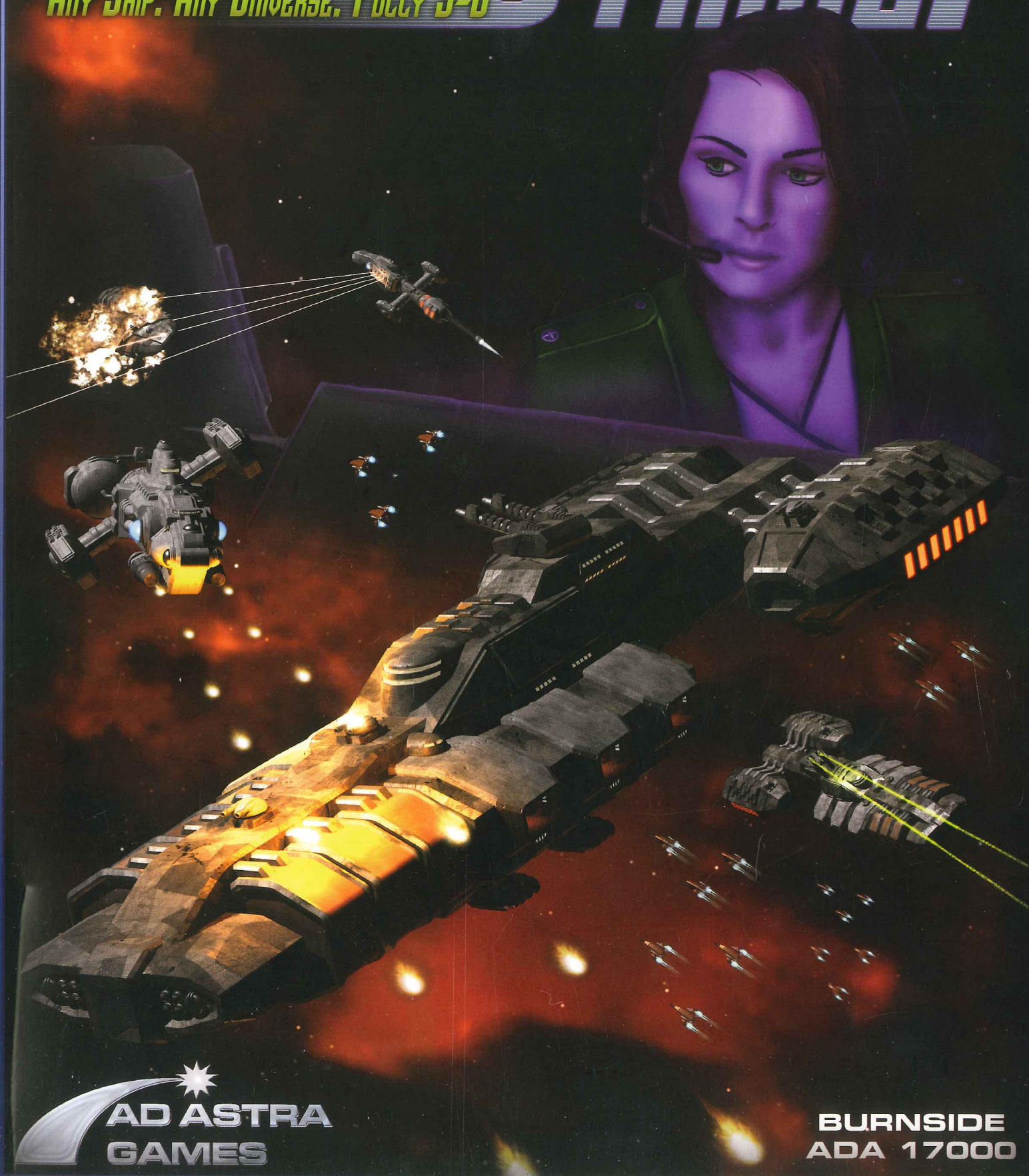


SQUADRON STRIKE!

Any Ship. Any Universe. Fully 3-D



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GAMES

BURNSIDE
ADA 17000

SQUADRON STRIKE!

Any Ship. Any Universe. Fully 3-D

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What Is Squadron Strike?

Squadron Strike is a space combat game, built around the idea that most space combat gamers don't want to be tied to just one setting. They want to see what happens when you mix the ships from different television programs, games and movies and see what makes for a fun fight.

To do that, you need a game engine that's capable of nearly anything. *Squadron Strike* delivers a multitude of options. Movement options range from "boardgame" movement with no momentum, to "Hollywood" style "spaceships move like airplanes" movement to Newtonian with optional fuel tracking rules for all three.

Weapons have a similar breadth of options, with rate of fire, cool down periods, damage, penetration versus defenses and special effects all under player control.

Nearly every sort of defensive measure is available in the game, from ECM to ablative shields, shield regenerators, facing armor and component armor. There are rules for all sorts of other equipment, such as cloaking devices, hangar bays, and tractor beams. Finally, there are hooks into a campaign game, including the cruise duration of your ships on a strategic scale.

All of this is done with a 3-D movement engine that lets you run several ships on a side in a reasonable period of time. *Squadron Strike* has a fully 3-D campaign map generator, allowing you to reach for the stars with armadas of starships ready to do your bidding.

However, before you can conquer the stars, you must first learn to fly.

Box Contents

Your box should include the following:

The main rulebook (what you're reading now). On the back cover of this rulebook is the sticker with the Serial Number.

A center stapled setting booklet, covering the Diaspora Universe.

A center stapled booklet containing ships and class histories.

Two map sheets with hexes printed on them, one white and one blue.

Two sealed bags of stacking tiles (with white, light blue, dark blue and black tiles within them).

One sealed bag of red and green tilt blocks

One set of ten sided dice

Two sheets of box miniatures, one each of sheet A and B

Two small sheets of extra counters to be cut apart.

Nine "tall skinny" Movement cards. There are three different types of these and they're numbered 1 through 3. These have a geometric pattern near the top of the card with concentric colored rings inside a hexagon.

Two half-page "wide and short" Reference cards, the front of which has a Range/Angle Lookup Table and the Sequence of Play in it. The back has several useful charts and tables.

Online Resources

Squadron Strike has several online resources activated with your serial number.

To enter your serial number, go to <http://services.adastragames.com/>, and create an account at the Ad Astra Games Services Page. This account allows other players to find you, but only if they've registered the same game (or games) that you have. Please don't make "funny joke" names; it's easier to find players if they know your real name and vice versa.

Once you've created your account, you'll need to enter the serial number off the back of your rulebook. This registers your games and allows you to access the following online resources:

Two additional SSDs, showing variants of two of the ships in the SSD book.

A Zip file containing the Excel spreadsheet that lets you design and print your own custom ships. While it will open in Open Office Calc, it is so slow that we reluctantly have to say that Open Office is not supported.

An account code that lets you access your free 90 day trial to **Squadron Strike** specific online tools. After the free trial, access to these tools will require a subscription. See if you're using them first, then decide if you're going to subscribe. The tools include:

A box miniature builder that lets you convert 6 views of artwork for a ship, this is the tool that will let you make box miniatures for any ship you desire.

A campaign map generator. The latter portion of this rulebook is a campaign system. As drawing campaign maps by hand is annoying and tedious, we've provided a campaign map generator for you.

A campaign victory deck generator. A victory deck is tied to a specific campaign map, and gives objectives, dirty tricks to play on other players, technology advancement cards, and the all important ceasefire clock cards. These cards should be cut apart, put into card sleeves with ordinary playing cards as backing and used normally.

In development are:

An online ship creation tool, done in Flash.

A system map generator. If you enter the campaign year, turn and operational turn, and the map information for the star you left and the star you arrived at, this program will spit out a system map of your destination, with the planets in their proper positions, and your initial location on the map. Many of these maps will need to be tiled across multiple sheets of paper for larger stars.

Subscriptions are \$20/quarter, or \$60 per year.

Online Forums

Ad Astra Games maintains a forum for communication with our customers at <http://www.adastragames.com/>. Our forum requires that you use your real first and last name as your public handles. Forum registration is completely independent of product registration or your shopping cart account.

Organization of the Rulebook

The oval at the outer edge of the page will tell you what section you're in. For example, the one for this page says "Organization".

This book is laid out with rules in the wide column in the middle, and sidebars on the outer edge of the page. Anything in a sidebar is optional, or an example.

Die Rolling & Rounding

Squadron Strike uses dice to generate random outcomes; whether or not an attack hits, how much damage it does and where it lands being the general set.

Squadron Strike uses 10-sided dice. For sake of convenience, we call them d10s. A die roll of "0" is treated as "10" unless specified otherwise. In all cases, if you're the person rolling the dice, a higher result is better for you.

Single Die Rolling Conventions

Single d10 rolls: Single d10 rolls have a *target number*, the number or higher you need to roll to succeed. For example, an Accuracy target number of 7+ means you need to roll a d10 and get a 7 or higher to hit.

The most common single d10 rolls are weapon Accuracy targets and Crew Rate checks. Whenever a modifier is applied to this kind of roll, it modifies the Target Number needed. This front loads the math steps for you and speeds up play.

Table lookup rolls: For table lookups, you're rolling a d10 to see which row of a table you're reading across. Die rolls for table lookups are in the form of "treat roll X as roll Y". For example, treating a roll of 1 as roll of 10.

Special Die Rolling Conventions

Nd10+: Roll N d10s (where N is a number from 2 on up) and sum the results to generate a final total. For example, rolling 5d10+, and getting results of 3, 7, 4, 2, 10 gives a final total of 3+7+4+2+10=26.

2d10-: Roll two d10s, subtracting the smaller number from the larger. This generates values between "0" (zero) and "9". For example, if you rolled 2d10-, getting individual die rolls of 7 and 3, 7-3=4, giving a result of 4. This die roll gets used a lot; we recommend acquiring several sets of paired d10s, each pair of a different color.

2d10c: Roll two d10s of different colors, one has a positive integer, one as a negative integer, and add the results. This gives a range from -9 to +9. There is also a 2d100c which combines this roll with d100 (below).

d100: Roll two d10s, of different colors, one as a 10s digit, the other as a 1s digit, giving a result between 01 (1) and 00 (100). "0" is treated as a "zero" for this roll.

