

Dogfight!

Rules for WW1 aerial combat with miniatures

CONTENTS

The rules are arranged in Turn-Sequence order.
The advanced rules may be used in place of
and/or in addition to the basic rules.

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1. TARGETING / CV ADJUSTMENT

TARGETING: *Targeting represents the pilot devoting his attention to the actions of a particular aircraft for that turn and allows for the gaining (and/or accumulation) of CV bonuses via position and maneuvering that could be used to attack and/or affect movement order --this latter effect (on movement order) can be applied to friendly aircraft if a player desires to react to the movement of an ally by targeting them.*

Players may declare a target aircraft --this is optional: there is no requirement to declare a target. Only one target may be chosen / held by each aircraft on a given turn.

Choosing a target at the beginning of each turn is a very important step in order to have an effect in combat because gaining CV bonuses (and/or firing) may ONLY be done on an aircraft that has been logged as that turn's target --ie: a specific enemy must be chosen so as to have any position / maneuver advantages applied or to attack in any given turn.

CV ADJUSTMENT: *Players that have chosen a target will track* CV bonuses / penalties during the course of the coming turn: these additions / subtractions will result from carryover, position, and movement. The bonuses for carryover and position are handled in this step.*

An aircraft's CV is target specific --if/when an aircraft declares a new target, its CV is reset to zero. EXCEPTION: When a new target is chosen that has an existing CV bonus on the aircraft then the aircraft's new CV is the negative of the target's CV --this is to reflect the player beginning the turn at a handicap relative to the new target that already has an accumulated CV advantage.

* This may be done in a separate log, though it is best done in a manner open to public view (such as on or with the stand itself) to avoid the drag on play that would result from players having to inquire of one another what their current CV's are.

CV ADJUSTMENT - CARRYOVER: *If the same target is kept, an aircraft may retain some or all of its existing CV.*

The existing CV (if any) is reduced by:

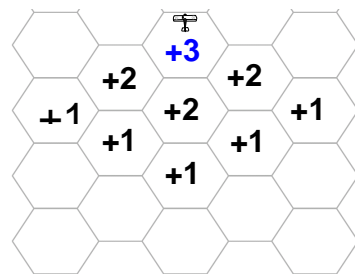
- SPEED: -1 / pt of difference greater than 1 (if aircraft in middle or sharing edge of same hex).
- RANGE*: Divide CV by two if the range is one hex, divide CV by three if the range is two hexes, and reduce CV to zero if the range is greater than two hexes.
- FACING: No carryover allowed if the target is behind player's aircraft.

*Add one to range for every two levels of altitude difference between aircraft.

CV ADJUSTMENT - POSITION: *If the targeting aircraft is behind its target* (denoted by the aircraft in the diagram) the appropriate bonus is noted. The numbered hexes indicate the bonus gained by the targeting aircraft if it occupies that hex.*

Exception: If in same hex as target (blue +3) the bonus is only logged if targeting aircraft is in middle of the hex.

* NOTE: Aircraft positioned in the middle of a hex have no facing, and therefore no "behind". No position bonus may be gained if targeting such an aircraft.



2. INITIATIVE

Movement order is sequential, and is determined for each turn by dice roll and targeting status / relationships.

Each player / aircraft rolls 1d10 (0-9). This number is then modified by pilot experience and aircraft speed (1 = **-2**, 2 = **-1**, 3 - 4 = **0**, 5 - 6 = **+1**, 7 - 8 = **+2**, 9+ = **+3**). Ties go (in order) to the higher experience, higher altitude, and higher speed. If still tied, resolve by a simple d6 roll-off.

First to move (in low to high order) are spinning aircraft. Then, aircraft that are targeting move in initiative order (followed immediately by any aircraft that are targeting them). Lastly, aircraft that have no declared target move in order of initiative.

CV ADJUSTMENT TO INITIATIVE (TAILING): If an aircraft's target has declared a target of its own, the targeting aircraft's entire CV may be added to its initiative roll; if the aircraft's target has no target of its own, then only half of the targeting aircraft's CV (rounded up) may be added to its initiative roll. If the adjusted initiative is greater than that of the target's, then the aircraft moves immediately after the target as dictated above.

NOTE: No CV bonus of the target on another is used in the comparison. The tailing aircraft need only exceed the normal, posted initiative (d10 roll modified by experience and speed) of its target.

To avoid confusion, players should not declare tailing increases until it is their turn to move, when they would then move their initiative indicator to show that of their target.

This rule may create "chains" of tailing in which each aircraft is set to follow its target. Should a circle occur (in which each aircraft follows another in a continuous loop) a simple d6 roll-off should be used to determine which aircraft will go first: then each of the others will follow in tailing order.

The tailing rule has no effect on the initiative of aircraft whose original rolls (plus experience and speed modification) exceed that of their targets: they are moved immediately after their target as dicated at the top of the page.

