

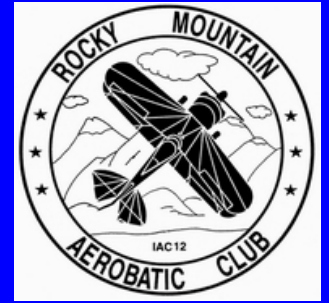


Aerobatics

International Aerobatics Club, Chapter 12
aka Rocky Mountain Aerobatics Club



Presentation Outline



- Who are we?
- Why fly aerobatics?
- Ways to be involved
- Regulations
- Safety & accidents
- Aerobatic Aircraft
- Competition
- Intermediate Sequence Video
- Getting Started



Who are we?



- Bob Freeman
 - President, RMAC
 - Married to Pam, father of 2 great boys
 - Profession: Seagate Engineering Mgt
 - Aviation background
 - Model airplanes
 - Fuel / line boy to pay for flying lessons in high school - 1972
 - BS in Mechanical Engineering
 - Former regional airline pilot
 - Former US AWAC (Advanced) team member
 - Aspiring US WAC (Unlimited) team member





Who are we?



- Earl Allen
 - Vice President, RMAC
 - Married to Maralyn Mencarini
 - Profession: Computer Support
 - Aviation background:
 - Flew Chinese diesel-powered models in the Philippines in the '60s
 - First small airplane flight with friend in J-3 Cub at Manila International Airport
 - Learned to fly 1991, 152, 172, Champ; Comm, ASEL, Instrument
 - 100 hours dual in Pitts before soloing
 - Sportsman this year, Intermediate next





Who are we?



- DJ Molny
 - Treasurer & Webmaster, RMAC
 - Married to Cindy
 - Profession: Software Consultant
 - Aviation background
 - Cessna “Learn to Fly” \$25 coupon, 1982
 - Comm. ASEL + Instrument rating
 - Hasn’t logged a single minute of night or IFR time since first aerobatic flight in 1998





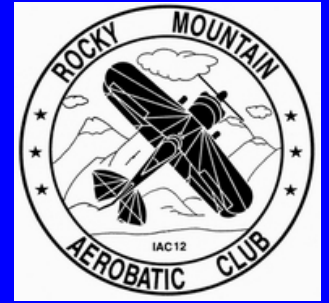
What is IAC Chapter 12?



- IAC is a Division of EAA
- IAC Chapter 12 = Rocky Mountain Aerobatic Club
 - About 80 members primarily along the Front Range
 - Majority don't compete, just love aerobatics
 - Most competitors in Primary, Sportsman, Intermediate
 - 8 compete in Advanced and Unlimited



Why Fly Aerobatics?

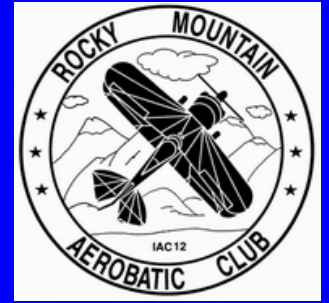


- Challenging
- Exciting
- Rewarding
- Skill building & safety
- Camaraderie
- Inspiring
- Esteem and ego
- Congenital Vitamin G Deficiency





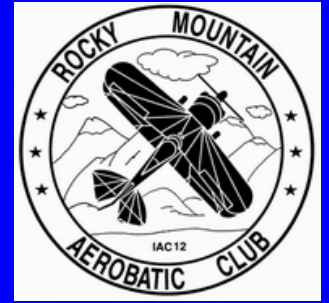
The Aerobatic “Type”



- Ambitious
- Extremely Driven
- Independent
- Organized
- Perfectionist
- Tenacious
- Satisfaction from personal achievement rather than social approval



Ways to Satisfy Your Vitamin G Requirements



- Recreational, totally independent
 - Basic Akro – loops, rolls and spins
- Give rides – but be careful here (legal, safety and ethical issues)
- Competition for fun – it's a blast
- Competition to drive to the top
- Competition to test your personal limits
- Training for your own skill development & safety
- Prepare for a career in airshows ☺