3d10hi: Roll three ten-sided dice and take the highest.

3d10med: Roll three ten sided dice and take the middle value.

3d10low: Roll three ten sided dice and take the lowest value.

Modifiers are always applied *after* the die rolling convention is done. For example, "2d10- +2" means: "Roll 2d10-, and add 2 to the final result".

Rounding

Unless overridden by a specific rule, round in the attacker's favor. In any situation where there are choices not covered by another rule, the attacker makes the choice.

Terms Used In The Game

All of these terms are explained in their usage context later in the book.

Action Points (APs): Action points are generated by your Bridge track and combine some command and control and “power allocation” concepts into one framework.

Crew Rate: The quality of your crew, expressed as a target number to be equalled or exceeded. Ranges from 2+ (Legendary) to 10+ (Hopeless)

AVID: Attitude Vector Information Display; this is the tool used to record changes to a ship's orientation, its current vectors, and changes to vectors. It is also used for shooting bearings, and tracking firing arcs. The key concept of the AVID is that it's a top-down view of a sphere, divided into windows that are color coded in rings, showing how far away from the equator you are.

Box Miniatures: Box miniatures are the “counters” of your ship in the game. They are printed on card stock with six views of the ship, one printed on each box-side. The top has a triangle pointing to the front and a semi-circle at the stern; think of them as the arrowhead and feathers of the direction you apply thrust in. The bottom of the box miniature has an anchor symbol on it.

To assemble your box miniatures, fold them along the creases already provided, and then glue the long edge first with white glue; you can then glue the end tabs into place and they'll remain fairly rigid. If you plan on using them at conventions, wrap them around some hard foam before gluing them shut to make them crush-resistant.

Hex Map: The game is played on a map of hexagons; called a hex map; each hexagon is called a “hex”. Ships are in hexagons, facing either the side of a hex, or a corner, but not on the lines between hexagons. The hex map has a rosette in the center, labeled A through F going clockwise. There is a second ring to the rosette, labeled 000 through 330, used for other games Ad Astra publishes that can be ignored for now. Directions Up and Down are shown by + and -.

The maps are *geomorphic*, meaning that when you're about to run off the edge of one map, you can move the second map to that edge and continue the fight.

Stacking Tiles: A ship's position on the map is shown by the hex it's in, while altitude is shown by placing stacking tiles under it, like poker chips.

Tilt Blocks: A ship's orientation on the map is shown with tilt blocks. The box miniature rests in the trough, and can either show a shallow angle (30°) or steep angle (60°). A box miniature that's pointed straight up or down is at a 90° angle.

SSD: Ship Systems Display; the record sheet that shows your ship's current capabilities. Systems can be destroyed on the SSD by marking off their boxes. **Squadron Strike** SSDs show 2 ships per page.

Pivots: Any facing change that moves the front of the box miniature around is a pivot, whether it's done up or down or in the plane of the map. If you're used to turning a figure on a map to get it to face where you want, that's a pivot; **Squadron Strike** allows you to pivot up and down as well.

Rolls: Any facing change that rotates the box miniature around its long axis is a roll. Rolling a ship allows you to flip the ship, bringing the other side's weapons to bear.

Bearings: Shooting a bearing is figuring out what part of the sky you see the target in, mapped to one of the windows of the AVID. Also used for tracking firing arcs.

RALT: The RALT (Range-Angle Lookup Table) is used for shooting bearings. Count out the hexes from you to your target on the bottom of the RALT, then count up by the total difference in altitude. The number will be the real range to the target, and the color will tell you what ring of the AVID it's visible through. The RALT is printed on the front of the Reference Card.

Four Die Monte: The practice of rolling a weapon hit with four dice, one for Accuracy, two of the same color for Penetration rolls, and one for the Hit Location roll.

Accuracy (Acc): The number that must be equaled or exceeded on a die roll to hit the target. Modified by Profile and ECM/ECCM.

Profile (Pro): A numerical measure of how hard a target is to hit; it adds to Accuracy, and can be a positive (making the target harder to hit) or negative number (for targets that are very large.) It can vary depending on the facing of the target fired at.

ECM/ECCM: ECM is Electronic Countermeasures (or jamming) while ECCM is Electronic Counter-Counter Measures. ECM makes you harder to hit, ECCM counters ECM.

Penetration (Pen): Bonus damage the weapon does, set by a 2d10- roll, or the maximum Pen value of the weapon, whichever is less.

Hit Locations: The SSD breaks the ship down into ten hit locations, with a number of items that can be hit, and different amounts of boxes. Which one gets hit (and where your ship got damaged) is determined by a d10 roll.

Small Targets: Fighters, missiles and torpedoes are collectively called "Small Targets", and are handled specially. All small targets have a Profile of +3.

Movement Modes: *Squadron Strike* uses movement modes to show differences in how movement is shown in different settings. Movement modes are named for the number of Newton's laws being obeyed, ranging from 0 to 2. (We assume anyone wanting Mode 3 movement will be happier with our product, *Attack Vector: Tactical*).

Vector Movement: Vector movement is like the old video game *Asteroids*. A ship with a vector of 4 hexes per turn in direction A, 2 hexes per turn in direction B, and one hex per turn in up (+) will move 4 hexes in A, 2 hexes in B and one hex up every turn, until thrust is applied. To slow down, you have to rotate 180° and apply thrust in the opposite direction.

Thrust: Ships change their vectors by thrusting. One of the biggest environmental changes to learn is if you have a speed of 9 and a thrust rating of 3, it will take three turns to slow down to a complete stop; this is very different from games that have spaceships moving like cars.

Displacement: If you apply thrust for a whole turn in vector movement, without changing direction, your ship will move a number of hexes in the direction of thrust equal to *half* of the amount you changed your vector by, carrying fractional hexes of movement over to next turn. This "half movement" is called "displacement". Displacement is also used for Mode 1 movement under the same circumstances, and in both cases represents the effect of continuous, rather than instant, acceleration.

Markers: For Mode 1 and Mode 2 movement, ships use End of Turn (Eot) markers to indicate where their ships will move if no thrust orders are plotted; these are then updated after movement is plotted for all players, and ships move. This, with practice, gives insight into what your opponent's movement options are.

General Course of Play

A scenario is a fight between two or more starships, often with objectives to be met. Multiple scenarios involving the same ships, carrying damage states between scenarios is called a *mini-campaign*. The term *campaign* is used for a full on combined strategic and operational game with multiple players.

Each scenario is broken down into multiple *turns*, with most scenarios lasting between ten and twenty turns. Depending on the number of ships, torpedoes and fighters involved, a turn might take anywhere from 2 to 15 minutes to resolve with five or six minutes per turn being fairly common.

The Sequence of Play

During a turn, you go through the four phases of the Sequence of Play, printed on the Reference Card, and shown at right. Each phase is broken down into steps.

Plotting: During the Plotting phase, players record movement orders for their ships, starting with pivots and rolls on the AVID (see pages 12 and 13). The next step is for Mode 1 ships only, and adjusts their speed for applying thrust.

All units plot their vertical and horizontal movements in the next step, through the particulars differ slightly for Mode 2 than from Mode 0 and Mode 1. After plotting vertical and horizontal movements, Mode 2 records their changes to vectors.

For Mode 1 and Mode 2 ships, their End of Turn (EoT) marker's position may be adjusted by a few hexes as a result of their movement plot. (This is likelier for Mode 1 than for Mode 2).

Movement: The movement phase starts by moving a ship to its EoT marker, including any pivots and rolls plotted. Once all units have moved, they record their new orientation on the AVID.

Once the new orientations are recorded, the next step applies to Mode 1 and Mode 2 ships only. Mode 1 ships bleed speed from their pivots, and Mode 2 ships consolidate their vectors. After that, both Mode 1 and Mode 2 ships place their EoT markers based on their current speed and vectors; this is where they will be after movement of NEXT turn if nothing changes.

The last step in Movement is for fighters to move (there is an order of precedence for fighter movement) and then for torpedoes to move closer to their targets.

Combat: This is where shooting happens. First, all units with ECCM systems roll dice for them to see how effective they were. Next, all units plot fire; fire plotting is done secretly and simultaneously. Write "D" for defensive fire and "R" for reserve fire. (These are explained on page 33).

Fire is resolved in the order of defensive fire and offensive fire, followed by a second plotting step for reserve fire, then reserve fire.

Crew Actions: The last phase of the Sequence of Play is Crew Actions, which involve using and activating equipment that isn't weaponry, boarding party actions, damage control attempts, and shield regeneration.

MODE		MODE	MODE
		PLOTTING	
		Plot pivot & roll on AVID, mark midpoints	
		If no pivot, add half of thrust to this turn's speed	
		Plot vertical & horizontal move, spend plotting APs	
		Record vector changes	
		Adjust EoT Marker for Displacement/Thrust	
MODE		MODE	
		MOVEMENT	
		Move to EoT marker, complete pivots & rolls	
		Record new AVID orientation	
		Bleed speed from pivots, add speed from thrust	
		Consolidate and record new vectors	
		Place EoT marker for current vectors / speed	
		Fighters move, torpedoes move closer to targets	
		COMBAT	
		Allocate APs for defenses & weapons fire	
		Roll for ECCM, note ELINT successes	
		Plot all fire; target "D" for defensive, "R" for reserve	
		Resolve defensive fire, Aegis fire steps	
		Resolve standard fire, missile & torpedo impacts	
		Plot & resolve all reserve fire	
		CREW ACTIONS	
		Activate cloaking device	
		Activate other equipment (simultaneous)	
		Boarding party combat	
		Damage control, shield & globe regeneration	



Ships Without Bridges

Ships that lose all their bridge boxes are under several penalties; rather than list those penalties everywhere they apply, we're giving a consolidated listing here.

First, ships without bridge boxes may not use any system that costs APs. While this is obvious, it needs mentioning.

Second, ships without bridge boxes may not use weapons, labs, launch or land shuttles or fighters, or operate tractor beams, transporters, prismatic globes, super science defenses or shield regenerators.

Finally, ships without bridge boxes have extremely limited maneuver options. They may do only one of pivot, roll or thrust. A pivot or roll may only change the facing by a single window on the AVID. They may only use Thrust 1.

