

## Air Show Special Provisions

### Air show special provisions:

1. All civil pilots who perform aerobatics and dynamic maneuvering must possess:
  - a. A valid FAA Form 8710-7, Statement of Acrobatic Competency, or Transport Canada Aviation (TCA), Form 26-0307, Statement of Aerobatic Competency. All limitations and endorsements on the form will be adhered to including altitude restriction for the entire performance.
2. All civil aircraft pilots must show evidence of performing or practicing their performance(s) within the previous 45 days.
3. All civil aircraft pilots that perform formation dynamic maneuvering or aerobatics must ensure the following requirements are met:
  - a. The members of the aerobatic team must comply with practice requirements of the applicable FAA accepted RIO ACE Program; and
  - b. All persons conducting formation dynamic maneuvering or aerobatics must have demonstrated or substantiated their skills as a team and have the formation dynamic maneuvering or aerobatics notation placed on their SAC.

**Note:** This evidence of performing or practicing can be a logbook endorsement, a written statement, or by noting this on the Participants Safety Briefing Signature Page for Aviation Event. The required practice or performance must be in the same aircraft make and model and the same maneuvers that will be performed at this event.

4. All military pilots must have command approval and FAA approval to conduct a demonstration in accordance with an approved maneuvers package.
5. Civilian pilots who wish to conduct Standard formation flight in airspace issued a CoW for an aviation event must possess a valid industry formation credential acceptable to the FAA.
6. A fly-by can be performed by a single aircraft, by aircraft in formation, or by aircraft in trail, along show lines at a minimum horizontal distance of not less than 500 feet from spectator area(s), congested areas, or occupied buildings; and in accordance with the conditions established in the following table:

<b>FLYBY REQUIREMENTS AND LIMITATIONS</b>	
<p><b>FLYBY.</b> A pass or a series of passes, performed by one or more aircraft while in the flying display area before an invited open air assembly of persons at an aviation event while a CoW for an aviation event is in effect. A flyby is not considered part of a performer’s maneuvering sequence and therefore must be performed in accordance with requirements listed below.</p>	
<p><b>SAC – Statement of Aerobatic Competency, FAA Form 8710-7</b></p> <ul style="list-style-type: none"> <li>• DMF – Dynamic Maneuvering– Formation</li> <li>• DMS – Dynamic Maneuvering–Solo</li> <li>• AF – Aerobatics–Formation</li> <li>• AS – Aerobatics–Solo</li> </ul>	<p><b>Formation Credential – FAST/FFI:</b></p> <ul style="list-style-type: none"> <li>• FAST – Formation and Safety Training</li> <li>• FFI – Formation Flying, Inc.</li> </ul>

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<b>Category Aircraft</b>	<b>Minimum Aircraft Category Show Line</b>	<b>Limitations</b>
<p>CAT I</p> <p>CAT II</p> <p>CAT III</p>	<p>CAT III – 500 feet</p>	
<p><b>CAT I/II/III Aircraft – Solo</b></p> <ul style="list-style-type: none"> <li>➤ Standard Maneuvering–Solo</li> <li>➤ Dynamic Maneuvering–Solo</li> <li>➤ Aerobatic Maneuvering–Solo</li> </ul>	<p>CAT III</p>	<p>➤ <b>Standard Maneuvering–Solo</b> No Credential Required:</p> <hr/> <p style="text-align: center;">Pitch ≤ 60° and/or Bank ≤ 75°</p> <hr/> <p style="text-align: center;">Altitude ≥ 100 feet AGL</p> <hr/> <p style="text-align: center;">Airspeed ≤ 300 kts IAS</p> <hr/> <p>➤ <b>Dynamic Maneuvering–Solo</b> SAC with DMS endorsement:</p> <hr/> <p style="text-align: center;">Pitch ≤ 60° and/or Bank ≤ 90°</p> <hr/> <p style="text-align: center;">Altitude: SAC-DMS Level II or higher ≥ 100 feet AGL</p> <hr/> <p style="text-align: center;">Airspeed: SAC-DMS Level II or higher – No limitation (supersonic not authorized)</p> <hr/> <p>➤ <b>Aerobatic Maneuvering–Solo</b> SAC with AS endorsement:</p> <hr/> <p style="text-align: center;">Pitch &gt; 60° and/or Bank &gt; 75°</p> <hr/> <p style="text-align: center;">Altitude: SAC-AS Level I or higher – No limitation</p> <hr/> <p style="text-align: center;">Airspeed: SAC-AS Level I or higher – No limitation (supersonic not authorized)</p>
<p><b>CAT I/II/III Aircraft – Formation</b></p> <ul style="list-style-type: none"> <li>➤ Standard Maneuvering–Formation</li> </ul>	<p>CAT III</p>	<p>➤ <b>Standard Maneuvering–Formation</b> FAST or FFI Formation Credential:</p> <hr/> <p style="text-align: center;">Pitch ≤ 45° and/or Bank ≤ 60°</p> <hr/> <p style="text-align: center;">Altitude ≥ 250 feet AGL</p>

