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Briefing

Aircraft may perform a number of different missions in support of ground operations. Aircraft may participate in surface combat by making strafing and bombing attacks. When opposing enemy aircraft are present in a battle they may engage in dogfights against each other. Aircraft designed as transports may load, carry and unload troops and equipment.

Aircraft Types

1. **Airplane** - a fixed-wing aircraft that may be powered by fixed jet, rocket or piston engines.

2. **Glider** - a fixed-wing aircraft without a powerplant. It is carried or towed into the air by another aircraft and released to glide down to the surface.

3. **Helicopter** - an aircraft supported in flight by rotating airfoils instead of fixed wings.

4. **Hoverjet** - a fixed-wing aircraft that is powered by jet engines which can be rotated to provide lift and/or forward movement.

5. **Hoverprop** - a fixed-wing aircraft that is powered by piston engines which can be rotated to provide lift and/or forward movement.

Aircraft roles

1. **Fighter –** lightly armored aircraft designed for aerial dogfights and air superiority missions. These aircraft are usually armed with light cannon, air-to-air missiles, and automatic or pulse weapons.

2. **Fighter-bomber –** these aircraft are essentially fighters rearmed for ground attack missions. They are armed with bombs, guided or unguided artillery rockets and air-to-surface missiles, in addition to their light cannon and automatic or pulse weapons.

3. **Ground attack aircraft –** heavily armored aircraft specifically designed for ground attack missions. They are usually armed in the same manner as fighter-bombers, but some may be armed with heavier weapons to perform as "tank-busters."

4. **Transport** - aircraft designed to carry personnel, equipment and/or cargo. These aircraft are usually unarmed and lightly armored, but some may be designed as armored transports for landing under fire.

Movement

1. Aircraft that lack the ability to hover (such as airplanes and gliders) must have movement rates sufficient to cross the wargaming table in one turn, since they cannot stop and hover in place over the battlefield.

a. Most airplanes will have movement rates that are greater than the length of the tabletop. For example, propeller aircraft might have movement rates of 300 to 400, while jets might have movement rates of 500 to 1600. These aircraft are generally used for devastating fly-over airstrikes.

b. Gliders do not actually have to have movement rates assigned since they only need sufficient movement to land on the tabletop. However, their movement rates tend to be rather low because of the fact that they are not powered and because they need to be slow enough to land safely. Gliders are only utilized in a transport role since they lack the maneuverability to provide effective fire support.

2. Helicopters, hoverjets and hoverprops and may move, hover in place and perform pop-up maneuvers. When employed in combat roles, these aircraft generally provide close fire support of ground troops. They are also widely used for transport.

3. Movement rates

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a. The **Basic** movement rates given below are good general rates chosen for their playability. The glider rate is its final landing speed.

Aircraft type	Movement
Airplane: fighter and fighter-bomber	720 inches
Airplane: ground attack	660 inches
Airplane: transport	450 inches
Glider	45 inches
Helicopter	150 inches
Hoverjet	300 inches
Hoverprop	240 inches

b. The **Advanced** aircraft movement rates assume that each aircraft is provided with the powerplant that will move it at the highest possible speed for its size and weight, but that significant performance variables will still exist. Therefore a range of speeds is provided for each aircraft type, and the players may assign speeds to their aircraft as they choose. The **Advanced** movement rates provide more variety to the game.

	Movement in inches		
Aircraft type	**Fast**	**Average**	**Slow**
Airplane: fighter and fighter-bomber	960	720	480
Airplane: ground attack	900	660	420
Airplane: transport	540	450	360
Glider	60	45	30
Helicopter	180	150	120
Hoverjet	450	300	150
Hoverprop	360	240	120

Reverse and sideways movement

1. Only helicopters, hoverjets and hoverprops may move in reverse and sideways.

2. Helicopters, hoverjets and hoverprops may move in reverse and sideways at their normal speeds.

Movement and fire

1. Aircraft that cannot hover are always considered to be moving at fast speed, unless they have suffered battle damage which reduces them to a slower speed.

2. The effect of movement and rotation on fire is given in the **Movement and Fire** tables.

Turning ability of aircraft

1. Aircraft that cannot hover may turn 30 degrees after their first third of movement, and 30 degrees after their second third of movement, for a total of 60 degrees per turn. This restriction only applied to movement over the wargaming table. For ease of play, the aircraft have unlimited turning ability in the period of time when they are not directly over the battlefield.

2. In order to determine when an aircraft such as a fighter-bomber will be able to make another strafing attack the following logic may be used to speed play and remove any need for complex calculations.

a. Taking the direction the aircraft was flying when it left the board after the first attack, it can be assumed that the aircraft can climb upward in a loop, pass over the board at high altitude on the next turn and drop back down for another attack on the second turn after the original attack.

b. If the player chooses to have the aircraft attack from a different direction, it will take an additional turn for the aircraft to maneuver into position.

3. Because of their ability to rotate in place, aircraft that may hover have greater flexibility and turning ability than aircraft that cannot hover. Refer to the **Movement and Fire** tables for the movement costs of rotation for hovering aircraft.