Ships without bridge boxes may use Damage Control parties normally. Generally, the first use is to repair more bridge boxes.

Action Points

Action Points (APs) are a mix of command and control and "power allocation". Each Bridge box generates one AP. Any unspent APs are lost at the end of the turn; you generate new APs at the start of each turn. Most systems cannot accumulate APs from turn to turn; the APs are spent on the turn they're used. Weapons are the primary exception.

A system's AP usage is chosen during ship construction; nearly any system can be made to use them. AP costs are shown by shading boxes on the SSD; the AP cost shading key is shown in the sidebar here.

APs are spent at different points of the Sequence of Play, and this rule is structured around when they'll be spent. Depending on when in the Sequence of Play the APs are spent, they get tabulated somewhat differently.

When spending an AP, you write a brief code in the Action Points track at the top of the Move card. M is movement, R is roll, P is pivot. SR would be shield regenerators, V2 would be "Weapon Mount V, row 2." J is ECM, K is ECCM

Plotting Phase Expenditures

APs spent during the Plotting phase are used for Movement, Pivots, Rolls and for weapons that have their cool down icons shaded for AP use. The actual APs are spent at the end of the Plotting Phase and all decisions have been made. To record APs spent on weapons in the Plotting phase, record the weapon's mount ID, and circle it.

Movement systems take the AP costs of all adjacent boxes with the same *numerical value* and shading and sum them for all of the capability used. For example, you cannot do Move 4 without having also used Move 3. Having all of the boxes with the numerical value "3" on your Move track shaded for 1 AP, and all your "4" boxes shaded for 2 APs means it will cost 1 AP to do a move of 3. Move 4 will cost 1 AP for move 3, and 2 additional APs for move 4. A different ship with AP 0 shading for its move 1 and move 2 boxes, and AP 1 for its move 3 and move 4 boxes would spend 0 APs to do move 1 or 2, 1 AP to do move 3, and 1+1=2 APs to do move 4. This same pattern applies for pivot and roll boxes shaded for AP use.

It is possible to make Movement systems (Pivots and Roll as well) where some numbers in the track are "missing", for example, a Move track that goes 5,4,2,1, with 5 shaded for 2 APs and 4 shaded for 1 AP, 2 and 1 being 0 APs). The ship can still apply a move of 3, even without the box (because there's a box with a higher value on the track). The AP cost would be the same as the box with the next lower numerical value to the "missing" box. That same ship, if it lost its 5 and 4 boxes on its movement track, would also lose the ability to do a move 3.

Combat Phase Expenditures

APs to activate ECM, ECCM, Armor, or other defensive systems are paid for at the start of the Combat phase, before ECCM is rolled. The costs are paid for all adjacent boxes with the same *numerical value* and shading. The total cost is the sum for all capabilities used, and works identically to the movement examples above.

APs spent to fire a weapon, as indicated by the shading on its range column, shading of the weapon mount row, or shading of a trait, are spent at this time. APs spent on a weapon (but not a weapon mount row) may come from the weapon's Capacitor.

APs may be spent to block damage to shields (only) at 1 AP per point of damage blocked. There still must be at least one bubble left when the AP is spent.

Weapons & Action Points

Weapon systems have several ways that they can use APs. Many of these will require understanding how weapons work, see page 39 if this is unclear. We're using the terms *cool down* (how many turns it takes between firings) and *RoF* (how many shots per turn the weapon gets) to explain how APs interact with weapon cyclical fire rates and arming times.

Weapons can require APs for turns spent cooling down (with the APs used to *arm* the weapon), to *fire* the weapon (payable on the turn the weapon fires), to *activate* traits or to *fire a row* of weapons in the weapon mount. A weapon can be designed to use APs in all four ways, and weapons are, by far and away, the systems likeliest to be used with APs.

Weapons (and only weapons) have an ability to store APs from turn to turn, called *capacitors*. If a weapon has a capacitor, the weapon's name will have a number in parentheses at the end of it, like this: Proton Lance (2). The number in parentheses is the number of APs that weapon can store from turn to turn. APs can be put into the capacitor at any time; once in the capacitor, they may only be used by that weapon.

Arming Cycle APs

Weapons that require APs on their cool down turns need that AP amount provided for each of the cool down turns, and those turns with APs applied must be consecutive. This pattern of APs over multiple turns is the "arming cycle". Only turns of cool down inherent to the weapon's design (those that show up on the weapon table) can be made to cost arming cycle APs. Additional turns of cool down set by the weapon mount may not have arming cycle APs and must be completed before the weapon can begin rearming.

You can't skip a turn in the cycle and make it up later. Nor can you pre-pay for multiple turns of an arming cycle at once, or draw the APs needed to pay for an arming cycle out of a weapon's Capacitor. Failing to pay the AP cost for a turn restarts the entire arming cycle, but would not require the weapon re-do any additional turns of cooling specified by the weapon mount. It is possible to have an AP cost associated with an arming cycle of 0 turns. The APs have to be spent in the Plotting phase, rather than at the beginning of the Combat phase.

Once all APs for each turn of the arming cycle are paid, the weapon is fully armed, and capable of firing at its full RoF; using less than the full RoF still discharges the weapon, and it requires the full AP costs to activate again. Until it is fired, it remains armed. It may (or may not) need additional APs based on the other ways weapons need APs. While a weapon with an arming cycle may also have a Capacitor, one is not required to keep the weapon ready after its arming cycle APs have been spent.

Weapon Fire APs

Above and beyond the arming cycle APs, weapons may take APs to fire. If this is the case, it'll be shown by AP shading of the weapon's range column. This is the AP cost to fire the weapon once. For a weapon with a high RoF, this cost must be paid for each shot taken; a weapon costing 1 AP per shot with a Rate of Fire of 4, would pay 4 APs to fire four times. (Exception: additional shots from the Continuous trait cost no APs). Torpedoes needing APs to launch use the AP cost for the band corresponding to the number of turns of thrust the torpedo will use; by setting different AP costs on different range bands, you can simulate torpedoes that take more arming to get longer ranges, or beams that need the same care and attention.

Why Four Ways To Arm Weapons?

The rules for APs and weapons provide more options for weapon design; they let you tailor make your weapon to match a setting or another game's rules.

Let's contrast two weapons. One weapon has an arming cycle of 0 turns costing 1 AP, and a RoF of 4.

The other has a cooldown cycle of 0, and a per-shot AP cost of 1, with the same RoF of 4. Otherwise, the weapons are identical.

The first weapon requires its APs be spent at the start of the turn; it's not possible to decide if you'll arm the weapon after you've moved. On the flip side, 1 AP pays for all four shots from the weapon, effectively giving a fractional AP cost of 0.25 APs per shot. (Though any unused shots are lost once the weapon is fired.)

The second weapon costs less, but will take anywhere from 1-4 AP, chosen at the time of fire, to fire.

Meanwhile, a weapon with an AP-requiring trait has the option of turning that trait off by not paying the AP cost.

Capacitors allow a weapon with a cool down cycle (but no arming cycle) to spend APs as available for later use

AP costs for weapon mount rows are one way to get 'fractional' AP costs for a weapon, or to show a weapon that's a bit 'outsized' for the ship it's on. This is also why it's possible to add additional cooling requirements to a weapon mount row, or to restrict ammunition to weapon mount rows.

Weapon traits can cost APs to use; if the AP cost isn't paid, the weapon fires without the trait. Trait and firing AP costs are cumulative. The only trait that requires an AP at all times is the Overload trait.

APs stored in Capacitors can pay for either of these categories of expenditures.

Weapon Mount Mandated APs

Weapon mounts can require APs to fire a specific row of weapons; this AP cost is paid to fire all weapons in that row at their full RoF. If weapons in the mount are destroyed or offline, the AP cost is not reduced. The APs used to pay for this may not come from any Capacitor systems on the weapons.

Crew Action Phase Expenditures

Systems requiring APs in the Crew Actions phase pay the cost per *group* of boxes, and are cumulative if the AP costs change within the group. Four shield regenerator boxes shaded for 1 AP activate for 1 AP, not 4. If three of them cost 1 AP and the fourth cost 2 AP, three would activate for 1 AP, the fourth for 2 APs for 1+2=3 APs. The ship could pay 2 APs to activate the fourth box on its own, though there's no good reason to do so. APs spent in the Crew Action phase don't require pre plotting.

Cloaking devices use the AP cost for the box with the current time spent cloaked.

APs can be used in the Damage Control Step as extra Damage Control Parties; it takes two APs to make one ad hoc Damage Control party. APs can be used for this, even if the last Damage Control party on the ship has been destroyed.

APs can be spent to move blocks of shield between facings in the Crew Actions phase, before shield regeneration. See page 46.

APs can be sent to a weapons Capacitor system during the Crew Action phase; this is a good way to use unspent APs at the end of the turn.

Squadron Organization & Action Point Transfers

Squadron command and control networks let APs be transferred "down the line" from a flagship or sub-command ship. A flagship can transfer Action Points to any ship in the organization. A sub-command ship can transfer Action Points to any of the ships directly subordinate to it that are within 3 hexes of the sub-command ship.

No ship may receive more than one AP from a donor in a turn; for a two layer command structure, this allows a single ship to receive two APs in this fashion.

All APs transferred "down the chain" are spent in the Plotting phase; write the hull ID number in the donor ship's AP track that the APs are going to, and draw a box around it; the recipient ship may spend it on any legal AP expenditure, but should draw a box around the "extra" AP.

Each flagship can have sub-command ships equal to two thirds of its Bridge boxes, rounded up. Each sub-command ship can have subordinate ships equal to one third of its Bridge boxes.

This allows a flagship up to 7 sub-command ships, and each of the sub-command ships can theoretically have up to 3 subordinate ships, allowing a fleet of 29 ships in one command and control network. (Hint - if doing a fleet action that large, give each sub-command and its subordinates to another player that you coordinate with.)