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<ul style="list-style-type: none"> <li>➤ Dynamic Maneuvering–Formation</li> <li>➤ Aerobatic Maneuvering–Formation</li> </ul>		<hr/> <p style="text-align: center;">Airspeed <math>\leq</math> 250 kts IAS</p> <hr/> <p style="text-align: center;">Formation separation is not authorized in the flying display area (see subparagraph 3-145D1))</p> <hr/> <ul style="list-style-type: none"> <li>➤ <b>Dynamic Maneuvering–Formation</b> SAC with DMF endorsement:</li> </ul> <hr/> <p style="text-align: center;">Pitch <math>\leq</math> 60° and/or Bank <math>\leq</math> 75°</p> <hr/> <p style="text-align: center;">Altitude: SAC DMF Level II or higher <math>\geq</math> 250 feet AGL</p> <hr/> <p style="text-align: center;">Airspeed: SAC DMF Level II or higher – No limitation (supersonic not authorized)</p> <hr/> <ul style="list-style-type: none"> <li>➤ <b>Aerobatic Maneuvering–Formation</b> SAC with AF endorsement:</li> </ul> <hr/> <p style="text-align: center;">Pitch <math>&gt;</math> 60° and/or Bank <math>&gt;</math> 75°</p> <hr/> <p style="text-align: center;">Altitude: SAC-AF Level I or higher <math>\geq</math> 250 feet AGL</p> <hr/> <p style="text-align: center;">Airspeed: SAC-AF Level I or higher – No limitation (supersonic not authorized)</p>
<p><b>All Aircraft:</b></p> <ul style="list-style-type: none"> <li>➤ Maneuvering sequence may not be interrupted to perform a flyby.</li> <li>➤ Flyby may only be performed before or after the sequence is completed.</li> <li>➤ No abrupt maneuvers between the corner markers may be performed along the Category III show line.</li> <li>➤ Flyby must be conducted in accordance with subparagraph 3-147L.</li> <li>➤ Supersonic flight not authorized.</li> </ul>	<p><b>Military Aircraft:</b></p> <ul style="list-style-type: none"> <li>➤ Sanctioned military demonstration teams with an FAA-approved maneuvers package must comply with the limits approved.</li> <li>➤ All other military pilots must comply with the flyby requirements and limitations.</li> </ul>	

NOTE: Per § 91.117(d), if the minimum safe airspeed for any particular operation is greater than the maximum speed required by § 91.117(a through c), the aircraft may be operated at that speed.