Safety & Accidents



- Outstanding safety record in IAC competition
- Typical Accident Causes
 - Poor judgment
 - Showing off, spontaneous & unplanned aerobatics
 - Lack of appropriate training
 - Insufficient altitude
 - Fuel mismanagement
 - Structural or control failure
 - Very rare inside the IAC –a/c properly maintained
 - Detailed walk around
 - Tech tips manuals & IAC email list



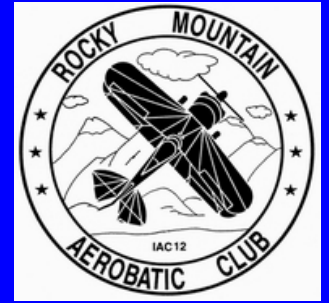
Aerobatic Regulations



- FAR 91.303: No aerobatics...
 - a) Over congested areas
 - b) Over open air assembly – i.e. no airshows
 - c) Within Class B, C, D, or E airspace (below is OK)
 - d) Within 4 miles of centerline of airways
 - e) Below 1500 AGL
 - FSDO issues waivers for contests & practice areas
- What constitutes aerobatic flight?
 - “Intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight”
 - What would an FAA examiner say?
- FAR 91.307(c): Parachutes
 - Required if there is more than one person on board, and
 - Bank exceeds 60 degrees or pitch exceeds 30 degrees
 - Required at all IAC events



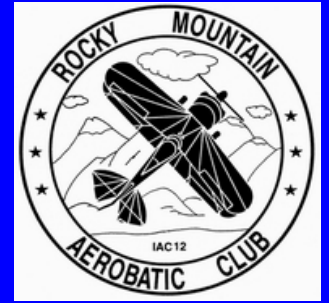
Aerobatic Aircraft

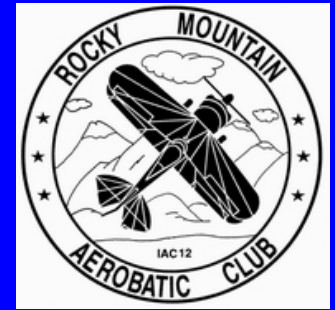


- Stressed for at least +6, -3Gs
- High power-to-weight ratios
- Inverted fuel and oil systems for sustained -G
- Predictable stall, spin and recovery
- Phenomenal control authority
- Symmetrical airfoils
- Redundant seat belts required for competition



Some Popular Aerobatic Airplanes





Introduction to Competitive Aerobatics

Gettin' yer Vitamin G's in a safe competitive environment!



Contests



- 39 U.S. Regional Contests in 2006
 - From February through November
 - Chapter 12 has sponsored three per year
- Six Regional awards based on points
- US National Aerobatic Championships
 - September - Sherman/Denison, Texas
 - 80 to 100 competitors
- World Championships (Adv. & Unlim.)
 - Slovenia, Poland, Florida, Spain, etc...
 - National teams from 15 to 20 countries, 60 to 80 pilots



Scoring



- Much like figure skating, pilots fly a routine that is scored by a panel of judges
- Every figure is compared with ideal geometry, and assigned a score from 0 to 10
- Each figure has a “K factor” indicating difficulty
- Total points determined by multiplying figure scores by K Factor, then adding up across all figures
- Positioning within the box is also graded
- Deductions for boundary infringements & low calls



Typical Regional Contest Format



- Friday
 - Contestants arrive, register, airplanes and paperwork inspected
 - Sign up for practice in the box
- Saturday
 - Pilots briefing: order of flight, weather, area, safety
 - Known sequence flown for all categories, some freestyles
 - Dinner Banquet
- Sunday
 - Pilots briefing: order of flight, weather, area, and safety
 - Known sequences for Primary and Sportsman, Free programs finish, Unknown sequences flown
 - Awards ceremony



Flight Programs



Known: Compulsory, changes annually

Freestyle: Showcase your strengths

Unknown: Music “sight reading” analogy

Four-Minute Freestyle: “Anything goes”