3. MOVEMENT

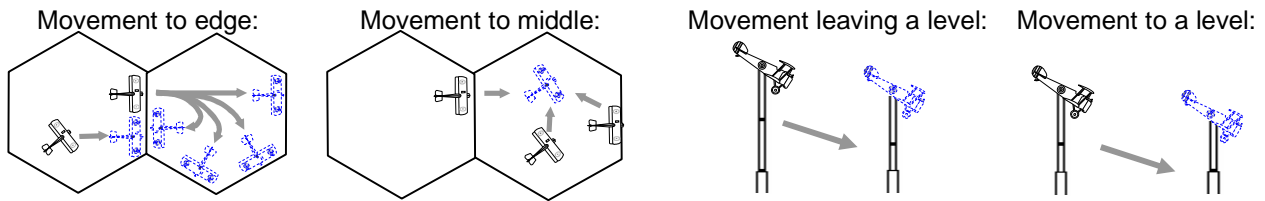
HORIZONTAL MOVEMENT - HEXES: Models moving through hexes are placed at the edge of a hex facing out, and models moving into (or staying in) a hex are placed in the middle of a hex.

VERTICAL MOVEMENT - LEVELS: Models will be either at an altitude level or leaving it, and be shown either level or climbing / diving (in one of three steps: shallow, normal, or steep).

IMPORTANT NOTE: The model position on the table is abstract and does not indicate the exact position of an aircraft. Placement in a hex (either edge or middle) indicates only that the aircraft is within effective combat range of other aircraft in the hex --and conversely: outside effective combat range of all aircraft not in that hex. A model placed at the edge of a hex represents the aircraft moving through the space in a particular direction --it could be anywhere within the space. A model in the middle of a hex represents an aircraft maneuvering within the space and having no particular location or facing (horizontal or vertical) at any given moment. The position of the model within an altitude level is similar to that described for position within a hex: No specific location of the aircraft is implied --only that it is within that engagement area.

MOVEMENT (cont'd)

DIAGRAMS OF MODEL POSITION / MOVEMENT:



Each of the moves shown above (horizontal and vertical) costs one Movement Point (MP). A point of horizontal movement will allow an aircraft to move one hex (*edge to edge*) or move from / to the middle of a hex (*edge to in the middle, in the middle to in the middle, or in the middle to edge*). A point of vertical movement will allow an aircraft to move one-half level (*leaving to in a level, or in a level to leaving*).

FACING WHEN LEAVING THE MIDDLE OF A HEX: Since aircraft in the middle of a hex have no facing, players may pick any edge of the hex as the exit side and/or any vertical facing without passing a Maneuver Test. If only one Movement Point is available / used, the aircraft is considered to be at the maneuver-level one less than its current (from the previous turn).

COMBAT VALUE (CV) RECORDING: During movement a targeting aircraft will add bonuses gained to its CV, and aircraft who are targeting it will subtract the bonus from their CV. If current aircraft has a different target of its own, then one-quarter of any bonus gained by it (rounded up) is subtracted. If current aircraft has no target, then one-half of any bonus gained by it (rounded up) is subtracted.

The maximum CV amount that can be held at the end of the movement phase is "10".

MOVEMENT POINTS (MP): Speed points are separate from Movement Points. An aircraft's move is done based on its starting speed, though may be modified by maneuvering (see "AEROBATICS") and/or tailing a target aircraft (see "CV TAILING BONUS"). Changes in speed that result from maneuvering and/or power / drag rolls are tracked and applied at the end of the turn.

An aircraft's speed is separate from (though it affects) Movement Points --ie: a model with a current speed of "6" will not move six hexes: Instead, the player will roll (1d6) each turn to determine how many MP will be available to the aircraft (see "VARIABLE MOVEMENT POINTS"). The number of MP available will range from zero to four, with one or two being the most common.

For each Movement Point available / used, an aircraft will move one hex (and/or vertically ½-level) straight ahead or the player may attempt to change its facing (either horizontal and/or vertical) to move to an edge / level other than the one straight ahead or attempt to move to or remain in the middle of a hex (see "FACING CHANGES / STAY-IN-HEX").

If positioned to leave a hex (or level) an aircraft must use its first MP to move into the adjacent hex / level (either the middle or edge / within). This means that an aircraft positioned to leave (either hex and/or level) may not turn back to the hex / level it currently occupies in a single MP.

If moving to or staying in the middle of a hex an aircraft may ignore excess MP available that turn.

MOVEMENT (cont'd)

VARIABLE MOVEMENT POINTS: At the beginning of an aircraft's turn to move, a die (d6) is rolled and the result added to the current speed to determine the Movement Points to be used that turn:

Sum < 4 = 0MP, 4 - 9 = 1MP, 10 - 15 = 2MP, 16 - 21 = 3MP, 22+ = 4MP.

This rule is intended to reflect / represent the fluid nature of air combat wherein positioning one's aircraft relative to other *simultaneously moving* aircraft contains an element of variability.

