

FIghtER AND SPACE COMBAT

Spacecraft

are typically much larger than normal vehicles requiring a larger scale. The scale used here is derived from the Starship Types from D20 Future. All ship types larger than ultralight would normally be considered colossal. The scale is below.

Transport scale size	Length in feet	Craft/Square	Ship Type
Capitol Ship	over 4000	1/100 and up	Superheavy
Carrier	1501 – 4000	1/10-100	Superheavy
Battleship	1001 – 1500	1/6-9	Heavy
Interdictor	501 – 1000	1/2-6	Medium
Cruiser	251 – 500	1/1-2	Light
Corsair	65 – 250	4-8/1	Ultralight
Interceptor	33 – 64	10-16/1	Ultralight
Fighter	17 - 32	15-20/1	Ultralight
Missile	8 - 16	30/1	N/A

There are a few key differences between ground-based combat and aerial or space combat. The first is the number of fire arcs. For these craft, there are two additional fire arcs; top and bottom. Unless the craft has a weapon that fires in the top or bottom, these fire arcs can be ignored for simplicity. The second difference is the number of craft that can occupy the same square (technically cube 500' by 500' by 500'). The third difference is facing possibilities. This one can become overwhelmingly complex very quickly, so I will attempt to simplify it.

Fire Arcs in 3D Combat

In most situations, only the four basic fire arcs need to be considered; however, some ships have weapons in the bottom or top fire arc and must be considered.

Bombs can be either glider bombs (steerable impact detonated) or conventional (non-steerable). In both cases, the force of gravity propels the explosive to its target. These weapons can only be launched at targets that have a stronger gravitational pull than the craft they are launched from. The fire arc for bombs is parallel to the axis of travel of the craft and vertical between the craft and the target. These weapons cannot fire at an angle toward the sides of the craft, unless the craft is capable of side to side movement.

Turrets can fire in all directions on the top or bottom fire arcs, but unless the turret is designed to fire into the standard fire arcs, they cannot engage targets, which are not in the specified fire arc. Some turrets are able to fire in only part of the primary fire arc. These turrets are partial turrets. A turret may be placed facing toward

any fire arc. A turret so placed can only fire into that fire arc, unless otherwise specified.

Craft that have weapons that are top or bottom fire arc weapons may fire at any craft that is in that fire arc.

Speed Categories

The speed categories for Space scale combat are Cautious (1/8 tactical speed), Cruising (1/4 tactical speed), High (1/2 tactical speed) and All out (Full tactical speed).

Example: Maverick's Fighter has a move of 18 and Maverick chooses to move at cruising speed. The number of squares he moves through in that round is 4 (fractions are rounded down).

In flight, a ship's ability to change direction or speed is based primarily on mass. This fact requires a change in the way that base speeds and control are handled for each type of spacecraft. The table above shows the size modifiers based on the Transport scale category to maneuvering. The size modifier applies to attack and defense and applies to all pilot skill checks. Changing speed is a pilot skill check DC 10 (+5 per speed category +size modifier + any misc. modifiers).

Craft per Square

In chase scale, usually only two vehicles can occupy a square, but in Space scale up to 30 missile size craft or objects may occupy the same square. This represents both the 2D combat square times 10 and the addition of the third dimension. Now craft can be over or under other ships, as well as to the side. Whenever any craft

Size	Size Modifier	Equipment Bonus	Weight (tons)
Missile	-1	0	up to 1/2
Fighter	-2	+1	2 - 16
Interceptor	-4	+2	16 - 125
Corsair	-8	+3	125 - 500
Cruiser	-12	+4	500 - 2500
Interdictor	-16	+5	2500 - 5000
Battleship	-20	+6	5000 - 25,000
Carrier	-24	+7	25,000 - 50,000
Capitol Ship	-28	+8	over 50,000

are in the same square, all ranges are treated as close range. This will be covered more carefully in the next

section. Cruiser size ships and larger can share squares with smaller craft, due to their nature. Interceptor size and smaller craft may treat larger ships as ground level for purposes of maneuvering and landing, but only if the ship is two or more size categories larger.

Density of Combat

With the added dimension of air and space combat, the density of the combat area becomes an important factor. Additional aircraft in a combat area creates clutter as well as cover and concealment. This creates an additional factor that pilots have to take into account. The following table lists the Combat Density rating and how it affects the Pilot DCs and attack difficulties of air and space combat. A ship can move up to one speed category over the maximum speed listed, but all penalties for density are doubled.