7. For the purpose of this event, the definition of aerobatic flight contained in 14 CFR § 91.303 is waived.
8. The following aircraft attitudes will be considered **Aviation Event Maneuvering**. Maneuvers performed while participating in accordance with the provisions of a CoW for an aviation event. Maneuvers

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performed at an aviation event require different levels of endorsement and are categorized and defined below:

- a. **Aerobatic Maneuvering.** Requires Statement of Aerobatic Competency (SAC) with an aerobatic maneuvering endorsement.
    - i. In a solo flight, aerobatic maneuvering is when the pitch attitude of the aircraft is greater than 60 degrees above or below the horizon and/or the angle of bank is greater than 75 degrees in reference to the horizon.
    - ii. In a formation flight, aerobatic maneuvering is when the pitch attitude of an aircraft is greater than 60 degrees above or below the horizon and/or the bank angle is greater than 75 degrees to the horizon.
  - b. **Dynamic Maneuvering.** Requires SAC with a dynamic maneuvering endorsement.
    - i. In a solo flight, dynamic maneuvering includes abrupt maneuvering, crossing maneuvers, and opposing maneuvers. The pitch and bank limitations are when the pitch attitude of the aircraft is less than or equal to 60 degrees above or below the horizon and/or the bank angle is less than or equal to 90 degrees in reference to the horizon.
    - ii. In a formation flight, dynamic maneuvering includes formation separation, formation configuration/position changes, rejoins, crossing maneuvers, and opposing maneuvers. The pitch and bank limitations are when the pitch attitude of the aircraft is less than or equal to 60 degrees above or below the horizon and/or the bank angle is less than or equal to 75 degrees in reference to the horizon.
- NOTE:** Solo maneuvers conducted after a formation has separated may be performed within the Dynamic Maneuvering–Solo limitations.
- c. **Standard Maneuvering.** Formation flight requires an industry formation credential.
    - i. In a solo flight, standard maneuvering includes non-abrupt maneuvering and flybys. The pitch and bank limitations are when aircraft pitch attitude of the aircraft is less than or equal to 60 degrees above or below the horizon and/or the bank angle is less than or equal to 75 degrees in reference to the horizon.
    - ii. In a formation flight, standard maneuvering includes non-abrupt maneuvering, flybys, formation configuration/position changes, and missing-man formation, and the flight may not separate inside the flying display area, except to break for landing or flyby. The pitch and bank limitations are when the aircraft pitch attitude of the aircraft is less than or equal to 45 degrees above or below the horizon and/or the bank angle is less than or equal to 60 degrees in reference to the horizon.

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### Aviation Event Maneuvering Chart

<b>SAC – Statement of Aerobatic Competency FAA Form 8710-7</b>				<b>Formation Credential - FAST/FFI:</b>			
<ul style="list-style-type: none"> <li>• DMF - Dynamic Maneuvering - Formation</li> <li>• DMS - Dynamic Maneuvering- Solo</li> <li>• AF – Aerobatics- Formation</li> <li>• AS – Aerobatics - Solo</li> </ul>				<ul style="list-style-type: none"> <li>• FAST – Formation and Safety Training</li> <li>• FFI - Formation Flying Inc.</li> </ul>			

  

Formation Maneuvering				Solo Maneuvering			
	Standard Maneuvering	Dynamic Maneuvering	Aerobatic Maneuvering		Standard Maneuvering	Dynamic Maneuvering	Aerobatic Maneuvering
FAST/FFI	Pitch ≤45° and/or Bank ≤60°			No Credential	Pitch ≤60° and/or Bank ≤75°		
SAC + DMF		Pitch ≤60° and/or Bank ≤75°		SAC + DMS		Pitch ≤60° and/or Bank ≤90°	
SAC + AF			Pitch >60° and/or Bank >75°	SAC + AS			Pitch >60° and/or Bank >75°