Categories



- Primary
 - Known sequence is flown 2-3 times
- Sportsman
 - Known sequence is flown 2-3 times, optional freestyle
- Intermediate
 - Known, Free, and Unknown sequence
- Advanced
 - Known, Free, and Unknown sequence
- Unlimited
 - Known, Free style, Unknown sequence, and optional 4 minute free style



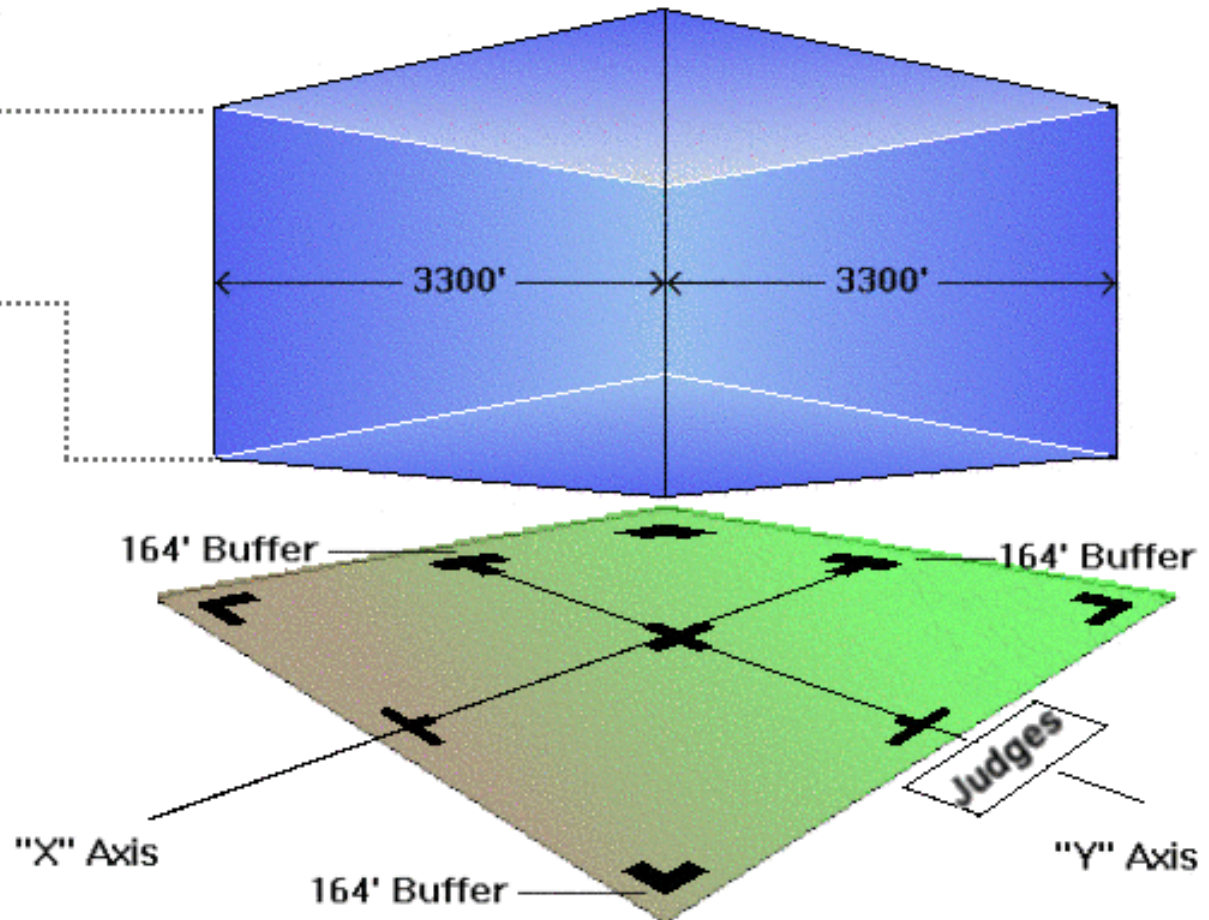
The Aerobatic “BOX”