If a flagship or sub-command ship is destroyed, it takes a number of turns equal to the replacement ship's Crew Rate, plus the number of directly subordinate ships, to re-establish the command linkages,

Crew Rate

A starship is more than the sum of its weapons and equipment. The crew is a vital part of the starship's capabilities. Each Crew Rate is associated with a target number; when making a Crew Rate check, you roll a d10, trying to equal or exceed the target number. A legendary crew has a rate of 2+, while a hopeless crew has a target of 10+. The range of Crew Rates is on the table below:

Crew Rate	Target Number	% Chance of Having	Cost Modifier
Legendary	2+	00	+15%
Elite	3+	97-99	+10%
Superb	4+	91-97	+7.5%
Veteran	5+	81-90	+5%
Average	6+	21-80	None
Mediocre	7+	11-20	-5%
Poor	8+	05-10	-7.5%
Terrible	9+	02-04	-10%
Hopeless	10+	01	-15%

On the left hand axis, we have the Crew Rate name, ranging from Legendary to Hopeless, followed by the target number for crew related functions. The third column gives the percentage chance of that Crew Rate being present; roll a d100 for each ship and give it the appropriate Crew Rate. The last column is the price adjustment for the ship as a percentage of the ship's cost. This price adjustment only applies for balancing tactical scenarios; it does not change the ship's cost for campaign purposes.

For each strategic turn that the ship spends beyond the limits of its inboard supplies, its crew quality permanently worsens by one. If crew quality ever gets below Hopeless, the ship is lost with all hands.

Crew Rate Changes

In campaign games, crew rate can change over time. For every campaign year that a ship has been in service, Crew Rate may change by the "review board" method, roll a d100; on a 91-100, the Crew Rate has improved by one step. On a 01 through 05, it has degraded by one step. During times of war, these checks happen quarterly.

Any ship that's involved in an Overwhelming Victory (see page 72) can make a Crew Rate check immediately after the battle; if it succeeds, they may roll their next "review board" Crew Rate upgrade check twice and take the better result.

A ship that participates in a Legendary Victory may make a Crew Rate check immediately; if it succeeds, the ship's Crew Rate improves by one step, and they may roll twice on their next two "review board" Crew Rate checks.

Why Doesn't Crew Rate Make My Guns Shoot Better?

Traditional crew rate rules model naval actions from Age of Sail to roughly World War II. Prior to radar controlled gunnery, the crew rate would alter how fast the weapon fired (well trained crews could sling powder charges faster), and how quickly you'd find the range to the target. (well trained crews would tell the how far short the splashes were on shells fired and adjust the shot.)

By the time of the Vietnam War, the radar set on the ship was giving target positions to within 5 feet, and splash spotters had more or less been phased out. Crew Rate showed how well trained the crew was in the ECCM and ECM gear, which the EW rules cover nicely.

It seems unlikely that a space faring navy would need splash spotters in a vacuum, or would be without the benefits of something like radar. Likewise, while it's fun to imagine teams of spacers hauling bags marked "photons, 200 nm" to pack into laser cannons, it's not especially plausible.

The Ship's System Display (SSD)

At the bottom of the page is a reduced image of half of a Ship's System Display (SSD); for ships, each SSD sheet shows two ships, one on the left, one on the right. The center of the page shows information common to both ships, things like point costs, the class name, the owning empire, weapon tables and firing arc diagrams. This information is flanked by the Structural Integrity (SI) track. (When you mark off the SI box with a # sign in it, the ship explodes).

To each side of the weapon mounts are the specific groupings of weapons sharing that firing arc; you can have two different types of weapons, with six copies of each weapon for each arc; each weapon is shown with a diamond.

Moving out from the weapon mounts, at the top of the page, we have a space for the "tail number" of each ship, its crew rate (typically 6+) and the names of the individual ships, with the Structural Integrity rating of the ship underneath.

From Aft, a "1" hits row 10				Struct Int (19)	Royal Rhodesian Navy Valiant 200 Pts, 203 Boxes, 30 End, TL 0 [2Med BMed Sp3] [aR7] + JAR SHR CA2 [RMed DMed BFree RoF8 Acc 1]	Struct Int (19)
Cargo					Nose Centered	
1				S1 ASL		
Hull	Marine Squad (8 to Co.)	Assault Shit (10 HS Cap.)	S1	S2 PL	Nose-Left	
2	3 2 1	4 3 2 1	0			
	Marine Squad (8 to Co.)	ECCM, radius 1	T1			
	3 2 1	1	0			
Cargo			V2		Nose-Right	
3			0	U1 LLT		
	Marine Squad (8 to Co.)	ECM	U1			
	3 2 1	1 1	0			
Hull	Nose Shld Regen	Damage Control	S2		Top	
4	6 3	6 5 4 3 2 1	0	V1 PDL		
	Aft Shld Regen	FTL Drive	#	V2 ASL	Bottom	
	3	6 4 2				
Cargo			V1		Aft-Centered	
5			000	W1 PDL		
				W2 ASL		
Cargo	Marine Squad (8 to Co.)	Pivot	W1		Y	
6	3 2 1	3 2 1 1	000	X1 PL		
				X2 PDL		
Hull	Top Shld Regen		X1		Z	
7	3		0			
	Bottom Shld Regen	Gen Shld Regen	#			
	3	6 4 2				
Cargo	2 Inf Squads (10 to Co.)	Roll	X2			
8	10 8 6 4 2	4 3 2 1 1	00			
Cargo			W2			
9			0			
	2 Inf Squads (10 to Co.)	Bridge				
	10 8 6 4 2	6 5 4 3 2 1				
Hull	Right Shld Regen	Movement, Mode 2				
10	3	4 3 2 1 1				
	Left Shld Regen	Labs	Armor			
	3	8 7 6 5 4 3 2 1	#			

Left	Right
<p>Armor 1+</p> <p>3 2 1</p> <p>Nose Profile 0</p> <p>Armor 1+</p> <p>3 2 1</p> <p>Aft Profile 0</p>	<p>Armor 1+</p> <p>3 2 1</p> <p>Top Profile -1</p> <p>Armor 1+</p> <p>3 2 1</p> <p>Bottom Profile -1</p>

Point Defense Laser	Light Lepton Torpedo
<p>Interceptor r6</p> <p>Rng Acc Dmg Pen</p> <p>0-9 3+ 3+ 3+</p> <p>10-12 4+ 4+ 4+</p>	<p>Thr 3 End 3 Ev 8+ Piv 2/6 Hrd Enveloping</p> <p>Snd Acc Dmg Pen</p> <p>0-9 3+ 3+ 3+</p> <p>10-12 4+ 4+ 4+</p>

Anti-Ship Laser	Pulse Laser
<p>High Impact 3:1 Continuous: 7+</p> <p>Rng Acc Dmg Pen</p> <p>0-9 3+ 3+ 3+</p> <p>10-12 4+ 4+ 4+</p>	<p>Interceptor r6</p> <p>Rng Acc Dmg Pen</p> <p>0-9 3+ 3+ 3+</p> <p>10-12 4+ 4+ 4+</p>

Under that, we have ten zones used for damage allocation, labeled 1 through 10. Each zone has a maximum of seven things that can be hit. In order, these are a group of Hull or Cargo boxes, two groups capped at 10 boxes each, a "fly out" that will direct damage to a weapon or another system, then a symbol, either a "J" symbol for "Jump to next row", a ">" symbol for "wrap to the next zone" or a "#" symbol for "Go to SI"

Below the hit location zones, we have the ship's defenses, printed in the gray spaces, which are broken up by facing: Top, Bottom, Left, Right, Nose and Aft. These spaces show shields (for ships that have them), armor, and the Profile number (a size modifier to the Accuracy of incoming fire) in them.

Movement, Pivot & Roll

A ship's maximum movement rate (thrust for Mode 1 & 2 movements) is labeled as Movement in hit location 10. The maximum pivot (in AVID windows, explained on the next page) is shown in hit location 6. The maximum Roll rate (also in AVID windows) is in hit location 8.

These items have boxes drawn around them to make them easier to identify.

Conceptual Picture of a Ship in an AVID Sphere

The illustration below shows a ship in an AVID ball viewed from the hex spine between C and D, with its nose angled up at a 60 degree angle facing direction A.

Orientation markers are sticking out on poles through the appropriate windows of the AVID to help you visualize what's going on.

The AVID

The AVID is used for both movement and fire plotting. The hexagon on the AVID is the map hex your ship is in. Inside the hexagon is a top-down view of a sphere, with the north pole shown by the purple circle, and the equator shown by the amber ring. The blue and green rings show 30° and 60° angles, respectively. The sphere of the AVID is fixed relative to the map.

The spaces on the sphere are called *windows*. Each AVID window is 30° wide and 30° "tall", though being projections on the surface of a sphere, they vary in shape. The amber and blue rings have windows facing the hex sides and corners, allowing your ship to face any of 12 directions. The green ring has 6 windows, one per hex side, and there's only one purple window. The sphere of the AVID also extends "down"; the blue, green and purple windows of the AVID have counterparts on the bottom half of the sphere.

Orientation markers are used to show the six sides of the ship in the AVID: Nose, Top, Bottom, Aft and so on. The Top, Bottom, Left and Right symbols can be drawn on the spine between cells of the Green ring of the AVID. The Nose and Aft may not be. All orientation markers must three windows (90°) away from each other. At the end of this rulebook is a set of pages showing a rendered box miniature and an AVID diagram showing that ship's orientation.

Each ship has six facings (Nose, Aft, Top, Bottom, Left and Right), which are the windows its orientation marker is in, plus all adjacent windows. Many ship's defenses are allocated to specific facings. Damage from the Aft facing has better odds of doing engine damage.

