for each tank must be established as not less than the quantity at which the first evidence of malfunction occurs under the most adverse fuel feed condition, occurring under any intended operations and flight manoeuvres, involving that tank.

2.2 Powerplants controls (ref. JAR 27.1141(d)(2))

For power-assisted valves, means must be provided to indicate to the flight crew when the valve:

- (a) is in the fully open or fully closed position, or

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(b) is moving between the fully open and fully closed position.

3. **Equipment, systems and installations**

3.1. Hand fire extinguishers

Hand fire extinguishers and their extinguishing agents must be of a type, approved by the Department of Civil Aviation. The operation of hand fire extinguishers must be straight forward and easy, whereby the design must allow one-hand aiming and triggering and intermittent operation.

The following extinguishers agents are approved:

- water with a suitable anti-freeze agent,
- carbon dioxide,
- bromotrifluoromethane (BF),
- bromochlorodifluoromethane (BCF),

The type and quantities of agent(s) are to depend on the number and location of fire extinguishers on board and likely kind(s) of fire(s).

3.2 Ni-cad battery installations (ref. JAR 27.1353(g))

Nickel-cadmium battery installations, capable of being used to start an aircraft engine or auxiliary power unit, must have:

- a. a system to control the charging rate of the battery automatically so as to prevent battery overheating, or
- b. a battery temperature sensing and over temperature warning system with a means for disconnecting the battery from its charging source in the event of an over temperature condition, or
- c. a battery failure sensing and warning system with a means for disconnecting the battery from its charging source in the event of battery failure.



Annex F

REGULATIONS FOR PARTS OF EQUIPMENT

Parts of equipment must comply with:

- a. JAR-TSO, or
- b. FAR-21, section O, or
- c. the regulations stipulated by the Director, that are equivalent to the regulations mentioned in sections a and b.

If neither JAR—TSO or FAR—21 are applicable on a part of equipment, that part of equipment must comply with:

- a. the EUROCAE Minimum Operational Performance Standards, or
- b. the RTCA Minimum Operational Performance Standards, or
- c. the SAE specifications.

SPECIAL REGULATIONS
FOR AIRCRAFT IN CATEGORY N

Winged aircraft and helicopters in category N, that are used for commercial flights, must, besides complying with the requirements in respectively annex B and E, comply with the following requirements:

1. On board of winged aircraft and propellor driven aircraft:
 - a. there must be a manual fire-extinguisher of an approved type, that is within direct reach for use by the crew. If in any part of the cabin of the aircraft a starting fire cannot be effectively extinguished with this extinguisher, for this measure the aircraft will have to be equipped with a second manual fire-extinguisher, that is directly available for use by a passenger;
 - b. measures must be taken, if the cockpit is not separated from the cabin, to sufficiently prevent unauthorized intervention of passengers in the operation of the aircraft. Use by passengers of the seat of the co-pilot is only allowed if all steering and engine-operating instruments, that are exclusively for the use of a co-pilot, are removed or covered in a way that operation of these instruments is not possible.
2. Winged aircraft and helicopters, that do not comply with the regulations mentioned respectively in annex B and E, must furthermore at least comply with the below mentioned paragraphs of FAR-Parts:
 - a. regarding performance of:
winged aircraft.....FAR-Part 23.45 through 23.77;
helicopters.....FAR-Part 27.45 through 27.79;
 - b. regarding flight characteristics of:
winged aircraft.....FAR-Part 23.141 through 23.221;
propellor driven aircraft....FAR-Part 27.141 through 27.175;

- c. regarding safety during emergency landings FAR-Part 23.561, on the understanding that the accelerations prescribed in that part under a may be diminished to:
 - upward 2 g,
 - forward 6 g and
 - sideways 1,5 g;
 - d. regarding the fire-safety of the interior:
 - winged aircraft.....FAR-Part 23.853;
 - helicopters.....FAR-Part 27: par. 27.853.
3. Aircraft that are or that can be equipped with 10 or more passenger seats, must comply with the airworthiness requirements mentioned in FAR-Part 135.169.