Combat Density	DC Modifiers	Maximum Speed
Light	0	All Out
Moderate	+2	High
Heavy	+4	Cruise
Dense	+6	Cautious

3D Combat

Facing in 3D combat is relative to the direction of other ships. In 3D combat, the more ships in an area, the more complex it becomes. In most cases, any two craft in the same square can be assumed to be in the same vertical space. This is not necessarily the case for 3D combat, especially with more than five craft in the same square, nor is it the case when a pilot decides to pull above or below another ship, for tactical advantage. This is the reason for 3D combat rules.

Maneuvering tactically in 3D combat allows a pilot to change her position relative to another craft's fire arcs. This is most advantageous when the craft pulling this move has a weapon capable of firing at the enemy craft from that position. This maneuver is a simple maneuver and like ramming allows the opposing pilot to make a check (DC 15) to prevent success. Unlike ramming, the check is a pilot skill check. If the check is successful, the opposing pilot has maintained his facing relative to the pilot attempting to make the maneuver. If the opposing pilot fails this check, the move is successful and has moved her craft into the intended fire arc.

In the case of smaller versus larger vessels, the question of facing becomes more complex, but can be simplified somewhat. Transport scale craft occupy a number of squares equal to its overall size divided by 500. If this number includes a fraction, the number is rounded up. Unlike ground and water craft, height is also an important dimension.

Example: Maverick has a fighter that is 60' long, 45' wide and 10' tall. In space scale, the fighter takes up only 1/50th of a square.

Example: Admiral Gritz commands a Capital starship that is 4700 feet long, 800' wide and 400' tall. The ship is 10 squares long, 2 squares wide and 1 square tall. This ship takes up a total of 20 combat squares, but most of those squares may be shared with other craft smaller than it.

Ramming in Space Scale

Like in chase scale, ramming in space scale is a simple maneuver that gives the target craft a reflex save (DC 15). Unlike chase scale, the result is based on the degree of success of the reflex save. A success up to +5 over the reflex save difficulty results in 1/2 damage to both craft. A success of +10 or more results in no damage and the attacking craft must make a reflex save (DC 15) or lose control. Ramming a vessel more than 2 size categories larger than the attacking craft is treated as a collision with a stationary object. The target craft may not avoid this kind of ramming attack. Damage is resolved as with standard collision Damage.

Highest Speed	Damage Die Type
Cautious	D2
Cruising	D4
High Speed	D8
All-out	D12
Smallest object size	Number of Dice
Capitol Ship	40
Carrier	36
Battleship	32
Interdictor	28
Cruiser	24
Corsair	20
Interceptor	16
Fighter	12
Missile	8

Combat and the Forward Fire Arc

Most fighters only have weapons mounted in the forward fire arc. For this reason, pursuit becomes the most important tactic.

Tailing and Pursuit

Tailing occurs when a craft is following another and is attempting to remain inconspicuous. This requires a pilot check opposed by the target pilot's spot check+1 per round that the tailing has taken place. These checks occur every round. If the target makes a change in facing of more than 45 degrees, another check is forced. Pursuit occurs when a craft is aggressively following another with intent to impede or attack the craft being followed. In this case, rules for maneuvering tactically apply. The target craft's pilot may take tactical action if she succeeds in a spot check (DC10 for pursuit).

Tailing

When tailing, tactical action can be taken to increase the spot check for the opposing pilot. This is only possible if there are places available to obscure a fast moving ship from any sensors or from visual sight or if the target craft has a sensor and visual blind spot. Taking tactical action is a simple pilot check. The result of this check is the new DC for the target pilot's spot check. The new roll is used even if it is lower than the previous roll. Tactical maneuvers are a move action. If the Tactical action results in a natural 1, the target pilot automatically notices the tail and can take tactical action. At any time, the tailing pilot may initiate pursuit.

Being Tailed

Once a pilot spots the tailing craft, she may take tactical action to lose the tailing craft. Tactical actions to lose a tail include increasing or decreasing speed categories, sudden turns or attempting to hide (if there are areas for a fast moving craft to hide). To lose a tail, requires a Pilot check opposed by the tailing pilot's spot check plus the pilot skill DC of any maneuvers or stunts used in the attempt. Failure to meet the DC by a number greater than the pilot DC, but less than the spot check roll results in the tail remaining intact. If the failure is by more than the spot DC, the maneuver is also failed and the results of failing a maneuver are applied based on the pilot check DC (not including the spot check).