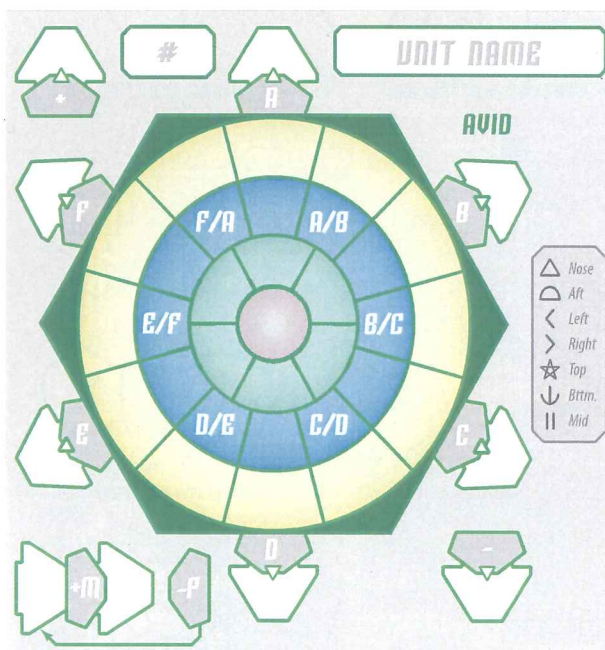
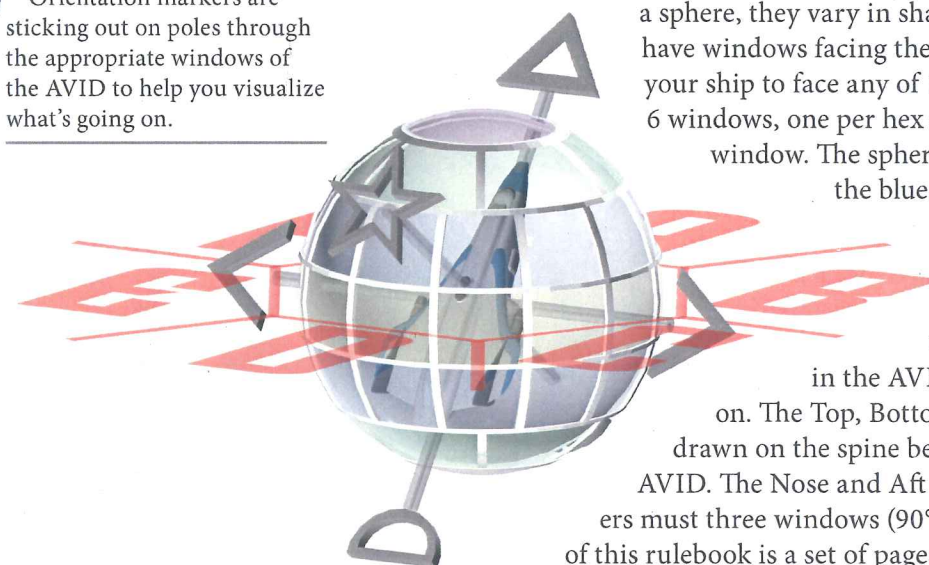
The arrows pointing out from the hexagon (labeled "A" through "F", plus "+" and "-") are used for Mode 2 movement and tracking vectors independently from your ship's facing. These arrows are called "vector containers". The small triangle inset at the base of each white arrowhead is used to track half hexes of displacement, and is used by checking it off when a half hex is carried, and erasing it when it's used or lost.

The arrows that have a blank arrow, followed by one labeled "+M", then another blank, then a reverse arrow labeled "-P" are used for determining speed (and the amount of speed bled) in Mode 1 movement. They're oriented from left to right on the "hex side" AVIDs, and from top to bottom on the

"hex corner" AVIDs.

No arrows are needed for Mode 0 movement.

In general, if the arrow is white, you record a vector in it. Record factors that change a vector in the gray arrowheads.



The AVID & Facing Changes

Pivots (changes to the direction the ship's Nose points) are drawn on the AVID. Draw an arrow from where the Nose is to where you want it to be. If the final destination is in the bottom half of the AVID, circle the arrowhead.

You can pivot a number of windows equal to the *Pivot Rating* of your ship, and can make one pivot and one roll each turn. Mode 0 and Mode 2 mark a double line (||) at the midpoint of the pivot to determine the direction of travel or thrust. Mode 1 ships should mark the pivot midpoint when using the optional midpoint movement rules on page 32.

Pivots On the AVID

On the AVID, we have a pivot taking the ship's Nose from B in the blue ring, to direction D in the amber ring. The pivot midpoint is shown by the double lines in the blue ring facing C. Pivots (and rolls) can make one diagonal crossing between AVID windows per Plotting phase.

Unlike other games that use the AVID, you may not make a single turn pivot that puts your Nose back in the AVID window it started out in. This prevents an abuse of the Mode 1 movement rules.

A ship's pivot capabilities (expressed in AVID windows) are shown in hit location zone 6 on the SSD, in the second row of the zone.

Rolls On the AVID

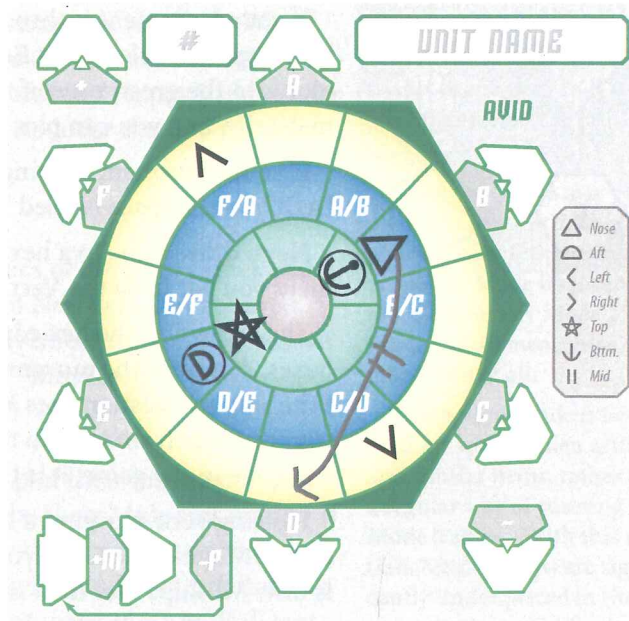
Plotting a roll on the AVID is like plotting a pivot. Instead of drawing a line from your ship's Nose, you draw an arrow from your ship's Top, Left or Right marker. Unless using the midpoint position optional rules on page 32, there's never a need to mark roll midpoints.

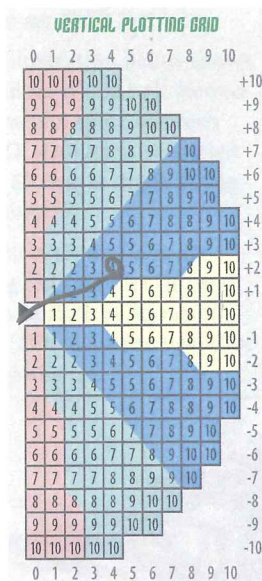
Ships can roll and pivot on the same turn; the pivot is tracked first.

A ship's roll capabilities (expressed in AVID windows) are shown in hit location zone 8 on the SSD, in the second row of the zone.

Fortresses

Fortresses may make one pivot or roll of up to one AVID window; there may be a delay between subsequent pivots or rolls depending on the fortress' size.





The Vertical Plotting Grid

Below the AVID on the Move Card, we have the Vertical Plotting Grid. This can be thought of as the side view of the sphere the AVID, represents, with your ship at the center of the sphere (shown by the triangle), moving outwards. Your ship will move or apply thrust in the direction the midpoint of its pivot, or in the direction its Nose is pointed in, if no pivot is made. For this example, we'll continue with the pivot drawn on the last page.

Look at the AVID where you marked the midpoint of the pivot, and find the color, (blue, in this case), pointing up. On the Vertical Plotting Grid, find the blue zone of boxes, going up. Assuming your ship applied four thrust, pick a blue box in that zone with the number "4" in it, and draw a line from the triangle to that box, circling the number in the box. This is shown by the gray line in the illustration at left.

If a square on the Vertical Plotting Grid is split between two colors (like the ones split between blue and green and blue and amber at range 4), that square can be reached by movement in either color.

Finally, count out from the circled box to the scale on the top of the Vertical Plotting Grid, and to the scale on the right hand side of the Vertical Plotting Grid. This tells you that your ship will move 4 hexes in the forward direction (Direction A/B) and rise 2 altitude levels.

The Horizontal Plotting Grids

Once you know how many vertical and horizontal movement units you have, it's time to plot your horizontal movement. Horizontal movement is plotted on one of the two hex grids at the lower right hand side of the MC.

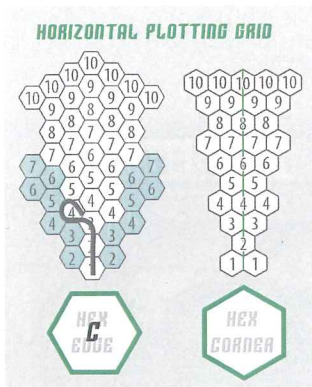
If your movement is through a hex edge (such as direction C), write that direction in the space labeled "Hex Edge". You can plot to any of the white hexagons. If your plot is in the green zone of the Vertical Plotting Grid, you're facing a hex edge automatically, and you can plot movement to any of the white or green hexagons.

If your movement is going through a hex corner, write the split direction (such as "A/B") in the space labeled "Hex Corner".

Next, draw a line to a hexagon with the number matching the horizontal movement you got from the Vertical Plotting Grid, and circle it.

The arrows on the hex edge horizontal plotting grid, going in direction C for 4 hexes, complete the movement plot we started with the pivot illustrated on page 9. (The ship in question uses Mode 0 movement for this example, so has no momentum to carry over from turn to turn. While Mode 0 movement is the least commonly used one in the game, it is the simplest to use for an initial example.)

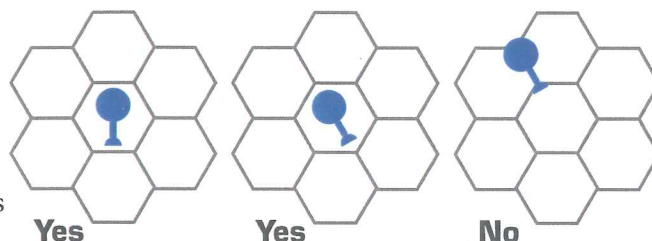
Plotting your movement in *Squadron Strike* boils down to drawing three or four lines on the Move Card. Once you've figured out how the parts fit together, drawing them is fast. All ships plot their movement at the same time, and reveal movement at the same time; there is no order of precedence or dice-off to see who moves first.



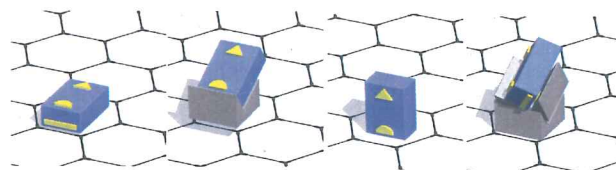
Movement On The Hex Map

Squadron Strike has ships move on a hex map. The hex map has a rosette in the center labeled A through F, and a second rosette labeled 000° through 330°; the second rosette is used for other games and can be ignored. Directions A through F are used as map directions, much like North or South are in a ground combat game.