CV TAILING BONUS: *If the aircraft has an existing spot and CV bonus on another, the movement point die roll may be modified to account for the current relative positioning and targeting status.*

If an aircraft's target began the turn at the same (or lesser) speed and has already moved, the aircraft may add half of its CV advantage to the movement-point die roll. This modification may not be done if the target aircraft moves after the player's aircraft in the turn*.

* The tailing bonus given for initiative is meant to reflect the advantage held by a pursuing aircraft, and if the target moves second (due to a higher initiative score) then it is to be interpreted as having given the pursuer the slip (for that turn at least).

CLIMBING / DIVING: Aircraft that are climbing or diving will move both horizontally and vertically. The number of Movement Points used for each type of movement is determined by the same die roll but may differ from each other in the same turn.

Climbs and dives can be shallow, normal, or steep --this is displayed on the model by a vertical facing of 1, 2, or 3 (30-, 60-, or 90-degrees). The vertical MPs of aircraft in normal climbs / dives are determined by the MP die roll. To find the vertical MP used by aircraft in shallow climb / dives subtract three from the MP die roll, and for steep climbs / dives add three to the MP die roll.

To determine the horizontal Movement Points used by an aircraft in a normal climb / dive subtract one from the MP die roll, and if the climb / dive is steep subtract two from the MP die roll.

Since vertical facing affects horizontal movement, vertical facing changes need to be declared / tested-for concurrently with horizontal facing changes --aircraft which succeed in their vertical facing changes move using the MP called for by the new vertical facing.

SPEED INCREASE (Power and Diving): To gain speed via power, players roll 1d6 (modified by power rating and MT status) - a roll > 2 gains one point of speed, and a roll > 6 gains two points. An aircraft trying to reach its maximum level speed subtracts one from the roll. Aircraft in a shallow dive gain one point of speed, those in a normal dive gain two, and those in a steep dive gain three. If an aircraft is below its maximum level speed it may use both diving and power to increase speed. No aircraft may use power to gain speed beyond its maximum level speed.

SPEED DECREASE (Drag, Climbing, and Aerobatics): To lose speed via drag, players roll 1d6 (modified by drag rating) - a roll > 2 loses one point, and a roll > 6 loses two points. Aircraft attempting to lose speed by using drag while in a shallow dive subtract one from the roll, those in a normal dive subtract two, and those in a steep dive subtract three. Aircraft in a shallow climb lose one point of speed, those in a normal climb lose two, and those in a steep climb lose three. Aircraft that spend Aerobatic Points during a Maneuver Test decrease their speed by one.

MOVEMENT (cont'd)

FACING CHANGES / STAY-IN-HEX: To change facing (horizontal and/or vertical) or to stay-in-hex cross-reference speed and desired maneuver on the table below to find the Maneuver Test level. *Example: Use the "facing 2" line if turning two hexsides or changing two steps of vertical facing.* (Aircraft in a climb or dive use the modified horizontal speed from "CLIMBING / DIVING" above.)

speed	1	2	3	4	5	6	7	8	9	10	11	12
facing 1	auto	0	0	0	0	0	0	1	1	1	1	2
facing 2	0	0	0	0	1	1 (1)	1 (1)	2 (1)	2 (1)	2 (1)	2 (1)	2 (1)
facing 3	0	0	1 (1)	1 (1)	2 (2)	2 (2)	2 (2)	2 (2)	3 (3)	3 (3)	3 (3)	X
stay in hex	0 (1)	0 (1)	0	1 (1)	1 (1)	1 (1)	1 (1)	2 (2)	2 (2)	2 (2)	3 (3)	3 (3)

The number in parenthesis --if any-- is the CV bonus gained by a successful test. The bonus for a successful stay-in-hex test is only gained if the range to the target is less than two.

MANEUVER TEST: Roll (2d6) greater than or equal to the target number to move as desired.

level 0: roll **2+**. **level 1:** roll **4+**, pwr -1. **level 2:** roll **6+**, spd -1, min.spd +1. **level 3:** roll **9+**, spd -2, min.spd +4

The model is marked or banked to indicate the test level (0, 1, 2, or 3) and the appropriate speed penalties / effects are applied. This is done regardless of the result of the test --the aircraft is considered to be at the tested level even if the test was failed. Aircraft that pass a 1, 2, or 3-level test by three or more on the roll are allowed a +1 bonus to that turn's power roll (if any).

Two-task movement (eg: horizontal turn plus a vertical attitude change in the same hex) is resolved with a single roll, and is tested at the higher of the two target numbers plus the MT-level of the other maneuver. Diving or climbing aircraft that wish to remain in the level as well as the hex must test to level out while testing to stay-in-hex in this manner.