The Aerobatic Zone

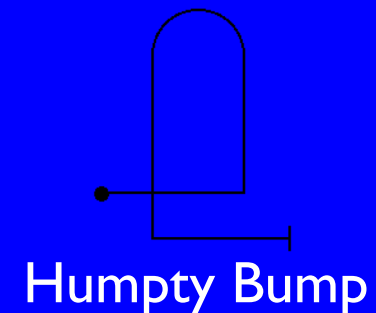
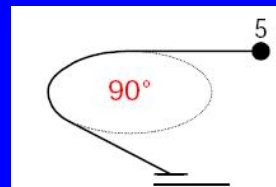
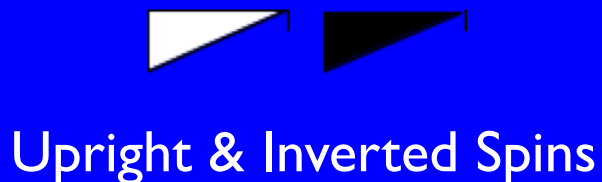
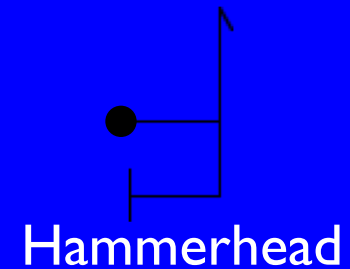
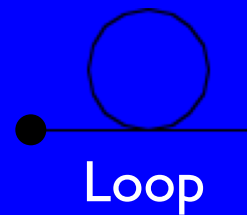
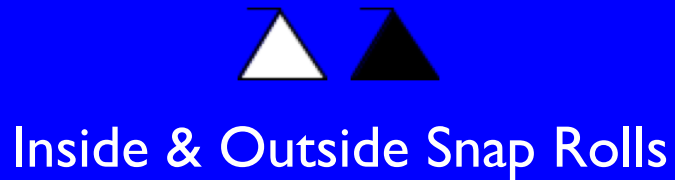
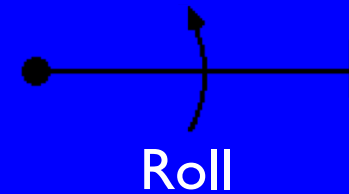
UPPER LIMITS.....
3280' AGL Unlimited
3500' AGL All Others

LOWER LIMITS.....
1500' AGL Basic & Sportsman
1200' AGL Intermediate
800' AGL Advanced
328' AGL Unlimited



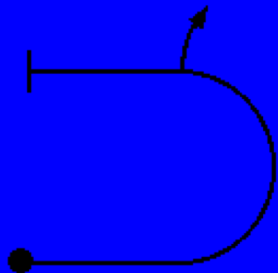
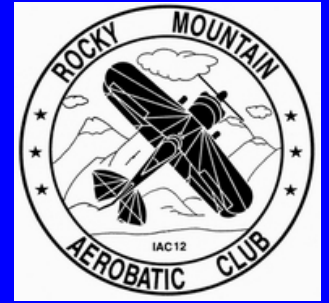