Ships are always placed inside of hexes, not on the spines between hexes. Ships may face either a hex corner or a hex side, as shown at right:



A ship's pitch and roll is shown on the hex map with box miniatures and tilt blocks, at right, we have illustrations of a ship level with the map, Nose angled up at 30° relative to the map, Nose perpendicular (90°) to the map, and Nose up at 30°, rolled 30° to the left.



A ship's altitude is shown with stacking tiles. The stacking tiles come in increments of 1 (white), 4 (light blue) and 16 (dark blue), to combine to make altitudes. The black stacking tiles are used to indicate a negative altitude level, and go on the top of the stack. (If you array your tiles so that they go from lightest on the bottom to darkest on the top, you'll have the least amount of time spent fiddling with them during the game).

Depending on a ship's movement mode, it may have an End of Turn (EoT) marker, sometimes called a future position marker or future position tent. For movement modes using momentum, the EoT marker is placed at the 'best guess' of where the ship's position will be after movement, and gets updated twice in the Sequence of Play, once after the plotting phase, and again after all movement is resolved. When placing stacking tiles under an EoT marker, always put the difference in altitude under the marker; if you're at altitude 12 and going up to altitude 15, put 3 tiles under the EoT marker, rather than 15. To show a decrease in altitude for the EoT marker, put the stack of tiles under the EoT tent upside down.

Movement Modes

Squadron Strike uses movement modes to reflect the physics of different games and TV shows. Movement modes are named for the number of Newton's Laws obeyed. Regardless of the movement mode, a ship's maximum movement capability is shown on the SSD in the first row of hit location zone 10, labeled "Movement".

Mode 0 Movement

Mode 0 movement obeys none of Newton's Laws. Ships plot their movement, and their movement goes through the AVID window defined by their Midpoint marker if they pivoted, or their Nose marker if they did not. They will move to exactly the hex they plotted to on their Vertical and Horizontal plotting grids, and they will have no momentum once they have reached that hex. Mode 0 ships never place an EoT tent. Any plotting or movement steps not explicitly tagged for Mode 1 or Mode 2 movement apply to Mode 0 movement.

Mode 0 movement can represent ships moving by stutter-warp drives, or Aristotelian movement (where constant thrust equals constant speed). While it's the simplest to teach, Mode 0 movement is at a mild disadvantage when played on the same map with Mode 1 and Mode 2 movement.

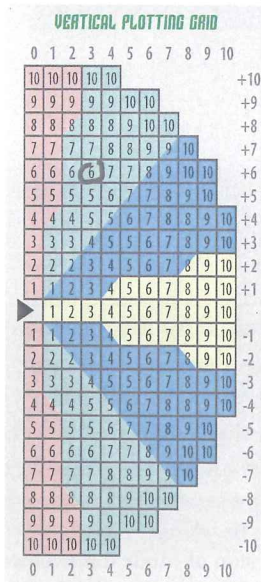
Mode 0 As Teleportation

This decouples Mode 0's movement from the facing of the ship, and makes for a *bizarre* fight. Ships may plot a move in any direction, regardless of facing. Ships using this version of Mode 0 movement move before any Mode 1 or Mode 2 movement ships plot movement at all.

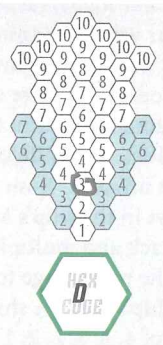
This optional rule is best used for special alien artifacts and similar items, rather than a regular way of running Mode 0 ships. With this option, Mode 0 ships are significantly under priced in their capabilities, and difficult to hit with missiles. Sum all the numbers in the ship's Movement track and multiply by 2; this is the percentage to add to the ship's cost. A ship with a track of 4, 3, 3, 2, 2, 1 would have a surcharge of 19*2=18%

Example: Centering Your Initial Velocity Plot

For example, if your velocity were six, facing direction D, (green, upper), your placement of the EoT marker would be constrained to the center of the three green boxes on the vertical move grid with the number 6 in them. This translates into three hexes of horizontal movement, and 6 hexes of altitude change. In the event where there are an even number of choices of eligible boxes on the vertical plotting grid, pick one of the middle two.



The horizontal portion of the plot would go straight down the Hex Edge plotting board for 3, as shown below.



Mode 1 Movement

Mode 1 movement adds momentum to Mode 0 movement. A ship using Mode 1 movement obeys one of Newton's Laws; it has a velocity that persists from turn to turn, though it always faces whatever direction the Nose is facing. This movement mode is best for universes with "warp drives" or spaceships that bank to turn.

Mode 1 movement always moves in the direction the ship was facing at the start of the turn, rather than in the direction of the midpoint of a pivot as Mode 0 does.

Mode 1 movement juggles three numbers to find your movement on the current turn, and how far you'll go on the next turn. These numbers are tracked in the arrowheads below the AVID, not the ones sticking out from the hex sides of the AVID.

The arrowheads are arrayed as an arithmetic worksheet: Initial velocity (first arrowhead), thrust (the gray arrowhead marked +M), the actual distance you move during the turn (the third arrowhead), and the number of windows you pivoted (the final arrowhead).

Initial Velocity & EoT marker

Your initial velocity is whatever velocity you had at the end of movement on the prior turn; if this is the first turn of a scenario, it's 0 unless something else says otherwise. After movement of each turn, you'll be recording a new initial velocity in the first arrowhead, and placing your EoT marker in accordance to this.

When placing an EoT marker according to your initial velocity, it helps to think of each AVID window as a conic "slice" of a sphere. Your initial EoT marker will be placed at a distance and altitude corresponding to the exact center of that conic slice, which will be the middle value on the vertical and horizontal plotting grids.

If the nose of your ship points through a hex corner, and your velocity is an odd number, you may choose either of the two hexes on the hex corner plotting grid to place your EoT marker.

Mode 1 movement can result in plotting moves that are greater than 10 hexes per turn. When doing so, plot out to 10 on the vertical and horizontal plotting grids, then circle the boxes of the "excess movement". For example, if you were moving 12, you'd plot to 10 on the vertical and horizontal plotting grids, and then plot to speed 2 going in the same direction. You cannot take both legs of the maneuver and "dog-leg" or "zig-zag" with them—for example, taking the leftmost hex for the first 10 movements plotted, and then taking the rightmost hex for the remainder.

Applying Thrust

The second arrowhead is used to record how much thrust you're applying; thrust uses the movement boxes on the SSD. You may pick any thrust rating up to your maximum on the thrust track each turn, including just coasting on your velocity.

Thrust always changes your initial velocity for next turn; its impact on your movement for the current turn depends on whether or not you're pivoting. If you pivot, your thrust only applies to your initial velocity for next turn, and your direction of travel is based on your orientation prior to the pivot.

If you thrust without pivoting, all of your thrust adds to the initial velocity for next turn, while half of it adjusts your EoT marker this turn, rounding down. This "half thrust" is called *displacement* and approximates acceleration over time.

The third arrowhead, as mentioned above, is how far you're moving on the current turn. It will have your initial velocity (if no thrust is applied, or if a pivot is applied), or your initial velocity plus half of your thrust (if thrust is applied, and a pivot is not).

Once you've got the number in the third arrowhead, select a cell in the Vertical grid matching it, in the part of the grid matching the AVID ring your Nose faced at the start of the turn. Cross reference for horizontal and vertical movement, and pick a hex on the horizontal plotting grid for the horizontal component.

You may pick any of the legal cells and hexes for the velocity you've chosen. You are not constrained by the position of your EoT marker, only by the velocity in the third arrowhead; this ability to shift where you end up is one of the advantages of Mode 1 movement. After plotting, adjust your EoT marker into the appropriate hex.

Pivoting & Speed Bleed

In Mode 1 movement, changing the direction of travel slows you down. We use the fourth arrowhead, labeled "-P" for this. For each window you pivot, you lose one on next turn's initial velocity; this is called "bleeding speed". A pivot may not take your next turn's speed below 0; at speed 0, you may pivot one window. Rolls have no effect on speed, and pivoting is the only way to "slow down" in Mode 1 movement.

The -P arrowhead points left to remind you that it slows you down; the thin arrow from it to the first arrowhead is to remind you to subtract the value in this arrowhead from the number in the third arrowhead and put the result in the first one.

Once you've finished moving and bleeding speed, place your EoT marker for next turn's initial velocity, using the procedures on the previous page.

Examples

Example 1: A ship with a velocity of 6 applies no movement energy or pivots. It will move 6 hexes this turn, and next turn it will have a velocity of 6 hexes per turn.

Example 2: A ship with a velocity of 6 applies a 2 window pivot, but no thrust. This turn it moves 6 hexes. Next turn, it will have a velocity of $6-2=4$ hexes per turn.

Example 3: A ship with a velocity of 4 applies thrust 3 this turn, but no pivot. It will move $4+(3/2)=5$ hexes this turn, and starts next turn with a velocity of 7.

Example 4: A ship with a velocity of 7 applies 2 thrust, and pivots 4 windows. Because of the pivot, on this turn it will still move 7. Its initial velocity next turn will be $7-4+2=5$ hexes per turn. The movement applied this turn mitigated speed bleed.

Example 5: A ship with a velocity of 4 applies 3 thrust, and pivots 2 windows. On the current turn, because of the pivot, the ship moves 4 hexes; next turn's initial velocity will be $4+3-2=5$ hexes.

Torpedoes & Fighters

Torpedoes pivot (and bleed speed) before applying thrust and moving. They bleed 10% of their speed per pivot, not one per window, with minimum loss of 1 hex/turn. They add their full thrust to their current speed and subsequent turn's speed.

Fighters may pivot up to half their maximum before movement and half after their movement; each pivot bleeds 10% of their speed, with a minimum loss of 1 speed. They add their full thrust to the current turn's speed and subsequent turn's speed.

Fighters may destroy one of their own evasion boxes to add two thrust on the current turn, or to add one window to their current pivot. This is done before movement, and no more than two boxes can be used this way in a single turn. See page 59.