MANEUVER TESTS - STAYING IN HEX: Player may choose a higher MT level but must pay all costs associated with and be indicated as being in the higher level. The increased CV bonuses for higher test levels are shown below:

speed	1	2	3	4	5	6	7	8	9	10
MT-level +1	3	2	2	4	3	2	2	6	5	4
MT-level +2	11	7	5	12	11	8	7	X	X	X

Aircraft do NOT gain the increased bonus unless testing at that level. However, failing a higher-level test DOES gain the CV bonus indicated by the number rolled if a lesser level is passed (though a roll on the MT FAILURE TABLE would still be required). Also: If the roll matches / exceeds the target number required to stay-in-hex, failure does not require leaving the hex.

MOVEMENT (cont'd)

AEROBATICS: *Aerobatics represent effort by the pilot to alter the flight of the aircraft in any way other than "normal" movement (coordinated turns, climbing, etc...).*

Players may spend Aerobatic Points to increase the CV bonus gained from an MT and/or to modify the movement-point die roll.

The maximum number of Aerobatic Points allowed for any single test equals the sum of the MT-level of the test plus the pilot's flying skill and aircraft aerobatic rating.

Example: A facing change with an MT-level of one allows the use of one Aerobatic Point. If the pilot had a +1 flying skill (or the aircraft a +1 aerobatic rating) then two Aerobatic Points could be used.

NOTE: Aerobatics may be used to gain a CV bonus even if no facing MT is desired.

Example: An aircraft flying straight may take a level-one MT to gain one CV point.

MT TARGET NUMBER: If Aerobatic Points are spent the target number of the MT is increased by one. Aerobatics do not affect the level of a Maneuver Test --the level is determined by the normal movement (facing or stay-in-hex) attempted.

CV BONUS: Aircraft gain one CV point for each Aerobatic Point spent during a successful MT. Aircraft gain one plus pilot's flying skill CV points for each Aerobatic Point spent during a successful MT to stay-in-hex if the target is in the same hex.

SPEED COST: If Aerobatic Points are spent the aircraft loses one point of speed.

MOVEMENT POINTS: Aerobatics affect the Movement Points available for that turn. If Aerobatic Points are spent (in conjunction with the appropriate MT-level test) reduce the movement-point die roll by one. If zero MP are available an aircraft may still make an MT to gain a CV bonus.

MOVEMENT (cont'd)

MANEUVER TESTS - FAILURE: An aircraft that fails a Maneuver Test must roll 2d6 (minus the amount the MT was missed by) and apply the effects from the table below:

roll	- 5	- 4	- 3	- 2	- 1	0	1	2	3	4+
CV	-6	-5	-4	-4	-3	-2	-2	-1	-1	0
move	-3	-3	-3	-3	-3	-2	-2	-2	-1	-1
speed	-2	-2	-1	-1	-1	-1	-1	0	0	0
stress	-2	-1	-1	0	0	0	none	none	none	none

CV: reduction in CV

move: reduction in the number of facing changes attempted

speed: addition to any speed loss incurred from the test

stress: modifier applied to a mandatory stress test (or to an existing test if required)

If a test involved multiple tasks (horizontal / vertical facing, stay-in-hex, and/or aerobatics), the application of the result in the "move" column is determined by a die roll. The player chooses a preference and modifies the roll with flying skill.

Roll 1d6: < 1 = third choice (if applicable), 1 - 2 = second choice, 3+ = player choice

Any CV bonus gained by the successful portion of the move (if any) is retained.

If the "move" penalty is greater than the number of facing / stay-in-hex / aerobatic changes attempted, lower the aircraft's pitch by one step.

Failing an MT does not end an aircraft's movement: if it has MP remaining it may continue its turn.

STRESS: Any player attempting a level three MT or ending the turn moving faster than their maximum dive speed must roll for stress damage. Roll 2d6:

< 0 = destroyed, 0-1= fill current & next set of boxes, 2- 3 = fill current set of boxes, 4+ = none

modifiers: aircraft strength = variable, current damage = -1 / filled set, speed = -1 / pt > max dive

STALL / SPIN: If an aircraft ends its move at or below its minimum speed, player must immediately roll 1d6 (modified by stall rating and flying skill):

If at min.speed: 1 = spin, 2 - 3 = stall, 4+ = no effect. If below min.speed: 1 - 3 = spin, 4 - 6 = stall.

If spin or stall: Spinning aircraft dive (normal) at speed 0 in middle of current hex @ MT-level 1, and stalling aircraft reduce pitch one step and move straight ahead on current facing --these moves are done in place of the move tested for. Both spinning and stalling aircraft lose their current target.

Aircraft may enter a spin voluntarily by succeeding in an MT --the level of which equals that required to pay one aerobatic point. NOTE: Aircraft aerobatic rating is not used to modify the required MT level, but pilot flying skill is.

Recovery from a spin is made by succeeding in an MT as with voluntary entry, but with a -1 penalty to the roll in addition to any modification by aircraft MT bonus or pilot flying skill.

4. COMBAT

FIRING: Firing is only possible on an aircraft that has been logged as that turn's target and upon which a CV advantage of at least one is held by the firing aircraft.

