

## OPTIONAL RULES

This section provides rules for resolving situations not covered by the basic rules for *AeroTech 2, Revised (AT2)*. Players should review the optional rules and agree on those to be included in their game before beginning play.

### ADVANCED AA

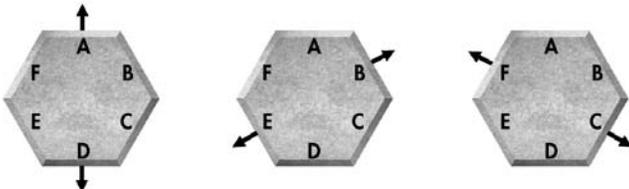
The core AT2 rules utilize the Movement Phase/Combat Phase breakdown common to *BattleTech* games. However, when looking at the interaction of aerial and ground units this allows AT2 units to minimize the effect of return fire as range is determined based on the target aircraft's end position rather than its closest approach to the AA unit.

To more closely represent real-world AA, players may choose to allow the horizontal range at which the AA engagement takes place to be based on the closest approach the aerial unit makes to the ground unit (or to hex 0909 if the aerial unit simply passes over the ground map hex). Modify the effective range to the target according to the standard altitude range rules (i.e. +2 hexes per altitude level). When using this rule, apply a to-hit modifier to the AA attack equal to the velocity of the target.

*For example, a fighter passes within 5 hexes (at altitude at Level 3 and Velocity of 5) of a ground unit that wishes to engage it but ends its movement 15 hexes away. In the standard rules, the attack would be made at range 21 (15 ground hexes + 2 hexes per altitude level) but suffers no to-hit modifiers for the fighter's speed. Using the advanced AA rules, the ground unit can engage the fighter at its closest horizontal point—5 hexes for a total range of 11 hexes including altitude modifications—but if it does so the attack suffers as +5 to-hit penalty for the fighter's speed (equal to its velocity).*

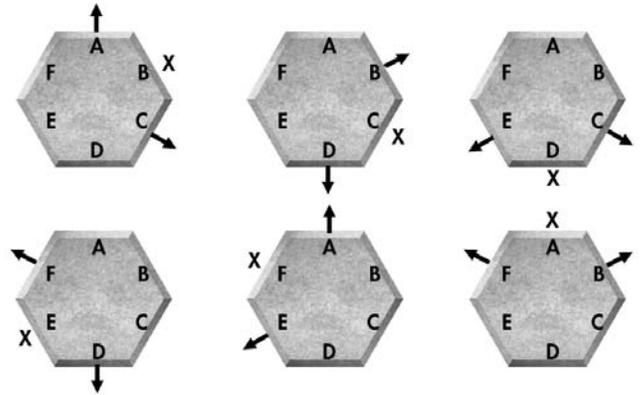
### OPPOSING VECTORS

If both vectors marked with arrows are active, subtract an equal amount from both until only one of them is active.



### OBLIQUE VECTORS

If both vectors marked with arrows are active, subtract an equal amount from both and add that amount to vector X.



### ADVANCED MOVEMENT

The basic AT2 rules represent a simplification of the mechanics governing movement in space. The advanced movement rules simulate a more realistic version of movement in space, where a unit's heading (direction of movement) may differ from the unit's facing (the direction in which the nose of the unit is pointing). For example, in the advanced movement rules a unit may not decelerate; it must alter its speed and direction by changing facing and applying thrust in a direction that counters its current movement. These rules accommodate a unit flying sideways or even backward, though tracking such maneuvers requires extra recordkeeping.

In the advanced movement system, facing changes do not affect a unit's heading. A unit's facing affects firing arcs according to the standard rules and determines the vector to which thrust is applied. Units can change their facing by one hexside by spending 1 Thrust Point. A unit can change facing as long as it has Thrust Points available.

A unit's heading and velocity are determined by a system of vectors. There are six vectors, which correspond to the six sides of each hex, labeled A-F. The A side of each hex is always toward the top of the map, regardless of a unit's facing. A vector is active if thrust is applied while the unit is facing that hexside. A vector is inactive if the unit spends no thrust to move through that hexside.