#### 9. Repositioning Turns.

- a. **Return to the Flying Display Area/Aerobatic Box.** Conducting repositioning turns having an energy vector directed towards the primary spectator area, and in accordance with subparagraph 3-147L, made for the purposes of returning to the flying display area or aerobatic box to realign with the appropriate category aircraft show line, must be completed as follows:
  - i. Civilian performers. Pilots who hold a SAC with an Aerobatic endorsement (Solo or Formation) and flying Category III or Category I and Category II ex-military fighters are permitted to perform repositioning turns for the purposes of returning to the flying display area or aerobatic box using a maximum of 120 degrees of bank and 90 degrees of pitch when above 500 feet AGL and not over designated spectator areas or congested areas.
  - ii. Pilots who hold a SAC with a Dynamic Maneuvering–Solo endorsement are permitted to perform repositioning turns using a maximum of 90 degrees of bank and 60 degrees of pitch when above 500 feet AGL when not over designated spectator areas or congested areas. Formation not authorized.
  - iii. Military jet demonstration teams and single-ship demonstration teams for the purposes of returning to the flying display area or aerobatic box:
  - iv. Military demonstration teams with accepted maneuvers packages are permitted to exceed a maximum of 120 degrees of bank and 90 degrees of pitch; Pitch and bank angles must not exceed standard operating procedures prescribed for the specific aircraft; and Inverted flight is not authorized below 1,500 feet AGL and not over congested areas or spectator areas.

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- b. **Inside the Flying Display Area/Aerobatic Box.** When it is not practical to leave the flying display area or aerobatic box in between segments of a flight performance, repositioning turns that have an energy vector directed towards the primary spectator area, in accordance with subparagraph 3-147L, and are made for the sole purpose of remaining in the flying display area and realigning with the appropriate Category show line are permitted in accordance with the following:
- i. Pilots who hold a SAC with an Aerobatics–Solo or Dynamic Maneuvering–Solo endorsement are permitted to perform repositioning turns and/or clearing turns to a maximum 90 degree bank. Pilots who hold a SAC with a Dynamic Maneuvering–Formation endorsement can perform repositioning turns using up to 75 degrees of bank. Pilots who hold an industry formation credential can perform repositioning turns using up to 60 degree angle of bank.
  - ii. The turns are carried out without abrupt control inputs during the portion of the turn when the aircraft is directing energy at the crowd.
  - iii. The turns are conducted in a manner to ensure the aircraft remains beyond the appropriate distance for their show line category (i.e., 500 feet for Category III; 1,000 feet for Category II; 1,500 feet for Category I).
10. Sequences/performances that contain dynamic maneuvering and aerobatic maneuvers must be initiated, performed, and completed at or above the altitude listed in the limitations on the SAC.
11. A show line (man-made or natural) clearly visible to the performers/pilots shall be provided to assist them in compliance with the approved distances from the spectator area(s). The show line will include a clearly visible (from 200 feet AGL at 200 KIAS) show center marker and corner markers that are 500 feet beyond the spectator areas along the crowd line to provide reference to pilots entering or leaving the flying display area.
12. Except when authorized during takeoff or landing, aircraft that operate at speeds of 156 knots or less and certain other Category III aircraft shall perform no closer than 500 feet horizontally from the spectator area[s]. Any single reciprocating-engine airplane, regardless of speed, with a maximum certificated gross weight of no more than 2,250 lbs. is also a Category III aircraft.
- NOTE: The dimensions of the aerobatic area for Category III aircraft may vary. It only needs to be large enough to provide sufficient space for Cat III performers to complete their aerobatic maneuvers within it. The only requirement that may not be altered is that the minimum distance from each side of this aerobatic area to the primary and secondary spectator areas respectively may not be less than 500 feet at any time.
13. Except when authorized during takeoff or landing, aircraft that operate at speeds of more than 156 knots but 245 knots or less shall perform aerobatic maneuvers no closer than 1,000 feet horizontally from a single spectator area. If two spectator areas are used, the show lines may be no less than 800 feet from one spectator area and no less than 1,000 feet from any other designated spectator area.
- Note: The dimensions of the aerobatic area may vary. It only needs to be large enough to provide sufficient space for Cat II performers to complete their aerobatic maneuvers within it. The only requirement is that the minimum distance from each side of this aerobatic area to the primary and secondary spectator areas respectively may normally not be less than 1000 feet. This distance may be reduced only on one side only of the Cat II aerobatic area to no less than 800 feet from either the primary or secondary spectator areas
14. Except when authorized during takeoff or landing, aircraft that operate at speeds of more than 245 knots shall perform aerobatic maneuvers no closer than 1,500 feet horizontally from a single spectator area. If