REGULATIONS FOR TOW-AIRCRAFT

§ 1. General

Article 1

In this annex it is understood understood under:

Tow-cable	: the total of parts that form the connection between the tow hook from the aircraft and the catchline or the front ring of the tow net;
Nominal strength of the safety link	: The maximal braking load of the safety link;
effective surface of the tow net	: the surface, in square meters, of a normal net, that has a same air-resistance as the safety link;
normal net	: a tow net, on which lines letters are sewn or on which nyloncloth letters are painted, and that is provided with a normal front tube, thin endurer and a normal flutterpiece.;
CAS	: the calibrated speed of an aircraft;
Vss	: the stallspeed in CAS of the tow aircraft in glide flight by the maximum allowed weight for the towing in the tow-configuration;
Vt	: the tow speed in CAS;
knot	: a speed of 1,8532 km per hour.

Article 2

De regulations in articles 3 through 11 are applicable on winged aircraft, that are classified in category N, of which the maximum allowed totalweight does not add up to more than 2500 kg, with which only one tow at the time is being towed and wherby the tow hook is attached in the plane of symmetry of the aircraft or at the rear end of the fuselage.

Article 3

In the flight manual of a tow aircraft there is mention of at least:

- a. the maximum allowed starting weight of the tow aircraft by the towing;
- b. the kinds of tows that the tow aircraft is allowed to tow.;
- c. the maximum allowed effective surface of the tow net;
- d. the equipment of the tow aircraft necessary for the towing and the allowed propellor types for the towing with mention of speed and diameter;
- e. the nominal breaking strength of the safety link;
- f. the particular procedures and instructions that are necessary for a safe execution of the picking up or releasing of townets;
- g. the maximum allowed amount of occupants of the tow aircraft during towing.

§ 2. Safety requirements

Article 4

1. The tow aircraft is provided with a detachable tow hook, of a type approved by or by means of the Director, at the rear end of the fuselage. The forces that occur during towing are being correctly guided to the main construction of the fuselage.

2. The tow hook is attached in a such a way that:

- a. after detaching the tow cable can not get entangled with any part of the tow aircraft and that
- b. a tow cable attached to the tow hook, without coming in contact with any part of the tow aircraft, can move over:

1°. an angle of 30° above or under the horizontal level and

2°. An angle of 15° to the left or right of the (vertical) level plane of symmetry of the tow aircraft whereby the horizontal level is the level that for the tow hook can be thought parallel to the longitudinal axes and the transversal axes of the aircraft.

3. Taking in account the safetyfactors mentioned under sub 6, the tow hook and its attachment on the tow aircraft are strong enough to in a safe manner take on a pulling force that at least equals the nominal strength of the safety link. The working line of this force varies thereby within the limits indicated in the previous part (sub 2).

4. The towhook can be opened within the limits indicated in sub 2 by any force executed on the towhook up to the nominal strength of the safety link.. The release mechanism of the towhook may not be blocked by external factors e.g. gras etc., while the chance for opening the towhook from the outside must be minimal.

5. Regarding the operation installation of the release mechanism the following applies:

- a. the operating handle or button, also when wearing gloves, is reached easily and fast by the

- pilot and must be operated with the pulling power mentioned in sub d without there existing the danger of un-intentional operation of any other operations installation;
- b. the operation installation is designed in such a way that for releasing the towhook the pilot exerts power of at least 5 kg and at most 15 kg on the operation handle or button by any force of the towcable on the towhook within the limits indicated in sub 2 and 3, whereby the slag van de hand to the operating handle or button may amount at least 5 cm and at most 20 cm.;
 - c. the operating handle or button is located in such a way that the chance for un-intentional detachment is as small as possible, while the operating installation is executed in such a way that two independent proceedings are necessary for releasing the towhook;
 - d. taking in account the safety factors mentioned in sub 6, the operating installation of the release mechanism is strong enough to safely take on a pulling power on the operating handle or button of 30 kg, on the understanding, that this pulling power is expected to be able to work under an angle of 30° with the level in which the operating handle or button is moveable and, that the operating installation has enough stiffness to prevent the occurrence of inadmissible stretch and the frequent post-adjustment under influence of above-mentioned power.;
 - e. the operating handle or button is clearly recognizable, either through execution either by means of an inscription.

6. The safety factors meant in subs 3 and 5 are 1,5 for breaking and 1,15 for permanent deformation.

Article 5

1. A tow aircraft by which throwing out of the grappling iron out of the cockpit encounters objection, is equipped with a detachable grappling iron hook, designated for hanging the grappling iron.

2. The grappling iron hook is attached in such a way, that during take off and after detaching the grappling iron, the tow cannot become entangled with any part of the tow aircraft.