The number of hits scored equals 2d6 -10 plus the current CV modified by the factors listed below, and then adjusted for burst size. If firing two guns, roll separately for each gun.

- Modifiers to roll ...fixed factors: aircraft firing bonus, pilot shooting skill
- ...variable factors: range* ½-hex = -5, 1 hex = -10, >1 hex = no fire possible
- speed of firing aircraft = -1 /pt ≥ max level

* Range is ½-hex if target is in the middle of a hex and the firer is on the facing edge of an adjacent hex, and the range is 1 hex if the target is on the edge of a hex (any facing) and the firer is in the middle or on the facing edge of an adjacent hex. For altitude-level differences: Range increased by 0 for fire from leaving the altitude level above, by ½-hex for fire from the level above and leaving the level beneath, and by 1 hex for fire from the level beneath.

- Adjust result by burst size** : 1 = halve result (round down)
- 3 = add half of result (round down)

**burst size based on... speed difference: 0 - 2 = 1 - 3, 3 - 4 = 1 or 2, 5 - 6 = 1, > 6 = no shot
as well as... sum of MT levels of firer and target***: 0 - 1 = 1 - 3, 2 = 1 - 2, 3+ = 1

*** reduce target level by 1 (if greater than 0): therefore 0 = 0, 1 = 0, 2 = 1, and 3 = 2

- The burst size used is the lesser of the two allowed by either speed difference or MT-level sum.

The adjustment for burst size is to reflect / account-for the effect on time-on-target by closing speed and the amount of maneuvering required to line up the target, as well as (in the case of the firer's MT-level) the greater difficulty involved in shooting while doing violent maneuvers.

EXAMPLES OF FIRING:

An aircraft with a CV of 5 rolls a 9: the roll minus 10 plus the CV yields a result of four hits. This would be the score for a size-2 burst.

If the speed difference was two or less and the MT-level-sum was zero or one, a size-3 burst would be possible and six hits (four x 1-½) would be scored.

If the pilot in the above examples had a +1 shooting skill, then the same roll and conditions would have yielded five (size-2 burst) or seven (size-3 burst) hits.

If both the firing and target aircraft in the above examples had been at MT-levels of two, then only a size-1 burst would be possible and two hits (half of four or five) would be scored. The same score would result if the speed difference between the two aircraft had been 5 or 6.

COMBAT (cont'd)

DAMAGE: Aircraft have sets of damage boxes that are marked off as hits are taken by making a diagonal slash mark in a box to indicate a hit (one hit = one box). One set must be filled in before a new set receives any marks. Once all boxes have one mark, return to the first set and begin marking in a second, crossing diagonal slash (creating an "X").

For each set filled in with one slash mark the aircraft suffers a -1 penalty to all stress tests.

For each set filled with two marks the aircraft suffers a -2 penalty to all stress tests, and has its maximum dive speed reduced by one.

CRITICAL HITS: For every four hits* (rounded down) scored on a roll of natural doubles, the target rolls 2d6 and applies the following effects (in addition to hits already scored by attack) :

2 = engine destroyed (roll for drag each turn)	7, 8 = structural damage (fill current set)
3 = control damage (-2 to MTs)	9 = structural damage (fill current & next set)
4 = engine hit (-2 to power rolls)	10 = pilot wounded (-1 to all skills)
5 = engine hit (-1 to power rolls)	11 = pilot wounded (-3 to all skills)
6 = control damage (-1 to MTs)	12 = pilot killed

*Adjust for shooting skill: -1 = five hits, +1 = three hits, +2 = two hits. Also: +1 pilots may subtract one pip from a die to obtain doubles, +2 pilots may add OR subtract one pip from a die. NOTE: the addition/subtraction is of a *pip* from a single die --not one from the roll result.

EXAMPLES OF CRITICAL HITS:

*A roll of "4, 5" for the 9 rolled** in the examples described on the previous page would have scored one critical hit for the +1 pilot firing a size-2 burst (reduced roll of $8 - 10 + 6 = 4$ hits) and two critical hits for the same pilot firing a size-3 burst (size-2 burst results $\times 1\frac{1}{2} = 6$ hits). If firing a size-1 burst, the +1 pilot would need to roll a natural doubles of 10 or 12 (or an 11, reduced one pip to a 10) to score one critical hit ($10 - 10 + 6 = 6$, $\times \frac{1}{2} = 3$ hits; or $12 - 10 + 6 = 8$, $\times \frac{1}{2} = 4$ hits).*

*** Had the roll been "3, 6" then no critical hits would be scored because the maximum pip modification allowed would reduce the "6" to a "5" and no doubles would result.*

A pilot with a neutral (0) shooting skill in the same conditions would need to roll natural doubles of 10 or 12 to score a critical hit with a size-2 burst ($10 - 10 + 5 = 5$ hits, or $12 - 10 + 5 = 7$ hits). If the same pilot fired a size-3 burst, then natural doubles of 8 or 10 would score one critical hit ($8 - 10 + 5 = 3$, $\times 1\frac{1}{2} = 4$ hits; or $10 - 10 + 5 = 5$, $\times 1\frac{1}{2} = 7$ hits), and natural doubles of 12 would score two critical hits ($12 - 10 + 5 = 7$, $\times 1\frac{1}{2} = 10$ hits). The same pilot could not score a critical hit when firing a size-1 burst in the examples' conditions ($12 - 10 + 5 = 7$, $\times \frac{1}{2} = 3$ hits).