Aresti Notation

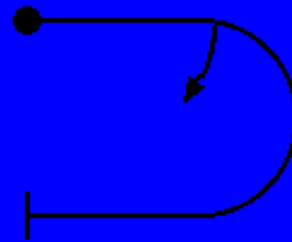




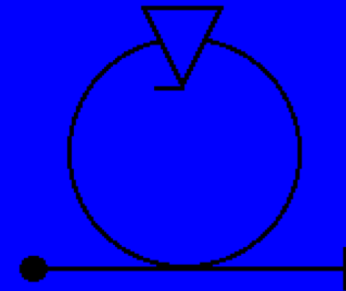
Aresti Symbols



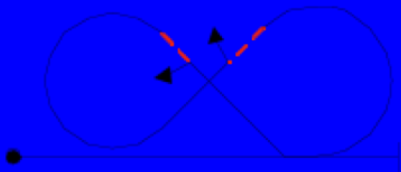
Immelmann



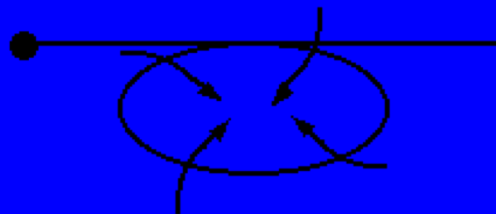
Split S



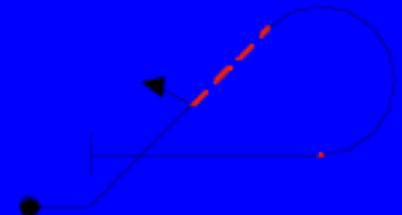
Avalanche



Cuban Eight








Rolling Turn

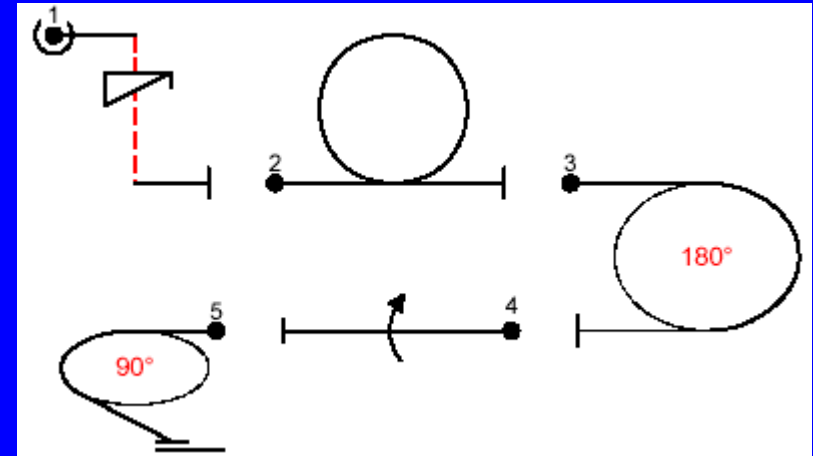


Rev. 1/2 Cuban Eight

Primary Sequence

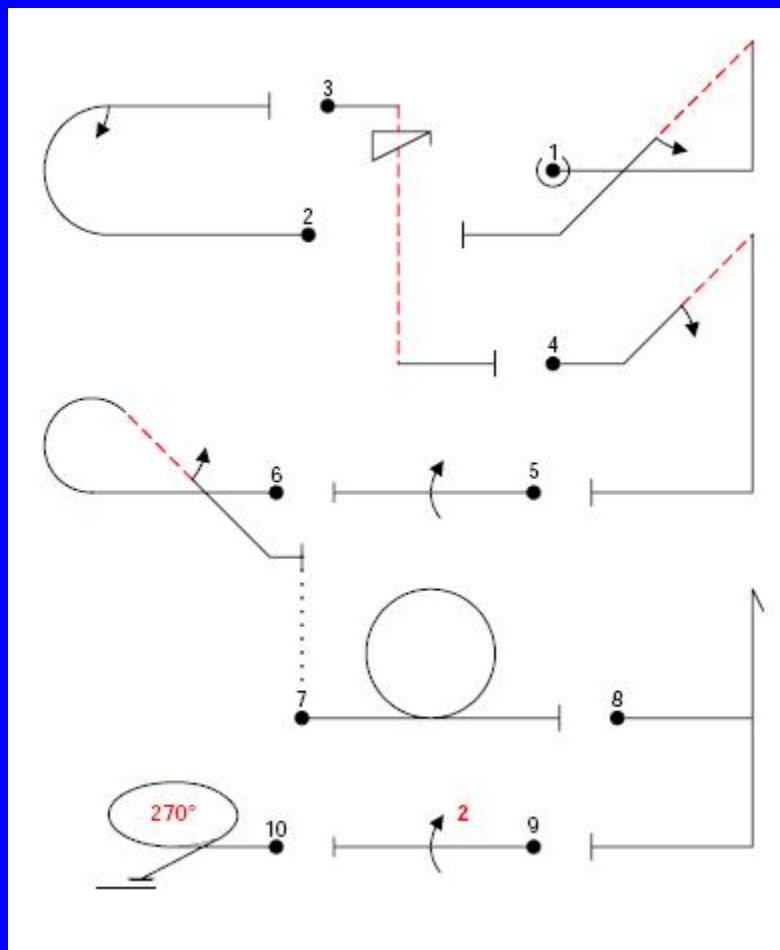


INTERNATIONAL AEROBATIC CLUB SCORESHEET									
A	Contest:		Date:		Category:		Programme:		pilot's number
					Primary		Known		
No	Symbol	Catalogue No.	K	Total K	Score	Remarks	Item	K	Score
1		1.6.3 9.11.1.4	10 5	15			Presentation	3	
2		7.5.1	10	10			FIGURE TOTAL K =	42	
3		2.2.1	4	4			INCLUDING PRESENTATION =	45	
4		1.1.1 9.1.3.4	2 8	10			Aircraft Type:		
5		2.2.3	3	3			CHECKED BY:		
6									