To use this system, each time a unit spends thrust, record that number on the record sheet in the appropriate vector (the vector of the unit's facing). Next, determine the effect of spending Thrust by consolidating the active vectors.

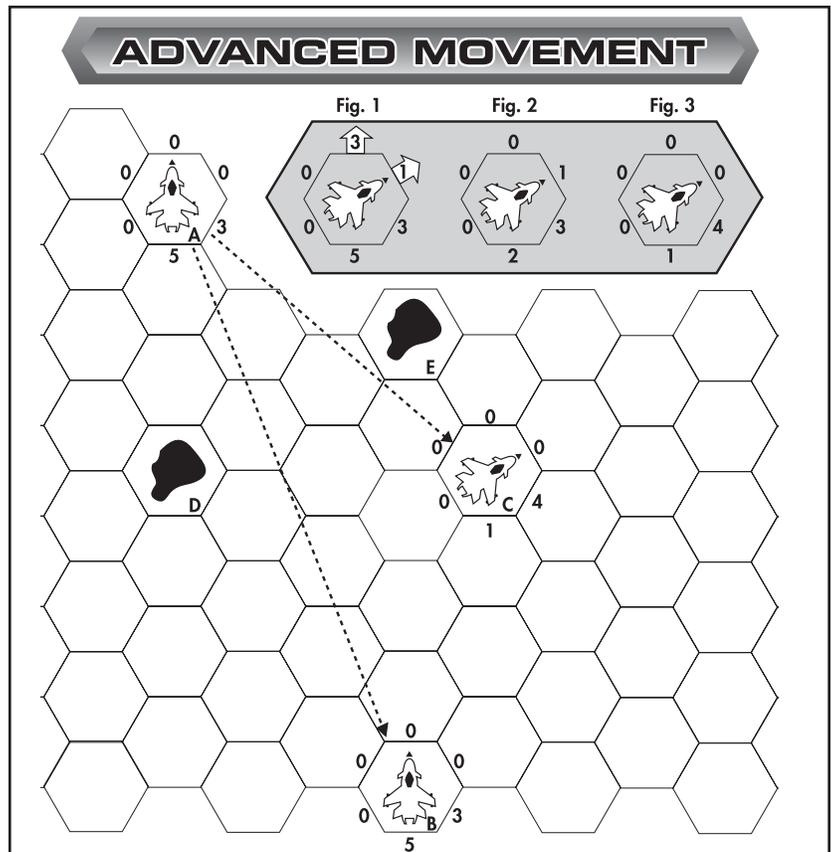
First, consolidate any active opposing vectors (see Opposing Vectors diagram, at left, by subtracting the lowest thrust value from both vectors, reducing one vector to 0.

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Next, consolidate the oblique vectors (see Oblique Vectors diagram, p. 44). Oblique vectors are pairs of vectors that are both adjacent to the same hexside (i.e., F and B; A and C; B and D and so on). When any pair of oblique vectors is active, subtract the lowest of the two Thrust values from both vectors (reducing one vector to 0), and add the same value to the Thrust value of the vector in between. For example, if a unit had an A vector of 4 and an C vector of 2, you would subtract 2 from both values. The C vector would become 0 and thus inactive; the A vector would be reduced to 2, and the B vector between them would be increased by 2.

After consolidating all vectors, a unit should have no more than two active vectors. A unit with more than two active vectors must be consolidated again.

After the player has spent the Thrust planned for the current movement and the active vectors have been consolidated to one or two, the unit completes its movement by moving the number of hexes and direction indicated by each vector. The unit is actually assumed to move in a straight line: if the exact path needs to be determined (for example, to decide whether a collision occurred), lay a straight edge between the center of the origin and destination hexes. If the path passes directly between two hexes, the controlling player chooses which hex the unit moves through.