3. The operating handle or button of the grappling iron is amongst others by means of inscription, form, colour and location in such a way distinguishable of other operating installations, in particular of the one for the towhook, that mistake is prevented.

Article 6

The engines of tow aircraft are equipped with a cylinderhead thermometer.

Article 7

Free translation of may 2006

As maximum allowed starting weight for the tow aircraft, the empty weight of the tow aircraft plus 90 kg of weight of a pilot plus full standard fuel tanks is used.

Article 8

The pilot must be able to see the tow easily. If for this means a rear view mirror is attached, this one offers enough view, is installed vibration-free, does not obstruct the front view and does not endanger the occupants.

Article 9

The tow aircraft possesses, during towing in all admissible situations regarding speed, weight and location of centre of gravity, enough stability and manageability, as well during take off as during flight. Curves with an inclination of 15° can be executed effortlessly.

Article 10

1. Except in the case the tow is being picked from the ground during flight, or in case the tow cable is longer than 500 meters, the distance from the point where the tow aircraft with attached tow comes in motion, to the point where a speed is reached that is 10 knots higher than V_{ss} , is stipulated under the following circumstances:

- a. the regulated usage limits of the engines is not exceeded, and
- b. the tow aircraft finds itself in the, for take off, most unfavourable situation regarding weight and location of centre of gravity.

2. The take off and the pick up during flight are executed under normal circumstances without particular skill of the pilot.

Article 11

1. For tow aircraft of which V_{ss} exceeds 50 knots, the climbing speed during the towing comes to at least 1,5 m/sec, if it is being towed with a speed that is at least 15 knots more than V_{ss} .

2. The climbing performance is stipulated under the following circumstances:

- a. by standard atmosphere at sea level;
- b. with such an engine capacity that the maximum term capacity and other usage limits of the engine are not exceeded;
- c. with the location of the centre of gravity on the most unfavourable place within the allowed

limits met de zwaartepuntsligging op de meest ongunstige plaats binnen de toegelaten grenzen.

Ministry of Transport and Communications**Department of Civil Aviation****ARUBA****CERTIFICATE OF ACCEPTANCE**

Name of holder:	Address of holder:
Location(s):	
It is hereby certified that, in accordance with article 64/96, paragraph 1, of the "Regeling Luchtwaardigheid" (AB 1995 no. 71), the holder identified above has been approved for performing the following activities:	
This approval is valid until:	Aruba,
Certificate no.:	The Director of Civil Aviation:
Appendix dated:	
Date of first issue:	

Ministry of Transport and Communications

Department of Civil Aviation



ARUBA

APPENDIX TO THE CERTIFICATE OF ACCEPTANCE NO.:

Amendment no.:	Aruba,
Effective date :	For the Director of Civil Aviation:
Supersedes appendix dated:	

SAMPLE CERTIFICATE OF AUTHORIZATION OF A GROUND ENGINEER

II. <div style="border: 1px solid black; width: 150px; height: 40px; margin: 5px 0;"></div>	IX. Licence valid until: <div style="border: 1px solid black; width: 70px; height: 25px; margin: 5px 0;"></div>	XIII. Remarks:
III. No.: _____ Date of first issue: _____	XII. Ratings <div style="border: 1px solid black; width: 150px; height: 30px; margin: 5px 0;"></div> <p style="text-align: center; font-size: small;">for decoding see page 5 and 6</p>	
IV. Surname: Given names: _____	Type ratings:	
V. Address: _____	VI. Nationality: Place of birth: _____ Date of birth: _____	
VII. Signature of holder: _____	X. Aruba,	XI. For Director of Civil Aviation
2	3	4