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two spectator areas are used, the show line may be no less than 1,200 feet from one of the designated spectator areas, and no less than 1,500 feet from any other designated spectator area. Single Cat I airplanes or the center of formation flights of Cat I airplanes must be centered on this show line.

NOTE: Applicable to Category I, II, and III showlines. For reciprocating engine powered airplanes, these distances are predicated on true airspeed in straight and level flight at 75 percent power at standard temperature and pressure (15°C/sea level) and maximum certificated gross weight. For turbine engine powered airplanes, the distances are based on 85 percent of the maximum continuous powered straight and level flight true airspeed at standard temperature, pressure, and maximum certificated gross weight. Any turbine engine powered airplane for which valid performance data acceptable to the FAA is not available will be required to perform on or beyond the Category I show line

15. [insert name] will make every effort to discourage secondary spectator areas. Secondary spectator areas cannot be located under the aerobatic box/flying display area. Flight over the secondary spectator area is permitted by all civilian and military air show performers when the following conditions are met:
  - i. Minimum altitude must be no lower than 500 feet above the spectators.
  - ii. Until the aircraft reaches an altitude of 500 feet, flight will be non-maneuvering and wings level in a normal climb.
  - iii. For rockets, flight over secondary spectator area is prohibited.
  - iv. UAS operations are not authorized unless authorized by the Administrator.
  
16. Flight demonstrations shall not be conducted during the day unless the ceiling is at least 1,500 feet, and the visibility is at least 3 statute miles at the time of the demonstration. The FAA IIC may adjust the minimum ceiling and visibility requirements at his/her discretion, if 14 CFR Section 91.155 is waived, but no less than 1,000 feet and 3 statute miles if:
  - a. Except for North American military performers, aerobatic maneuvers are conducted by Category III aircraft only within an operations area having a diameter of no more than 2 statute miles; and
  - b. Originally scheduled aerobatic maneuvers are not modified or conducted in close proximity to the surface as a result of the reduced weather conditions.
  - c. 14 CFR Section 91.155 is waived, the cloud separation may be reduced to "Clear of Clouds" by the IIC
  - d. No other reductions in weather requirements shall be made. (Ref. 3-154)
  
17. Air Show Maneuvers Toward Primary Spectator Area-Prohibited. Maneuvers that put the aircraft in an aerobatic attitude while the energy vector of the aircraft is directed at the primary spectator area between the corner markers are prohibited.
  - a. Aerobatic maneuvers, that in the event of a catastrophic failure, a part of the aircraft would contact the surface at or inside the primary spectator area between the corner markers are prohibited. Maneuvers of this type include inverted flight, pulling to the vertical, and loops where the energy vector is directed at the primary spectator area during the maneuver.
  - b. Rocket launches conducted inside the aerobatic box that, in the event of a catastrophic failure might result in a part of the rocket contacting the surface inside the primary spectator area between the corner markers, are prohibited.
  
18. Air Show Maneuvers Toward Primary Spectator Area- Permitted Maneuvers—No Approval Required.

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The following maneuvers are permitted without any additional approval:

a. Aerobatic maneuvers by a single aircraft, by multiple aircraft, or aircraft in formation in which the aircraft, but not the actual energy vector, is momentarily pointed towards the primary spectator area. For example, a spinning maneuver that has the energy vector of the aircraft directed toward the ground, but may briefly have the nose of the aircraft directed at the crowd, will be permitted. Similarly, a humpty-bump maneuver in which the direction of the aircraft is briefly directed at the crowd when the aircraft has nearly zero air speed is also permitted. Maneuvers of this type include spins, tail slides, torque rolls, humpty-bumps, and flops, as well as hammerhead turns and tumbles or lomcevaks whose flightpaths are parallel to the show reference line.