*The Advanced Movement diagram shows the advanced movement system in action. The small arrow in the fighter's hex indicates facing, and the small numbers surrounding its hex show the fighter's vectors.*

*A fighter begins the turn in Hex A with a Velocity of 5 in vector D and a Velocity of 3 in vector C. If the player spent no Thrust at all, his unit would move to the position and facing shown in Hex B by moving 5 hexes aft and 3 hexes aft-right. The fighter would not check for a collision with either of the asteroids; the actual path of movement is shown by the dotted line.*

*Rather than leaving the fighter's movement as is, the player spends 3 Thrust Points at its current facing, increasing vector A from 0 to 3. He then spends 1 Thrust to change facing one hexside to the right, and spends 1 Thrust increasing vector B to 1 (Figure 1).*

*After the thrust expenditure, the vectors are consolidated. First, opposing vectors are consolidated. In this case, there is one pair of opposing active vectors: A and D. The lesser of the two, A, is reduced by 3 to 0, and the opposing vector is reduced by 3 to 2 (Figure 2).*

*Next, the player checks for oblique vectors. There is one pair, D and B. The lesser of the two, B, is reduced by 1 to 0, and D is reduced by 1 to 1.*

*amount subtracted from each (1) is added to the vector in between, in this case C, increasing it to 4. Because there are no more active opposing or oblique vectors, and there are only two active vectors, the fighter's final vectors are now known (Figure 3).*

*After spending 5 Thrust Points on movement as described above, the fighter's final position and facing would be as shown in Hex C. Note that there is no chance of the fighter colliding with the asteroid in Hex E.*

### ADVANCED INITIATIVE

The Advanced Initiative rules determine Initiative on a unit-by-unit basis using a modified Control Roll (all applicable modifiers to a Control Roll apply). This system takes longer than rolling Initiative for each opponent, but it gives better-quality crews an advantage. The unit with the lowest Initiative moves first, followed by the unit with the second lowest, and progressing to the highest Initiative. For ties, units with the lowest MoS move first. If both units possess the same MoS, re-roll the Control Roll. This system eliminates the use of movement subphases.

*John's fighter pilot has a Piloting Skill of 4. He rolls 2D6 with a result of 6—a MoS of 2. Adding the fighter modifier of +3, the fighter has an Initiative of*

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5. Simon's DropShip crew also has a Piloting Skill of 4. His 2D6 roll results in a 9, a MoS of 5. For a DropShip, the modifier is 0. The two units tie. However, because the fighter's MoS was lower than the MoS of the DropShip, John must move first.

### ADVANCED INITIATIVE TABLE

Initiative = Control Roll MoS/MoF  
+ Class Modifier

#### Class Modifiers

Fighter	+3
Small Craft	+0
DropShip	+0
WarShip	-3
JumpShip	-5
Station	-5

## ADVANCED POINT DEFENSE WEAPONS

Many large vessels, such as DropShips and larger ships, carry weapons that are too small to use offensively against other ships. Weapons such as machine guns, anti-missile systems, flamers, and small lasers can, however, function in "point defense mode" to target incoming enemy missiles (but not autocannon or Gauss rifle shells; they travel too quickly for targeting computers to track). Weapons capable of functioning in this way are labeled as Point Defense or AMS in the Class column of the Weapon and Equipment Tables, p. 73. Weapons can only be switched into or out of point defense mode in the End Phase and cannot be fired normally while in this mode.

A weapon in point defense mode has a range of 1 hex. The weapon defends the hex containing the point defense weapon and one hex in its firing arc. Reduce the effect of enemy missile attacks (SRM, MRM, LRM, ATM, and Rocket Launchers) aimed at or passing through defended hexes by an amount equal to half the point-defense weapon's Attack Value. If a missile attack passes along the line between two arcs, the defending player may choose to use the point-defense weapons in one or both arcs.