<p style="text-align: center; font-weight: bold; font-size: small;">DECODING OF RATINGS</p> <p>Aeroplanes having a maximum certified take-off mass exceeding that mentioned hereby have to be mentioned on page 3, under type ratings.</p> <p>AB1Z Category 1Z aircraft and engines installed in Category 1Z aircraft.</p> <p>AB1T Category 1T aircraft and engines installed in Category 1T aircraft.</p> <p>AB2Z Category 2Z aircraft and engines installed in Category 2Z aircraft.</p> <p>AB2T Category 2T aircraft and engines installed in Category 2T aircraft.</p> <p>AB3Z Category 3Z aircraft and engines installed in Category 3Z aircraft.</p> <p>AB3T Category 3T aircraft and engines installed in Category 3T aircraft.</p> <p>CEF Instruments without auxiliary electronic equipment, airconditioning and electrical installations installed in Category 1, 2 and 3 aircraft.</p> <p>DG Automatic flightguidance systems and communication-, navigation- and identification installations installed in Category 1, 2 and 3 aircraft.</p> <p style="text-align: center;">5</p>	<p style="text-align: center; font-weight: bold; font-size: small;">DECODING OF RATINGS (cont.)</p> <p style="text-align: center; font-weight: bold; font-size: small;">AIRCRAFT CATEGORIES</p> <p>Cat. 1Z/T Aeroplanes with one piston/turbine engine without a pressurized cabin.</p> <p>Cat. 2Z/T Aeroplanes with a maximum take-off weight not exceeding 5700 kg with more than one piston/turbine engine and/or a pressurized cabin. All turbine aeroplanes have to be mentioned separately on page 3, under type ratings.</p> <p>Cat. 3Z/T Helicopters with a maximum take-off weight not exceeding 2700 kg with one or more piston/turbine engines.</p> <p>If this licence is an aircraft maintenance engineer's licence, it has been issued in accordance with the provisions of Annex 1 to the Convention on International Civil Aviation signed at Chicago on 7th December 1944 and the Air Navigation Act of Aruba.</p> <p style="text-align: center;">6</p>	<p style="font-weight: bold;">KINGDOM OF THE NETHERLANDS</p>  <p style="font-weight: bold;">MINISTRY OF TRANSPORT AND COMMUNICATIONS</p> <p style="font-weight: bold;">DEPARTMENT OF CIVIL AVIATION ARUBA</p>  <p style="font-weight: bold;">PERSONNEL LICENCE</p> <p style="font-weight: bold;">AIRCRAFT MAINTENANCE ENGINEER</p>
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BIJLAGE K

**SAMPLE OF THE
TRANSMISSION AND RECEPTION LICENSE**

Registration not transferable	ARUBA DEPARTMENT OF CIVIL AVIATION Ministry of Transport and Communications		This certificate must be in the aircraft when operated
No.	AIRCRAFT RADIO STATION LICENSE		
1. Nationality and Registration Marks	2. Manufacturer and Manufacturer's Designation of Aircraft	3. Aircraft Serial No.	
4. Permission is hereby granted to _____ to install and operate the following radio transmitting and/or receiving equipment on board the aircraft above. - VHF Communications (117.975-137 MHz), Emergency Locator (121,5 & 243 MHz)			
5. The radio station on board the above-described aircraft may be used only when a valid license of inspection has been issued.			
Date of issue		The Director of Civil Aviation	
Expiry date		Signature	

DCA FORM INS-4.011

*Free translation of may 2006***Annex K - 1**

Annex L

SAMPLE CERTIFICATE OF CONFORMITY

No.	ARUBA DEPARTMENT OF CIVIL AVIATION Ministry of Transport and Communications CERTIFICATE OF CONFORMITY		This certificate must be in the aircraft when operated
1. Nationality and Registration Marks	2. Manufacturer and Manufacturer's Designation of Aircraft	3. Aircraft Serial No.	
4. Categories		Class	
5. This Certificate of Airworthiness is issued pursuant to the Convention on International Civil Aviation dated 7 December 1944, and the regulations given by or by virtue of the Aviation Act of Aruba, in respect of the abovementioned aircraft which is considered to be airworthy when maintained and operated in accordance with the foregoing and the pertinent approved Flight Manual.			
Date of issue		The Director of Civil Aviation	
Expiry date		Signature	

DCA FORM INS-4.010

Annex M

SAMPLE EXPORT CERTIFICATE OF AIRWORTHINESS

No.: _____

Government of Aruba

Department of Civil Aviation

Export Certificate of Airworthiness

This certifies that

the product identified below has been examined and as of the date of this certificate, is considered airworthy in accordance with the Aviation Act of Aruba.

This certificate in no way attests to compliance with any agreements or contracts between the vendor and purchaser, nor does it constitute authority to operate an aircraft.

Product:

Manufacturer:

Model:

Serial No.:

New: ☐ *Newly Overhauled:* ☐

Used Aircraft: ☐

Country to which exported:

Remarks:

Exceptions:

Aruba,

The Director of Civil Aviation