ADVANCED RULES

Players wishing to include more detail / complexity may choose to use some of the following.

ACQUISITION: If a new target is chosen, an acquisition roll (1d6) is made to determine the quality of the sighting. A roll less than zero means no target (or bonuses) may be logged for that turn.

Modifiers to roll: pilot experience, aircraft spotting rating, MT level = - level #, facing sun = -3, target behind = -2, range = -1 /hex >2 (add one to the range for every two levels of altitude)

This should not be seen simply as spotting, but as how well / soon the target is seen to allow the player to maneuver to gain a firing position in the coming turn.

Aircraft that have failed an acquisition attempt are considered to be targeting as far as the effect on defensive maneuvering, and should be labeled/indicated as such.

TARGET DISCLOSURE - FORMATIONS: A player who targets an aircraft that is in formation displays the ID of the formation leader instead of the target aircraft (if within two hexes range). The player still needs to record the actual target in a log, but need not disclose the identity of the specific aircraft in the formation that is being targeted unless/until it is fired upon.

RANDOM TARGETING EFFECT: Players that do not choose a target in a turn may log as a CV bonus half of their initiative advantage over another aircraft. Normal CV adjustments are made for the movement of both aircraft, but no firing is allowed on that turn. If a successful acquisition roll is made on the following run, the player may then claim a CV carryover.

This attempts to reflect the random relative positioning of aircraft, and the fact that all will not be on an even scale regarding possible target status.

TARGETING FRIENDLY AIRCRAFT: *Targeting a friendly aircraft allows a pilot to follow a leader in formation and/or receive simple signals.*

FORMATION FLYING: A friendly aircraft (in the same hex and altitude) may be logged as that turn's target. The targeting aircraft is moved at the same time (and in the same manner) as its leader rather than when dictated by its own initiative roll. The movement-point die roll made by the leader applies to all aircraft in the formation IF they are at the same speed: Any aircraft in the formation with different speeds must roll their own movement-point dice. Also, any MTs or other performance checks (such as power / drag rolls) must be made by each individual aircraft. Also, if the leader uses any Aerobatic Points during his move, all pilots following must apply a penalty of twice the number of those points used to their MTs when rolling to succeed / maintain formation.

SIGNALING: A pre-arranged message / instruction may be passed between the two players. The signaling player must have logged the message to be given at the beginning of the turn (under "notes") and may not perform any Maneuver Test above level 1 or any aerobatics that turn. The targeting player --if a successful acquisition is made-- asks if the target aircraft is signaling, and receives the message.

ADVANCED RULES (cont'd)

CV CARRYOVER - FACING: The spot on a target may be lost if it is behind the player's aircraft: Player must roll >3 (on 1d6, modified by pilot experience) or else the aircraft must be reacquired with a new spotting attempt at the beginning of the next turn.

CLOSE ENCOUNTERS / COLLISION: *Any two (or more) aircraft that begin a turn in the same hex and altitude and have matching initiative numbers have a chance of a collision.*

Each pair of players* rolls 1d6: the sum of the two rolls is used to determine the number of MT-levels that must be made by the two aircraft that turn to avoid a collision.

-- modifiers to die roll: experience, MT-level = - #, speed = -1/ point > 6, targeting = -2**

-- sum of d6 rolls: -4 = 6 MT levels, -3 = 5 MT levels, -2 = 4 MT levels, -1 = 3 MT levels,
0 = 2 MT levels, 1 = 1 MT level

* Three-way ties (or more) would result in multiple rolls: one set for each pair. The same MT taken by the common player would be applied to both collision threats.

** NOTE: If at least one of the pair is targeting the other there is no chance of an encounter.

If the sum of the above rolls is greater than one, no collision threat exists and the players may take their normal turns. Otherwise, they make MTs (during their turn in the movement order) to avoid a collision --the sum of their levels to match (or exceed) the result of the dice roll above. Both players test secretly / simultaneously --no collusion / planning is allowed in deciding test levels taken (except as noted below*). Failed tests gain the MT-level of the test dice roll. Any declared targets by either of the players are lost, but both aircraft are treated as targeting (for CV bonus purposes) by other players who are targeting either of the pair involved in the close encounter.

* The more experienced pilot/faster aircraft (if any) may choose which player goes first --if the required MT-level sum is reached by the first player, the second may take his normal turn.

If the required MT-level sum is not attained, a collision occurs. Both players roll for damage as if being fired upon, using as the CV bonus the amount of MT-levels remaining plus 1/3 the combined speeds (rounded down). Hits are marked off --and critical hits taken, if any-- as with normal combat.