Point defense bays can only be used once each turn. The player must declare that he will use point-defense weapons before the to-hit roll is made for the missile attack. AMS bays may be used against every attack that passes through the hexes it defends (i.e. they may fire multiple times per turn), expending ammunition for each missile they engage. Each use of an AMS system generates heat, and the AMS system may not fire if doing so would cause the vessel's heat to exceed its dissipation capacity.

Capital missiles cannot be destroyed by point-defense fire but suffer a +1 to-hit penalty for each point of armor damage they sustain from passing through a defended hex.

*John controls a Dante-class WarShip. He switches the appropriate systems into "point defense mode" in the End Phase of the current turn. In the following turn, a 50-point LRM attack is aimed at the frigate. Before the attacker makes his to-hit roll, John declares that he will use the point-defense weapons. The LRM attack passes through the front hex of the WarShip, which contains a 30-point point-defense bay. The point-defense bay reduces the LRM attack by  $(30 \div 2)$  15 points.*

## AMMUNITION EXPENDITURE

All units carry a limited amount of ammunition for their ballistic and missile weapons. The AT2 rules ignore ammunition restrictions in favor of ease of play. If the game is on a relatively small scale or is part of an ongoing campaign where ammunition must be carefully conserved, players may choose to track ammunition expenditure.

The standard ammunition load (available shots) for an ammunition weapon is listed in the unit's description. Note that, as in *Classic BattleTech*, a single "shot" represents the single use of the weapon, not a single shell or missile. For example, a ton of LRM-20 ammunition contains six shots—120 individual missiles.

When a player fires a weapon that requires ammunition, he should place a tally mark next to the ammunition line for that weapon. When the ammo bay is empty, the weapon cannot be fired for the remainder of the game.

**Ultra AC:** Ultra AC weapons use two shots of ammunition every time they are fired. If only one shot remains for an Ultra AC, it is treated as though it were out of ammo. Players using the optional *Individual Weapons* rules (see p. 52) may opt to fire an Ultra AC at less than its maximum rate with commensurate reductions in the ammo consumed.

**Rotary AC:** By default, Rotary Autocannons (RACs) use 6 shots of ammunition every time they fire. If less than 6 shots remains for a RAC, it is treated as though it were out of ammo. Players using the optional *Individual Weapons* rules (see p. 52) may opt to fire a RAC at less than its maximum rate with commensurate reductions in the ammo consumed.

**AMS:** Each firing of an AMS uses half a ton of ammunition. If an AMS has less than half a ton of ammunition available it is treated as though it were out of ammo.

**Single-Shot:** One-shot (OS) weapons may be fired once after which they are considered out of ammo and may not be used.

## AMMO CRITICALS

Players may wish to add ammunition explosions to their games. In such cases, roll 2D6 whenever a Weapons critical occurs on an ammunition-fed weapon to determine whether the damage is to the ammunition rather than the weapon itself.

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On a result of 10 or greater, the ammunition suffers damage; otherwise the weapon is destroyed. If the ammunition is explosive (i.e. any other than Gauss ammo), an ammunition critical causes damage equal to the weapon's damage value multiplied by the number of rounds remaining of that ammunition associated with that weapon/bay. Apply this damage in a single block to the same facing as the weapon (i.e. if the critical was to a Nose/Weapon facing, the damage is to the nose armor while Right Side/Weapon damage results in damage to the right side). Fighters equipped with CASE suffer damage equal to a single attack rather than the full ammunition associated with the weapon.

As per standard *Classic BattleTech* rules, players may wish Gauss rifles to explode and cause damage when they sustain damage. In such cases, when a gauss weapon critical occurs, the location also suffers the effects of an ammunition explosion (20 points for a standard Gauss rifle, 16 for a Light Gauss Rifle and 25 points for a Heavy Gauss Rifle). Naval Gauss weapons do not explode if they suffer critical damage.