Establishing Pursuit

A pilot, who is already tailing another craft, may automatically establish pursuit. In all other cases, the pilot must make an opposed pilot check, modified by any maneuver or stunt DCs that are needed to get into

the rear fire arc of the other pilot.

Pursuing

When pursuing another craft, the pursuer can make tactical maneuvers such as - close the distance between the craft or to engage target lock on the craft being pursued (if the pursuing craft has weapons in the forward fire arc that can be locked onto a target) or firing on the target craft. The pursuing pilot cannot establish tailing once pursuit has started.

Being Pursued

Once pursuit has been established, the pilot may make tactical maneuvers to break pursuit. These maneuvers are opposed by the pursuing pilot's reflex save. Once pursuit has been broken, the pilot may take actions to take up pursuit of the opposing pilot, or other standard combat actions.

3D Stunts and Maneuvers

Beside the standard stunts that any ground vehicle can make, there are some stunts that only aircraft and spacecraft can make.

Maneuvers

Break Pursuit – As a move action, a pilot can attempt to break pursuit. This is a simple maneuver requiring an opposed pilot check vs. the pursuing pilot (a pursuing pilot can break pursuit as a free action with no opposed check).

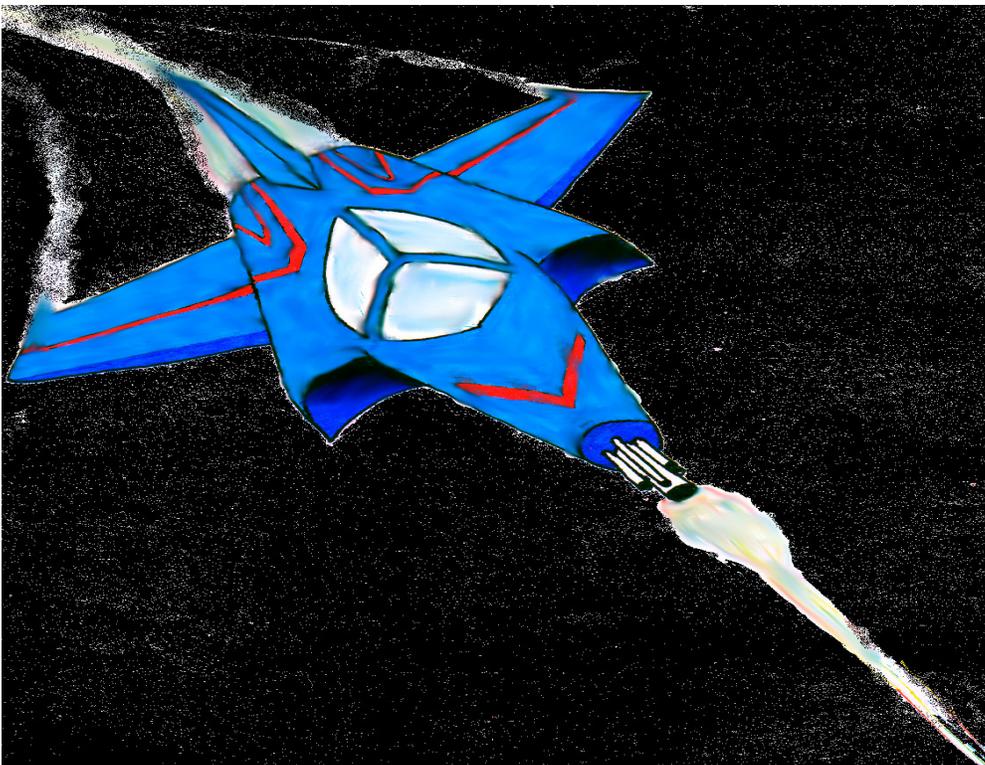
Climb/Dive – This maneuver changes the vertical facing of a ship relative to the ground surface (or another ship if in space) by 45 degrees. This can be made in conjunction with turns at no additional cost (pilot DC 5).

Extreme Climb/Dive – This is like Climb/Dive, except it is a 90-degree facing change. Extreme climbs or dives are a move action (pilot DC 10).