Players have the option of retaining their normal turn (not maneuvering to avoid a possible collision), and just taking their chances with damage rolls --though if any damage results, the player(s) must subtract twice the number of hits taken from any MTs attempted that turn.

CLOSE ENCOUNTERS - RAMMING: A player within the same hex as his target may apply his initiative tailing bonus to force a close encounter. If the amount of the bonus is enough to match (or exceed) the initiative of the target a ramming attempt may be declared. Both players roll as described above for a close encounter, with the exception that the ramming player must add one for every point of speed below 4 of his aircraft, and instead of applying pilot experience adds instead the negative of his flying skill to his roll.

ADVANCED RULES (cont'd)

VARIABLE MOVEMENT POINTS: Players are required to declare (and later attempt) the desired move of the first Movement Point for that turn before rolling the movement-point die.

This is done to eliminate the "see-the-future" advantage given to players that would allow them to avoid beginning a course of action (such as a climb out of harm's way or move into the first hex of a planned two-hex move) that they know they could not complete that turn because of a lack of MP.

MOVEMENT TABLES: Substitute the following tables for those used in the Basic Game.

The use of these tables creates a finer gradation in movement difficulty between speeds and facing changes, as well as allows for a finer degree of choice for players when deciding on a difficulty level to be taken when maneuvering within a hex.

speed	1	2	3	4	5	6	7	8	9	10	11	12
MT -facing 1	auto	0	1	2	2	3	3	4	4	5	5	6
MT -facing 2	1	2	2	3	4	5(1)	5(1)	6(1)	6(1)	7(1)	7(1)	8(1)
MT -facing 3	2	3	4(1)	5(1)	6(2)	7(2)	7(2)	8(2)	9(3)	10(3)	12(3)	X
MT -stay in hex	1	2	3	4	4	5	5	6	7	8	9	10

Cross-referencing the number of facing changes desired (1, 2, or 3) or to stay-in-hex with the current speed shows the target number required to succeed in a Maneuver Test (rather than the MT-level shown in the Basic Game table), as well as any Combat Value bonus gained (shown, if applicable, by the number in parenthesis -use the table below to find CV bonus for stay-in-hex MT's).

MT level	target number	speed loss*	min. speed	1	2	3	4	5	6	7	8	9	10	11	12
0	2	0	=	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	=	1	1	0	0	0	0	0	0	0	0	0	0
1	4	0 (-1)	=	2	1	1	1	0	0	0	0	0	0	0	0
1	5	0 (-2)	+1	4	2	2	1	1	1	1	1	0	0	0	0
2	6	1	+1	8	5	4	3	2	2	1	1	1	1	1	1
2	7	1 (-1)	+2	15	9	7	5	4	3	2	2	2	1	1	1
2	8	2	+4	X	X	11	8	6	5	4	3	3	2	2	2
3	9	2 (-1)	+4	X	X	16	12	9	7	6	5	4	4	3	3
3	10	3	+5	X	X	X	X	13	10	8	7	6	5	4	4
3	11	3 (-1)	+5	X	X	X	X	18	14	11	9	8	7	6	5
3	12	4	+6	X	X	X	X	X	X	14	11	10	8	7	6

*number in parenthesis is a penalty to that turn's power roll

ADVANCED RULES (cont'd)

CLIMBING / DIVING: *A finer range of possible climb / dive angles can be used. The basic steps displayed are still the three categories (shallow, normal, or steep), but rather than only the single value for vertical MP each category has three sub-steps within it that players may choose from.*

The range of vertical movement points for aircraft in shallow climbs / dives is that determined by subtracting three, four, or five from the movement-point die roll; for aircraft in normal climbs / dives by subtracting zero, one, or two from the die roll; and for aircraft in steep climbs / dives by adding one, two, or three to the die roll.

The advantage in using this rule is the obtaining of better odds for speed control (detailed below).

SPEED INCREASE / DECREASE: If using the optional, finer-graded vertical movement as detailed above the loss or gain of speed from climbing / diving is variable.

- Dives at the minimum step gain one less point of speed on a roll < 5 (d6) and dives at the middle step gain one less on a roll < 3 (d6).
- Climbs at the minimum step lose one less point on a roll < 5 (d6) and climbs at the middle step lose one less point on a roll < 3 (d6).

FACING WHEN LEAVING THE MIDDLE OF A HEX: When leaving the middle of a hex, players choose their intended departure hexside and/or vertical facing and roll to determine the exit side (vertical facing is as chosen*). This procedure is also used for aircraft that fail an MT attempting to stay-in-hex to determine which edge it is placed on.

Roll 1d6 : < 1 = 3, 1-2 = 2, 3-4 = 1, 5-6 = 0

modifiers: flying skill = variable; MT level: 0 = +4, 1 = +3, 2 = +1; CV tailing bonus = variable

(result equals number of hexsides difference from intended direction)

* when leaving the middle of a hex, players may still choose their vertical facing.