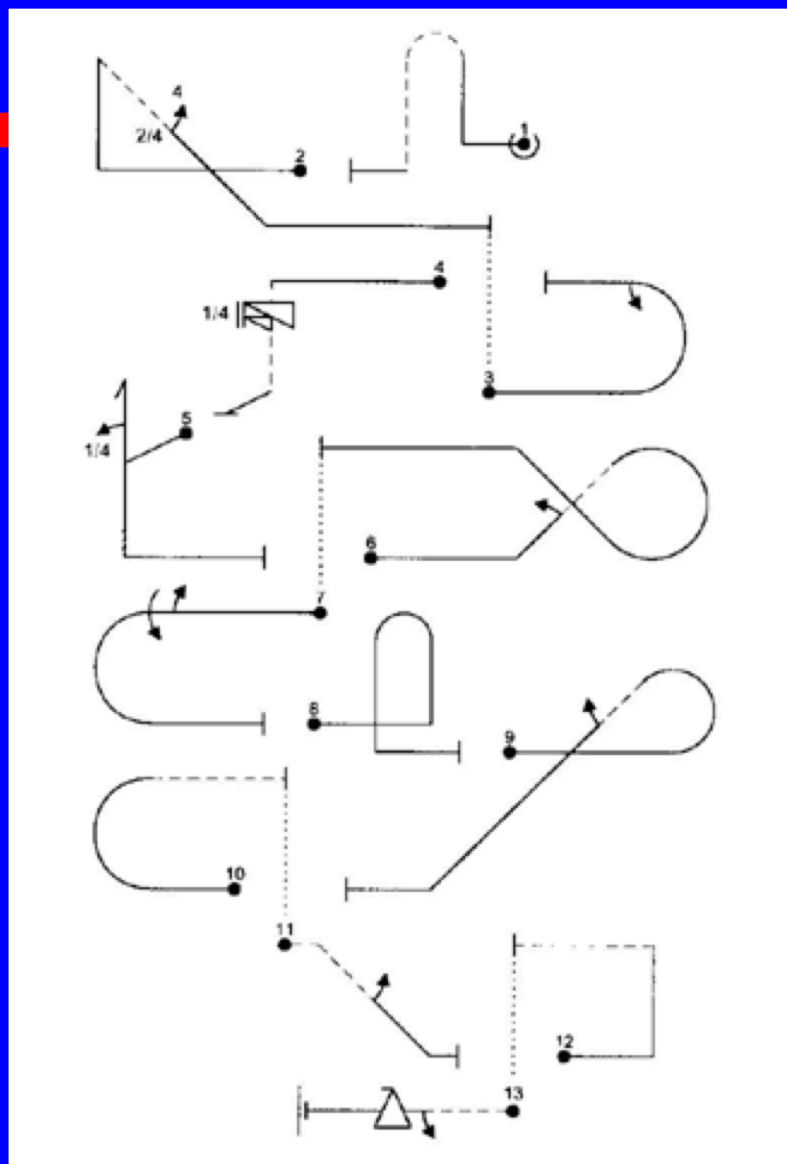




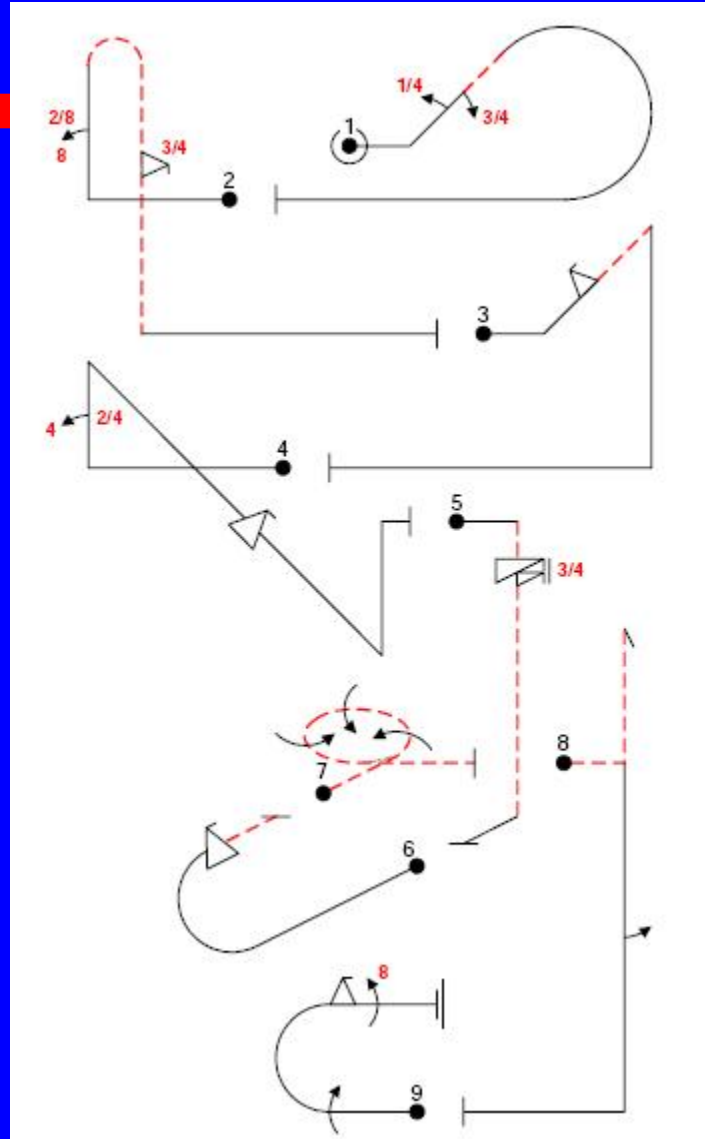
Sportsman Sequence



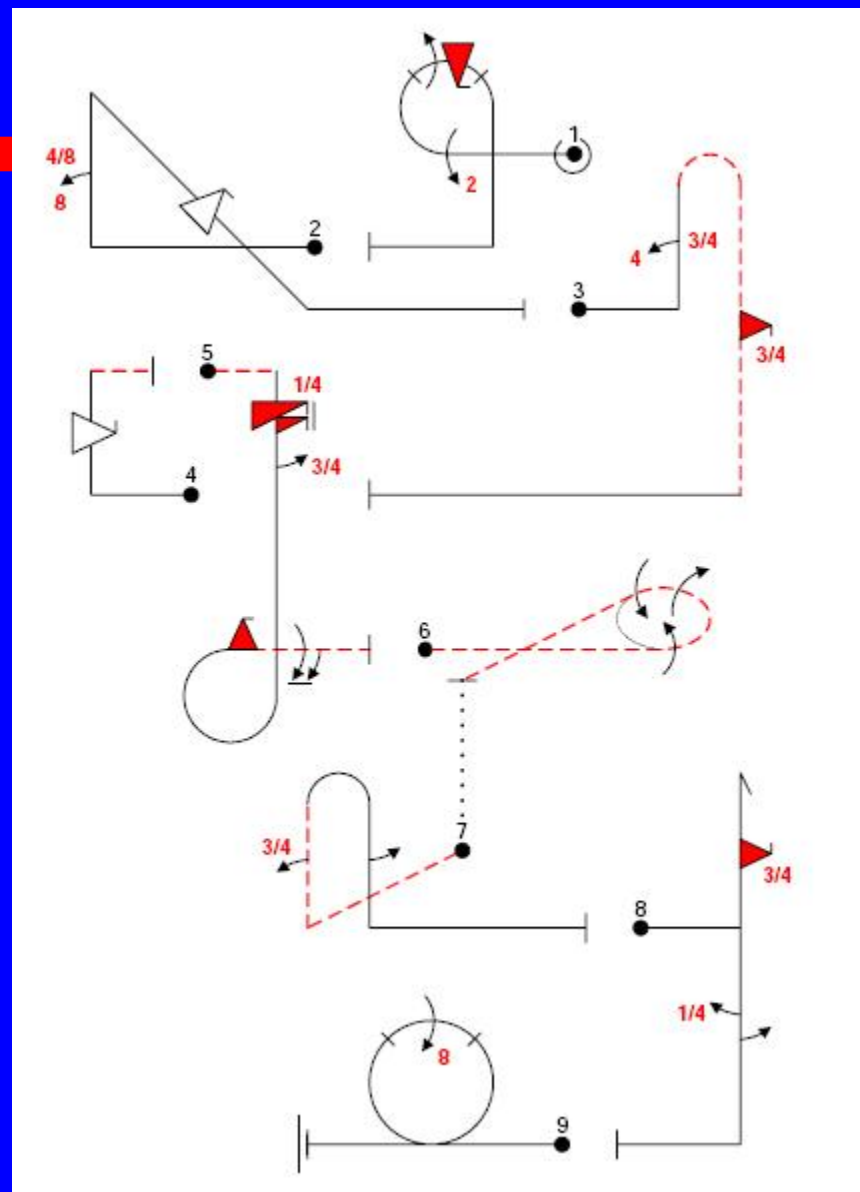
Intermediate Sequence



Advanced Sequence



Unlimited Sequence

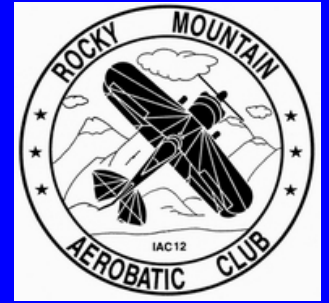




-
- Flying the Intermediate Known (video)



Next Steps & Q&A?



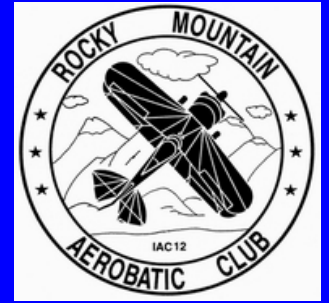
- Introductory aerobatic rides
 - Longmont Vance Brand airport
 - Extra 300L: Tom Edwards, DJ Molny
 - Pitts S-2B: John Blum
 - Super Decathlon: Roz Jones
 - Date is TBD
- Flight Schools & Instructors:
 - John Blum: New Attitude Aerobatics, Jeffco: Decathlon & S2B Pitts
 - FlyAerobatics.com
 - Dick Bevington: Air West Aviation, Longmont: Decathlon and Citabria



Resources



- People: Any RMAC officer or director
- On the Web:
 - IAC: <http://www.iac.org>
 - RMAC: <http://www.iac12.org>
 - Email list: http://acro.aerobatics.ws/iac_exploder.html
 - “How to Shop for Quality Aerobatic Training”:
<http://www.richstowell.com/howto.htm>
- Books:
 - “Basic Aerobatics” by Szurovy & Gouliau (ISBN 0070629269)
 - “Better Aerobatics” by Alan Cassidy (ISBN 0954481402)



THANK YOU!