Stunts

Roll - This move may be used for show or as a dodge maneuver. This maneuver does not change the facing of the craft, but may be used to sideslip, or to break a pursuit. This requires a pilot check (DC 15).

Loop – This move is a full vertical loop, ending in the exact position it was initiated from, or in a position adjacent to the start position. This move requires a pilot check (DC 25). This move may be used to break or establish a pursuit.



New Feats

Aircraft Dodge – You have great skill at dodging attacks against your aircraft.

Prerequisites: Dexterity 13, Pilot 6 ranks, Aircraft Expert.

Benefit: When you pilot an aircraft, you may choose one target and gain a +1 Dodge bonus to Defense against attacks from that target. You can select a new target on any action.

Aircraft Expert – You have great skill behind the stick or yoke of all aircraft.

Benefit: You gain a +2 to all pilot checks.

Aircraft Evasion – You have highly developed combat reflexes and awareness.

Prerequisites: Dexterity 13, Pilot 6 Ranks, Aircraft Expert.

Benefit: You may apply your Dex bonus to the vehicle's Defense and may make Reflex saves against any effect that would normally allow a reflex save for creatures.

Special: Explosions that result from missiles or other projectiles do not allow a save.

Automated Weapons Proficiency – You have been trained in the use of automated weapons controls and can use automated weapons as efficiently as most people use personal weapons.

Benefit: The character no longer takes a non-proficiency penalty for using automated weapons and may take any bonus from automatic targeting systems.

Prerequisite: Base Attack Bonus +3, Vehicle, Aircraft or Starship Weapons proficiency, Dexterity 13.

Improved Aircraft Evasion – Your combat reflexes have been especially developed for fighter combat.

Prerequisites: Dexterity 13, Pilot 10 ranks, Aircraft Expert, Aircraft Dodge, and Aircraft Evasion.

Benefit: If your craft is exposed to any effect that would allow a reflex save for half damage, your craft suffers no damage if the save is successful.

Advanced Aircraft Evasion – You have great skill avoiding damage in combat.

Prerequisites: Dexterity 13, Pilot 10 ranks, Aircraft Dodge, Aircraft Evasion, and Improved Aircraft Evasion.

Benefit: You may make a reflex saving throw to avoid any projectile attack against your craft from the target you receive a dodge bonus against. If the save is successful, you take no damage from the attack.

Normal: Projectile attacks that hit do full damage.

Special: Guided weapons (like radar or laser guided missiles) maintain their lock and the attacking pilot may make additional attacks with the same weapon, without firing additional rounds. This may continue until the attacking pilot fails the attack roll or until the weapon reaches its maximum range (or hits another target).

Formations and Fighter Wings

Flying in Formation

Formations are one of the more complex aspects of 3D combat. In most formations (in atmosphere) these craft are all moving or facing the same direction. Any number and size of craft can be in a single formation and a single formation can occupy more than one square. Formations take all kind of shapes, from an arrow head shape to a funnel and anything in between. Ships can even form a wall to give maximum firepower forward in a 3D blockade.

Elements

An element is the simplest formation, consisting of 2 to 3 craft covering each-other's flanks and rear. An element gains a +1 to attack and defense. The individual craft in an element can fall back as far as one combat square and still be considered in the formation.

Wings

The next simplest formation is the wing. A wing consists of 4 to 8 craft (usually fighters) in specific positions with relation to each other.

Wings take full advantage of 3D tactics to destroy their opponents as fast as possible. A fighter wing can fly in formation or break formation to engage separate targets. Craft fighting as a wing gain a +1 to attack and defense per 2 ships in the wing.

Squadrons

The next step up from a wing, a squadron actually consists of 4 – 10 wings. Each ship in a squadron covers another one to 4 ships, giving support in a dogfight. Craft fighting in a squadron formation gain a +2 to attack and defense per 2 wings in the squadron.

Fleets

The fleet consists of at least 4 squadrons. Like wings and squadrons, a fleet formation gains bonuses as they would in a squadron (+4 to attack and defense). Ships flying as part of a fleet formation do not suffer combat density penalties, due to the coordination provided in these formations. Opposing ships that enter an area controlled by a fleet take full penalties for combat density.

A fleet formation may take any shape and the ships can be traveling in any direction relative to the rest of the fleet, though usually any given wing will all be traveling as a unit in a single direction.