Optional Rule: Slowing Down.

Mode 1 movement is vaguely jet-like.

For an oceanic model, ships can use their pivot thrusters to slow down without changing facing. Every two windows of pivot capability spent reduce speed by 1, as if the unit had pivoted during the turn.

This rule makes it difficult to fight Mode 1 ships with Mode 2 or Mode 0; hitting Mode 1 ships with torpedoes or missiles with this rule will be much more difficult.

As a rough approximation of the difference in capabilities, sum the numbers in all the pivot boxes on the ship, multiply by three, and increase the cost of the ship by that as a percentage; a ship with a pivot track of 3, 2, 2, 1 would have its cost increased by $3+2+2+1=8 \times 3=24\%$.

Why Are Torpedoes And Fighters Different?

The first reason is record keeping; it's much easier to track their speeds as a single number rather than remembering to add half their thrust this turn and the full amount next turn. Likewise, it's easier to let torpedoes pivot (and bleed a percentage of their speed instantly).

These changes make them more maneuverable than ships, which is an important consideration.

For fighters, allowing them to pivot, move, then pivot after movement in addition to the changes for torpedoes, lets them chase down a target, and then pivot to bring weapons into arc before they overshoot, which reinforces the 'feel' of the "World War II fighters in space..." trope that shows up most often in SF.

Mode 2 Movement

Mode 2 movement both does and does not build on Mode 1 movement. Where Mode 0 and Mode 1 movement show different sorts of cinematic movement types, Mode 2 represents how spaceships actually move in the frictionless vacuum of space.

If you've played the old video game *Asteroids*, you've played Mode 2 movement. It obeys two of Newton's laws—an object in motion will remain in motion until an outside force acts upon it, and the result of an outside force will be a vector addition of that force plus the existing motion. Or, less technically, your ship will have momentum that's fixed to a map direction rather than the front of your ship.

For example, a ship moving 7 hexes per turn in direction A, and 2 hexes per turn in direction B will move in exactly that pattern until it applies thrust in a different direction. Unlike Mode 0 or Mode 1 movement, which have some flexibility in picking their end position each turn, Mode 2 must follow the exact vectors recorded. The ship's EoT marker would be placed 7 hexes out in A, and 2 hexes in B at the end of movement each turn, until thrust was applied.

That ship can only slow down (cancel) its movement in A by applying thrust in direction D. It does this by pivoting until the ship's Nose faces direction D, and applies thrust using the procedure below.

A side effect of Mode 2 movement and its vectors being tied to the map direction is that it's the only movement mode that allows a ship to fly backwards. This flexibility in orientation comes at the price of having its end position being easily predicted.

Plotting Procedure

A ship with Mode 2 movement records its vectors in the white arrowheads surrounding the AVID; these correspond to the six map directions (A-F) and up (+) and down (-). When a Mode 2 ship thrusts, it adds hexes of velocity to the vector in that specific direction; these changes affect your velocity for *next* turn, not the current turn. Those changes are recorded in the gray arrowheads facing each direction.

Mode 2 movement applies thrust in the direction of the midpoint of the pivot, or, if the ship is not pivoting, in the direction the Nose is pointed in. On the Vertical Plotting Grid, select a square with the number matching the amount of thrust the ship is using, and in the colored zone matching the colored ring of the AVID. Cross reference to the right and up and you'll get the vertical vector change, and the horizontal vector change. Record the vertical change (if any) in the gray arrowhead labeled "+" or "-" sticking out of the AVID.

On the horizontal hex grids, pick a hex that matches the horizontal thrust element, and convert it to map direction vector changes by the following steps:

On the Hex Edge hex grid, going straight down the center row of hexes means you'll have gained that many hexes per turn in that map direction. If you select a hex that's one off of that hex direction, you're trading one hex of velocity change from the hex row to the side you shifted to.

For example, if you thrust 4 in direction A, there are three hexes in the white part of the Hex Edge grid. Choosing the middle hex gives you a velocity of 4 in A. Choosing the left hex trades one velocity in A for a velocity in F, giving you 3 in A, 1 in F. Choosing the right hex would give 3 in A, 1 in B.

When thrusting towards a hex corner, you use the Hex Corner plotting grid. The line running down the center of that grid is the exact line from the hex corner, and thrust down this line will be evenly split between the two directions.

Like thrusting down the hex row, you can pick other hexes (with the right number) and have finer control over your vectors on the hex map. For example, taking the same thrust in 4 down the A/B hex row, you still have three hexes to choose from. Taking the center hex will give you 2 hexes per turn in direction A, and 2 hexes per turn in direction B. Choosing the left-most hex trades one of the hexes in B for a hex in A, giving you 3 in A, 1 in B; the right-most hex would give 1 in A, 3 in B.

Recording Vector Changes & Displacement

When thrust is applied, write those vector changes in the gray arrowheads outside the AVID, recording the numbers in the appropriate directions. During the movement phase, after movement, any numbers you write there are added to any vectors that previously exist, and are then consolidated (using a very simple form of vector addition) to get your velocities for next turn.

If you apply thrust, but *do not* pivot, your End of Turn (EoT) marker will be shifted a number of hexes equal to *half* the amount you changed your vectors by, in the direction(s) that thrust was applied in.

For example, if you thrust 4 in D, and do not pivot, you will shift your EoT marker 2 hexes (half of 4) in D. This shifting of the EoT marker is called *displacement*.

If your displacement ever results in a "half hex" of displacement, fill in the tiny triangle at the border between the gray arrowhead and the white arrowhead; this is a "half hex carry", and it will add to any half hexes of displacement you get later on.

If you thrust in a different direction, you lose all half-hex displacement carries.

Each time you consolidate your vectors (explained on the next page), you place your EoT marker a number of hexes away from your ship equal to your current velocities, as recorded in the white arrowheads surrounding the AVID. If you had a 4 in direction A, and a 3 in direction F, and 2 in direction +, you'd place your EoT marker 4 hexes away from you in A, 3 in F, and 2 up on stacking tiles.

Tactical Implications of Vector Movement

The first rule of vector movement is that where you'll end up in a turn is less important than where your vectors will take you on subsequent turns. This is why there's such an emphasis on distinguishing how your thrust alters next turn's velocities, and why displacement only happens when you don't pivot in the current turn.

The second rule of vector movement is that in order to stop, you have to spend as much time decelerating as you spent accelerating; if you've got a ship with a thrust of 3, and build a velocity of 9 in A, it took you three turns to get there. Stopping will take you three more turns after facing direction D.

The corollary of the second rule is that the faster you're going, the harder it is for you to change the direction of travel. The volume of space your ship can occupy after a turn's movement looks somewhat like a trumpet bell, with the "flare" a function of how quickly you can pivot and how hard you can thrust perpendicular to your course. It's very easy to 'over-thrust' for the tactical environment, and build up a large enough velocity that it will take you several turns of thrust in the opposite direction to overcome. Changing your direction of travel with Mode 2 movement takes time, and that's unfamiliar territory until you're used to it.

Half Hex Displacement Carries And Pivoting?

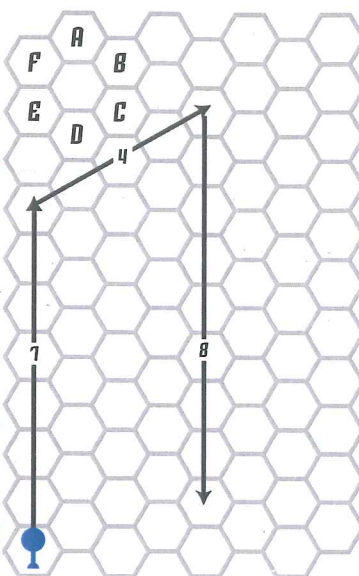
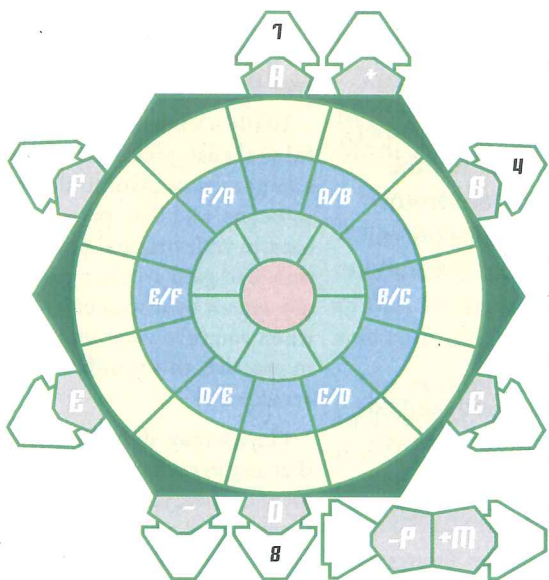
While it's potentially useful to thrust, accumulate a half hex carry, pivot to shoot someone, and then pivot back to your original orientation, and gain an extra hex of movement by displacement when you turn your engine on, in practice, this is difficult to arrange.

Players may, if they wish, say that any pivot erases displacement carries, just to make the vector record-keeping less onerous. The handful of situations where it's wrong are pretty rare.

Why Is Displacement Different between Mode 1 & Mode 2 Movement?

Mode 2 carries displacement half hexes over from turn to turn for thrust in the same direction, Mode 1 doesn't.

This offsets the lateral advantage Mode 1 has in shifting position when thrusting. Mode 1 is still vastly more maneuverable, especially when turning, but a Mode 2 ship can out accelerate it in straight thrust.



Vector Consolidation

In the same step of the Movement Phase that Mode 1 ships bleed speed and adjust their next turn's velocity, ships using Mode 2 movement do a bit of arithmetic called *Vector Consolidation*. Vector consolidation adds all the vectors of a ship together using certain rules to condense them down to two adjacent map directions.

The vector consolidation procedure is shown on the back of the Reference Card, and is illustrated here.

We'll start out with a ship with vectors of 7 in A, 4 in B, and 8 in D. This is shown in the AVID above, and translates into the hex map movement shown at right.