b. High energy maneuvers such as minimum radius turns (maximum of 90 degrees of bank) by a single aircraft on the appropriate show line for the aircraft category in accordance with the following:

- Category III aircraft—maximum altitude of 250 feet,
- Category II aircraft—maximum altitude of 300 feet, and
- Category I aircraft—maximum altitude of 500 feet.

c. Non-aerobatic maneuvers by a single aircraft, by multiple aircraft, or aircraft in formation with an energy vector directed towards the primary spectator area provided the aircraft/UAS remains beyond the appropriate show line for aircraft category (i.e., 500 feet for Category III; 1,000 feet for Category II; 1,500 for Category I)

d. Non-aerobatic formation maneuvers (e.g., flybys) that may direct momentary, but not sustained, energy toward the primary spectator area, except during any formation separations, formation configurations/position changes, or rejoins. This does not apply to non-aerobatic formation maneuvers conducted in accordance with established FAA policy.

e. Flight over the spectator areas in accordance with established FAA policy.

f. Repositioning turns in accordance with established FAA policy.

g. All other maneuvers that do not direct an energy vector at the primary spectator area.

h. Class 1 rocket launches in accordance with established FAA policy.

19. Spectator areas may not be closer than 500 feet from any takeoff and landing runway when the approach speed ( $V_{ref}$ ) of any aircraft exceeds 100 knots and/or for any aircraft that has a certificated gross weight of more than 50,000 pounds. This also includes Airplanes, gyroplanes, and helicopters conducting excessive, non-aerobatic maneuvers on takeoff or landing (car-top landing/comedy acts). Aircraft with and both an approach speed ( $V_{ref}$ ) of 100 knots or less and a certificated gross weight of 50,000 pounds or less and UAS (> 55 pounds) shall be required to use a runway that is at least 300 feet from the spectator area. Powered parachute (aircraft/ultralight) and UAS (< 55 pounds) shall be required to use a runway that is at least 100 feet from the spectator area.

- a. If ALL aircraft and ultra-lights in an air show have approach speeds of less than 60 knots, and certificated gross weight of less than 2,500 pounds, and there is no excessive maneuvering during takeoff or landing, spectators may be as close as 200 feet to the takeoff or landing runway.



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- b. Car-top landings: only those performers with a current and valid SAC and a car-top landing endorsement with a 300-foot limitation are authorized to maneuver non-aerobatic, take off, and land at a minimum of 300 feet from spectators, congested areas, or occupied buildings when a hard prepared surface is available and a similar surface is not available at 500 feet.
  - c. These distances can be measured to the runway centerline for single aircraft operations, in which case the aircraft are expected to operate on the runway centerline. For formation takeoffs/landings, this distance shall be measured to the runway edge.
20. For the U.S. Air Force Thunderbirds and Heritage Flights, U.S. Navy Blue Angels, and Canadian Snowbirds approved maneuvers include level or climbing (normal rate) non-aerobatic flight over any spectator no less than 500 feet above the highest point in the primary spectator areas. All other performers must be at or above 1,000 feet above the highest point in the primary spectator areas.
21. Any maneuver or speed approved by AFS-800 in the FAA approved maneuvers package or FAA accepted military order are permitted if performed as approved. These may be exceptions to FAA Order 8900.1, Volume 3, Chapter 6. For US Military Jet Teams, flight below 500 feet AGL over occupied buildings is permitted in the transition areas depicted in their maneuvers package. Low altitude ingress and egress routes below 500 feet AGL require FAA IIC approval.
- a. FAA IIC approval has been granted.
22. An arrival demonstration is not authorized unless an advance member of the US Military Jet Team has been briefed on the show line and pertinent special provisions of the CoW. This information must be relayed to the team leader before the arrival demonstration.