Swarm Formation

A swarm formation uses tactics based on the behavior of creatures that act in swarms, especially bees, bats and other small flying creatures. Swarm formations gain no bonus to attack or defense, but gain +1 die of damage per 5 ships in the formation (rounded up) to a max of +4 dice. A swarm formation makes a single attack roll per turn, but must be in close range to attack.

Attacking as a swarm formation provokes an attack of opportunity if the defending ship has point defense weapons. Individual ships in a swarm formation can be attacked as usual for space combat. Swarm formations can contain no ships larger than Interceptor size. Swarm formations take penalties for combat density as normal. A swarm formation takes up one square per 5 ships at a combat density of Moderate (+2 DC to all pilot checks) or up to 8 ships at a Combat density of High (+4 DC to all pilot checks). A swarm formation cannot fit more than 8 ships to a square. Swarm formations can only attack ships of Cruiser size or larger.

Joining a formation

Initiating a formation requires a pilot check (DC 10) by each pilot joining the formation. Ships in a formation gain a +2 circumstance bonus on all pilot checks when maneuvering as a formation, but take a -2 penalty on any action taken separate from the formation (including breaking formation).

Breaking formation is a simple maneuver that requires a pilot check (DC 10). Breaking formation, the pilot loses both the +2 bonus to formation maneuvers and the -2 penalty to non-formation maneuvers.

Joining a formation and rejoining a formation requires a pilot check (DC 10). For each size category of craft that is in the formation, the DC to join increases by +1.

Weapon Batteries

Ships that have weapon batteries such as lines of non-fire-linked turrets can use volley tactics to attack any size ship. Volley attacks are treated as auto-fire, except that damage is increased by +1 die per 3 weapon emplacements. Volley attacks can be used to attack swarm formations as a single ship, rather than attacking each ship separately. When swarm formations are attacked in this manner, the total hit points from each ship in the swarm are totaled, but only the hardness of a single ship is deducted from the total damage done by the battery. A swarm formation that loses more than ½ of its hit points is broken, though it can reform on its next turn.

Automated Firing Systems

Automatic weapons targeting systems are dependable in varying degrees. These systems have the same basic intention, but function differently depending on how advanced the design. Below are some types of automated weapon targeting systems, which may be used with or instead of those listed in D20 Future. Each system takes up 1 sensor slot.

Type 1 (PL 5)

This system is designed for manned turrets, which require 2 crewmembers to operate effectively. The

design is simple, the gunner fires on targets designated by the gun commander through the commander's independent viewer (CIV). The commander can designate multiple targets, which the gunner's sight is automatically traversed onto by the targeting system. This gives the gunner a +2* to BAB, which may be applied to determine multiple attacks.

Purchase DC: 22

Restriction: Licensed (+1)

Type 2 (PL 5/6)

This is a more advanced system, which automatically designates targets for the gunner to fire on, and the gunner then may then determine the threat, and chooses whether or not to fire on the target. This system is also designed for a manned turret weapon. Because of the tendency to designate every moving object, the system often designates friendly and fleeing non-combatants vehicles. This system gives the gunner a +1* to BAB, which may be applied to determine multiple attacks.

Purchase DC: 27

Restriction: Restricted (+2)

Type 3 (PL 7)

This is the first version of a fully automated targeting system. This version will actually identify friend/foe/non-combatant with an 80% accuracy rate (roll of 1 on automated attack results in friendly craft or character being targeted). The Weapon system operator may choose to manually select target priority, on a touch-screen display of all potential targets in range. This system when in auto-targeting mode has a BAB of 3 (all automated attacks are rolled by the GM). When operated in manual designation mode, the system grants a +3* to the Gunners BAB, which may be applied to determine multiple attacks.

Purchase DC: 32

Restriction: Restricted (+2)

Type 4 (PL 8)

This system is the most advanced auto targeting system available. It scans for concealed weapons, identifies friend/foe/non-combatant and automatically fires on enemy targets with a 99% accuracy rate. This system (like its predecessors) allows for manual target designation as well as full automation. This system grants the operator a +4* to BAB, which may be applied to determine multiple attacks. If used in full automation, the system has an effective BAB of +6/+1 (all automated attack rolls are made by the GM).

Purchase DC: 50

Restriction: Military (+3)

**The benefit to BAB is only given if the operator has the Automated Weapons Proficiency Feat.*