STRESS: *If using the advanced Movement Tables, the target number (rather than MT-level) dictates when a Stress Test is required.*

Any aircraft attempting an MT with a target number of 8 or greater must test (this does not include aerobatic points). Additional modifier: target number 8 = +1, 10 -11 = -1, 12 = -2

ENGINE CRITICAL HITS: Roll 1d6: 1-3 = Aircraft smokes -all pilot skills are reduced by one and player rolls 1d6 (now and each following turn). Result of 1 on this later roll means the aircraft is on fire -all pilot skills are reduced by three and player rolls 1d6 each turn = damage taken. Fire damage is indicated by filling in boxes (with solid blocks) -once all boxes are filled the aircraft is destroyed.

JAMMING / CLEARING: Roll 2d6 for each gun when firing -result of 2 or less = jammed.

Modifiers: size-3 burst = -1, consecutive firing = -1 / turn

Clearing attempts may be made on subsequent turns (straight and level flight only -no MT's).

Roll 2d6: result of 11+ = cleared (natural 2, 3 = permanent jam that may not be repaired).

Modifiers: pilot experience, consecutive roll= +1 /turn, under fire= -1 /burst point, wing-gun = -2.

GRAND TACTICAL MOVEMENT

When opposing forces are far apart (-generally more than eight or ten hexes), players may choose/agree to use the following movement tables. These numbers are based on a 15-second turn.

HORIZONTAL MOVEMENT:

speed : 1 2 3 4 5 6 7 8 9 10 11 12 * normal movement points.

move* : 1(5) 1(3) 2 2(5) 2(3) 3 3(5) 3(3) 4 4(5) 4(3) 5

CLIMBING:

SPEED

	1	2	3	4	5	6	7	8	9	10	11	12
1	X	1 / 3	1 / 2	1 / 1	0/(-3)	0/(-2)	0/(-1)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
2	X	X	1 / 4	1 / 3	1 / 2	1 / 1	0/(-3)	0/(-2)	0/(-1)	0 / 0	0 / 0	0 / 0
3	X	X	X	1 / 5	1 / 4	1 / 3	1 / 2	1 / 1	0/(-3)	0/(-2)	0/(-1)	0 / 0
4	X	X	X	X	2 / 6	1 / 5	1 / 4	1 / 3	1 / 2	1 / 1	0/(-3)	0/(-2)
5	X	X	X	X	X	3 / 7	2 / 6	1 / 5	1 / 4	1 / 3	1 / 2	1 / 1
6	X	X	X	X	X	X	3 / 7	3 / 7	2 / 6	1 / 5	1 / 4	1 / 3
7	X	X	X	X	X	X	X	3 / 9	3 / 8	3 / 7	2 / 6	1 / 5
8	X	X	X	X	X	X	X	X	X	3 / 9	3 / 8	X

- first number equals the vertical facing required: 0 = level, 1 = shallow, 2 = normal, 3 = steep
- second number (after the " / ") equals the speed loss (or penalty on power roll) incurred
- an "X" means that the move is not possible

DIVING:

SPEED

	1	2	3	4	5	6	7	8	9	10	11	12
1	1 / 1	1 / (2)	1 / (4)	1 / (6)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
2	2 / 3	1 / 2	1 / 1	1 / (2)	1 / (4)	1 / (6)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
3	3 / 5	3 / 4	2 / 3	1 / 2	1 / 1	1 / (2)	1 / (4)	1 / (6)	0 / 0	0 / 0	0 / 0	0 / 0
4	X	X	3 / 5	3 / 4	2 / 3	1 / 2	1 / 1	1 / (2)	1 / (4)	1 / (6)	0 / 0	0 / 0
5	X	X	X	3 / 6	3 / 5	3 / 4	2 / 3	1 / 2	1 / 1	1 / (2)	1 / (4)	1 / (6)
6	X	X	X	X	X	3 / 6	3 / 5	3 / 4	2 / 3	1 / 2	1 / 1	1 / (2)
7	X	X	X	X	X	X	X	3 / 6	3 / 5	3 / 4	2 / 3	1 / 2
8	X	X	X	X	X	X	X	X	X	3 / 6	3 / 5	3 / 4
9	X	X	X	X	X	X	X	X	X	X	X	3 / 6

- first number equals the vertical facing required: 0 = level, 1 = shallow, 2 = normal, 3 = steep
- second number (after the " / ") equals speed gain (or number to roll \geq on 1d6 to gain one point)
- an "X" means that the move is not possible

The horizontal move for climbs/dives requiring 0 or 1 facing = same, for 2 facings = 1 less, for 3 facings = 2 less

TURNING: the same rules for the standard gameturn apply

POWER / DRAG (1d6): ≤ 0 = gain/lose 0, 1 = gain/lose 1, 2 - 3 = gain/lose 2, 4 - 5 = gain/lose 3, 6+ = gain/lose 4