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Combat air patrol

1. Combat air patrol is a mission assigned to aircraft in which their duty is to fly air cover over friendly forces to protect them from attacks by enemy aircraft.

2. To simulate this mission in **LaserGrenadiers**, the following rules will apply:

a. At the beginning of each turn a player must decide if he will assign any available aircraft to combat air patrol. The player must specifically record if any aircraft are assigned this mission.

b. An aircraft assigned to combat air patrol will enter play only if it triggered by the entrance on the board of an enemy aircraft. If no enemy aircraft enters the board, the aircraft on combat air patrol will not enter play that turn.

c. If an enemy aircraft does enter the board, the aircraft on combat air patrol may immediately enter the board itself and attack the enemy aircraft before it performs any attacks.

d. Normal movement rules are set aside at this time and the **Aerial Combat Rules** are used to determine the outcome of the attack.

Aerial Combat

1. In order to determine the speed of an attacking aircraft and the range at which it opens fire, the owning player should divide the current movement allowance of the attacking aircraft by the current movement allowance of the enemy aircraft it is attacking. The resulting dividend is used in the following **Air Combat Ratio** table.

Dividend	Attack range	Attacker movement
Less than 1.0	long	slow
1.0 to 2.0	medium	moderate
Greater than 2.0	short	fast

2. These factors are used in the normal hit/miss procedure. However, the movement factor for the target aircraft is not used in the hit/miss procedure. It has already been factored into the result.

3. The following example illustrates the use of this procedure. A fighter with a movement rate of 720 attacks a ground attack aircraft with a movement rate of 660. The attack takes place at medium range with the attacker at a moderate movement rate. (The dividend of 720 divided by 660 is 1.09, which falls between 1.0 and 2.0.)

4. If the enemy aircraft survives the attack, the owning player may proceed with his ground attack or he may declare a dogfight. If he declares a dogfight he may attack the aircraft that was on combat air patrol. The former target aircraft now becomes the attacker and uses the special aerial combat procedure given above. After this attack the fight is assumed to break off and play returns to the normal sequence.

5. Attacks against other aircraft may utilize air-to-air missiles and such weapons as autocannon, rotary machineguns and energy weapons.

6. Attacks against other aircraft may not utilize ground attack weapons such as bombs, artillery rockets and air-to-surface missiles.

Interceptive fire against aircraft

1. In order to determine if an aircraft is in range for interceptive fire before it drops free-falling bombs, the following procedure may be used.

a. Set the target point for the bombs.

b. Determine the height of the aircraft above the ground, and measure out the same distance from the target point back toward the aircraft.

c. Place the aircraft at the end of the distance measured, and raise it up to its height above the ground. This is the position at which the aircraft will release its bombs. If the aircraft is in range for interceptive fire before it reaches this point it can be fired upon before it drops its bombs.

2. The basic formula is that the height of the aircraft above the board and the distance between the release point and the target point will be equal.

Aircrew reaction to damage

1. The crews of aircraft that are attacked while making a ground attack do not always press home the attack. They may veer off and even jettison their weapons.

2. After all fighter attacks and ground fire attacks are made against the aircraft, and all damage to the aircraft is assessed, a reaction check should be made to determine if the attack continues.

3. The owning player should roll a ten-sided die and add the following factors.

Current damage	Factor
1 to 4 points	+1
5 to 8 points	+2
9 or more points	+4

4. The result is determined using the following table.

Factor total	Result
2 to 5	The aircraft continues its attack.
7 to 10	The aircraft breaks off its attack and takes evasive action.
11 to 14	The aircraft breaks off its attack, takes evasive action and returns to base. It will not attempt to make another attack.

Hit/miss determination for bombs

1. Use the normal hit/miss determination procedure.

2. Range is determined by the vertical distance the bomb will fall. The range factor will be –1 for each 12 inches above the ground.

Example: 21 inches will have a -1 range factor; 36 inches will have a –3 factor; 55 inches will have a –4 factor.

3. Aircraft that cannot hover (fighter, fighter bomber, ground attack, transport and glider) are always considered to be moving at fast speed, unless they have suffered battle damage, which reduces them to a slower speed.

4. Guided and smart bombs receive the +3 factor for being smart weapons.

5. Freefall bombs do not receive a bonus.

6. If a bomb misses the target point, refer to the rules for the hit locations of misses. Use the Hit Locations of Bomb Misses table to determine the direction and distance of a miss.

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Rotation and fire for hoverjets and hoverprops

Rotation (in degrees)	Movement cost	Effect on fire
Up to 45	One-sixth	None
46 to 90	One-third	As for slow movement
91 to 135	One-half	As for moderate movement
136 to 180	Two-thirds	As for fast movement
181 to 225	Five-sixths	No fire
225 or more	Total	No fire

Rotation and fire for helicopters

Rotation (in degrees)	Movement cost	Effect on fire
Up to 90	None	As for slow movement
91 to 180	One-third	As for moderate movement
181 to 270	Two-thirds	As for fast movement
271 to 360	Total	No fire