*For example, if an LRM 20 with 1 ton of unused ammo suffers an ammo critical hit, it would suffer 120 points of damage (20 x 6 shots/ton). If the damaged unit was a fighter whose ammo was protected by CASE, it would suffer only 20 points of damage (i.e. the damage of a single attack).*

### RE-ARMING

Most combat units carry additional stores of ammunition for their weapons and for the small craft they transport. Re-arming during combat is a difficult and dangerous procedure but one which many crews and pilots must carry out to prevail. DropShips, JumpShips, WarShips, and space stations may re-arm from ammunition stored in their cargo bays. Fighters may re-arm by landing on a friendly carrier (DropShip with fighter/small craft bays; see *Launching/Recovering Small Craft*, p. 54) that has appropriate ammo stores. Re-arming a unit uses the same rules, irrespective of unit type.

Any number of tons of ammunition may be reloaded in a single turn. However, the more types of ammunition being moved and the more tons of each type, the greater the chance of a delay or mishap. Roll 2D6 for each ammunition type being moved (SRM, LRM, AC, RAC, NAC, and so on), adding 1 to the result for every ton of that type of ammunition being moved. On a result of 1 through 7, the reloading is successful and that ammunition is available to the weapon (assuming there was sufficient space in the weapon's magazine—for example, a fighter designed to carry 2 tons of LRM ammo can't be "re-armed" with ammo that would increase the amount carried over 2 tons). On a result of 8 through 11, the reloading attempt fails but the ammo remains available for future re-loading events. On a die result of 12 or greater, an accident occurs and the ammunition being moved explodes, damaging the unit.

The amount of damage caused depends on the type and quantity of ammunition being moved; a ton of LRM ammo

inflicts 120 points of normal damage (the number of missiles it contains), while five tons of AC/5 ammo cause 500 points of normal damage (5 points per shot, 20 shots per ton). Break this damage into 20-point groups and apply it to the nose arc of the vessel, rolling 2D6 to determine the specific location according to the normal damage rules. Each location damaged by the ammo explosion has a chance of critical damage (rolled normally) over and above any chance for exceeding Damage Thresholds, i.e. if the hit-location roll is 6 (Nose/FCS), there is automatically a chance of critical damage to the FCS even if the Damage Threshold is not exceeded and two chances of critical damage if the Damage Threshold is also exceeded.

Re-arming that takes place outside of combat automatically succeeds and has no chance of an accident occurring. However, in such cases it takes 10 minutes to load each ton of ammo.

### ASTEROIDS

Some battles take place in or near asteroid fields. These large rocks, massing hundreds or even thousands of tons, can be a boon or a curse in space combat. Most DropShips and JumpShips carry a series of small guns (usually lasers or PPCs) used to destroy small pieces of debris. However, all units must steer around any large obstacles. Before beginning the game, players should agree on what constitutes a large obstacle.

To add an asteroid field to the game, place asteroid counters on the map before play begins. Players should agree on a system for placing the asteroid counters and determine the number of counters to be placed, if that number is not specified in the scenario set-up rules. For purposes of determining the amount of damage an asteroid can withstand (see below), each asteroid should be designated as small, medium, or large.

The asteroids may be stationary or mobile. Mobile asteroids may all move in the same direction at the same velocity, or each asteroid can move at a unique heading and velocity. To give each asteroid a unique movement, roll 1D6 for velocity and 1D6 for direction using the Dive-Bombing Scatter Diagram (see p. 37). If an asteroid moves off the map edge or enters a space-atmosphere interface hex, it is removed from play. If the players want to keep the map crowded with asteroids, each one that moves off the map can be replaced by a new asteroid that enters the map from the opposite map edge in the following turn.

A unit may fly through or end its movement in a hex occupied by an asteroid, but it risks colliding with the asteroid. When a unit enters an asteroid hex or an asteroid enters the same hex as a unit, make a Control Roll against a target number equal to Piloting Skill +2, modified for critical damage or thrust. A successful roll means the unit and asteroid miss each other.

On a failed roll, the unit and the asteroid collide. The unit sustains a number of points of capital-scale damage equal to 1D6 x MoF. Regardless of whether the unit moved into the asteroid hex or the asteroid moved into the unit's hex, the