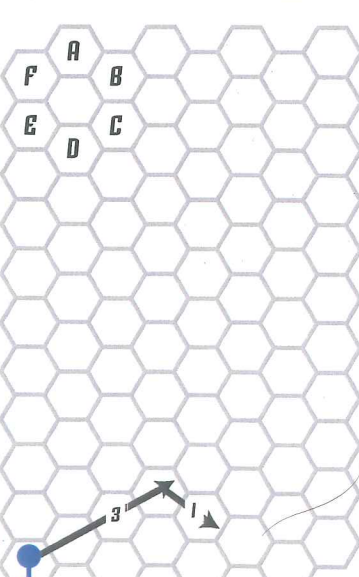
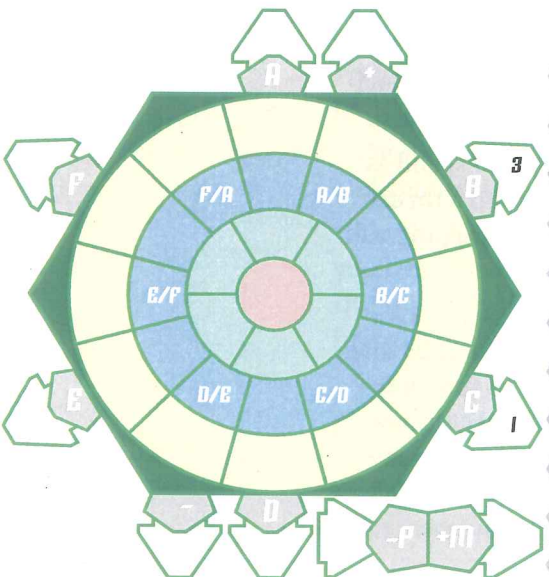
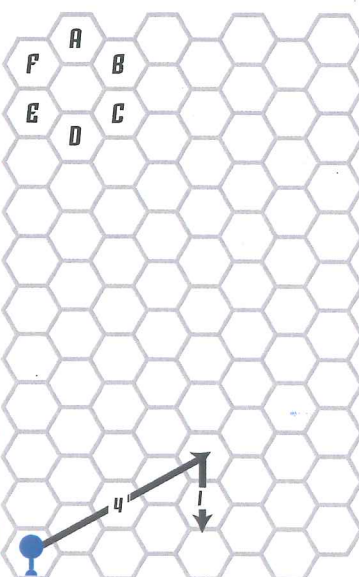
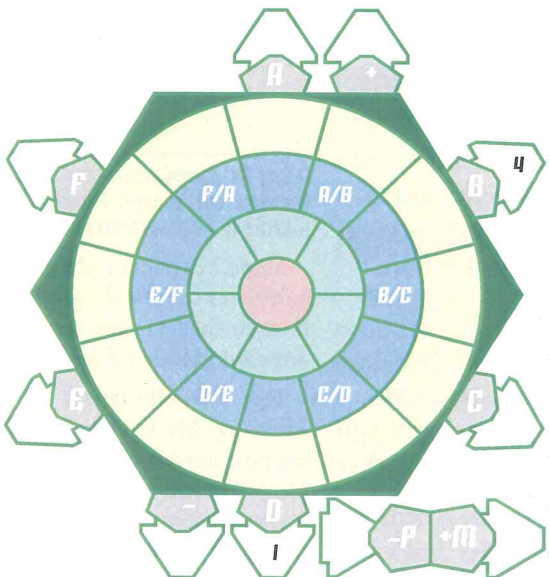
Vectors 180 degrees apart are subtracted from one another; in this case, the vector of 7 in A is directly opposite the vector of 8 in D; 8 minus 7 means that we get a net, final vector of 1 in D. This gets shown on the AVID in the middle of the page, and translated into map movement by the hex map.

As you can see, this puts us in the same end hex, but with a lot less roundabout way of getting there.

We still have two vectors 120 degrees apart. To consolidate them, rotate the smaller vector one hex side closer to the larger, adding it to any vector that was there previously, and subtract the smaller vector from both original vectors.

The 1 in D rotates to become 1 in C, the 4 in B is reduced to 3, and the original vector of 1 in D has 1 subtracted from it leaving 0.

The final map movement is shown with the third sample map.



Contrasting Movement Modes

At this point, you've read a bunch of movement modes without really being able to visualize how they work on a map; the next ten pages will give illustrated movement examples.

Before we get to the movement examples, we're going to contrast the differences in movement modes, on the assumption that anyone playing this game will eventually try to play "mix and match".

Mode 0 movement is the easiest to teach, and involves the least amount of record keeping and map clutter, as shown by the lack of EoT markers on the map. Mode 0 movement makes it almost impossible to reach range 0 against someone, because you have no indicator of where the enemy will be from turn to turn within the cone of probability for their future movement. While a Mode 0 ship won't ever be able to move farther than its current Move rate from its current position, it can appear nearly anywhere within the conic section corresponding to its movement value. This can, with very narrow firing arcs, or short weapon ranges, make for a frustrating game.

Mode 1 and Mode 2 movement have similarities, in that ships have velocities that accumulate from turn to turn. Another similarity is that when they pivot, they're effectively 'stuck' to their EoT marker, and when they thrust it either adds half to their current velocity (if they didn't pivot) and fully to next turn's velocity, or just adds to next turn's velocity (if a pivot is involved).

Because Mode 1 movement allows a ship to "plot freely" within its cone of probable movement, but never less than its current velocity, it has a significant amount of flexibility in where it shows up on the map. This is mitigated by the fact that it will ALWAYS move in the cone defined by the AVID window its Nose starts the turn in, rather than the cone defined by the midpoint of the pivot.

Allowing Mode 1 movement to "move along its pivot midpoint" means that mixing Mode 1 movement with either Mode 0 or Mode 2 movement is pointless: the Mode 1 ship is so advantaged that there's no point in playing the game.

Mode 1 is the best approximation for how most television shows portray spaceship movement; if it sort of banks like an airplane to turn, it's Mode 1 movement.

Mode 2 movement is the most realistic of the movement modes, but has the least positional uncertainty determining where your ship will end up on a given turn. You will end up *exactly* on your initial EoT marker, or be within half your thrust rating from it, in the direction your Nose is currently facing. Mode 2 movement does not allow the "lateral play" on what hex the EoT marker will be in that Mode 1 movement does. However, Mode 2 movement is the only movement mode where a ship can fly "backwards", and unlike Mode 1 movement where half-hexes of thrust are rounded down, in Mode 2, they accumulate (provided you don't thrust in a different direction).

In play, Mode 2 movement requires the most player effort; vector consolidation is a 3 step process, and involves moving numbers from one place to another, as compared to simple subtraction for Mode 1 movement, or no velocity tracking whatsoever for Mode 0 movement. While it's not a lot of player effort, every little bit adds up when running multiple ships on the map.

Both Mode 1 and Mode 2 movement run the risk of flying off the map if you aren't careful.

Visualization Tricks to Speed Play and Build Tactical Awareness

In the illustrated movement examples on the next few pages, we provide an image of a ship in an AVID ball, and a picture of the box miniature at the initial orientation, and at the end, with the path it travels marked out with shading on the hex map, going lighter as they represent positions that are farther away in time.

This kind of visualization is right up there with shooting bearings in your head (see the sidebar on p35) as one of the skills that elite players master.

Optional Rule: Ramming!

During the Plotting Phase, a captain may write "Ramming" across its AVID plot, if he thinks he'll end up in the hex and altitude of an enemy ship.

After EoT markers are adjusted (and show a ram is possible), the ramming player reveals that he wrote "Ramming" during the Plotting Phase, then stands up and gives the speech for the crew.

Everyone in the room (including the player of the ramming target) votes. If a majority of them agree that the speech was stirring enough to allow a ram, the captain makes a Crew Rate check.

A success means the ship has rammed, destroying both it and the target at the end of the combat phase. A failure means movement and combat is handled normally.

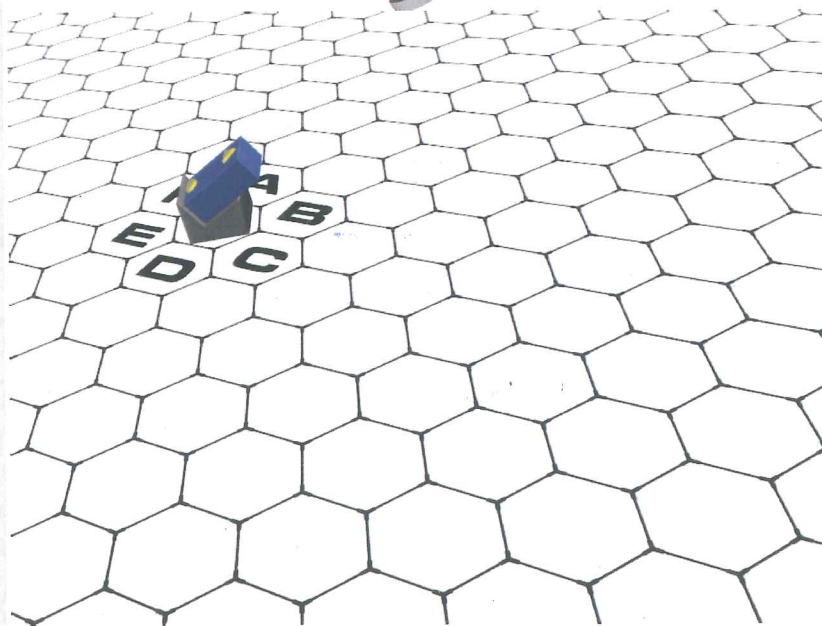
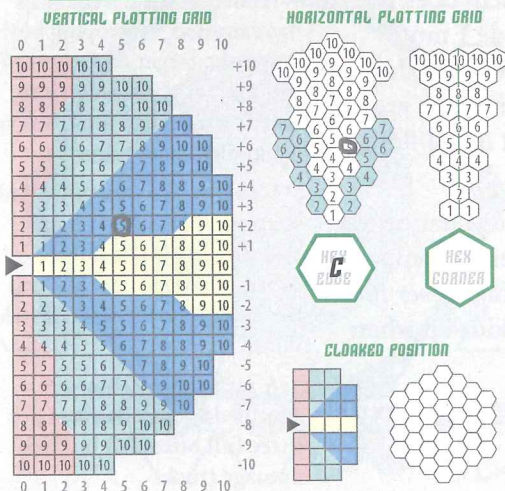
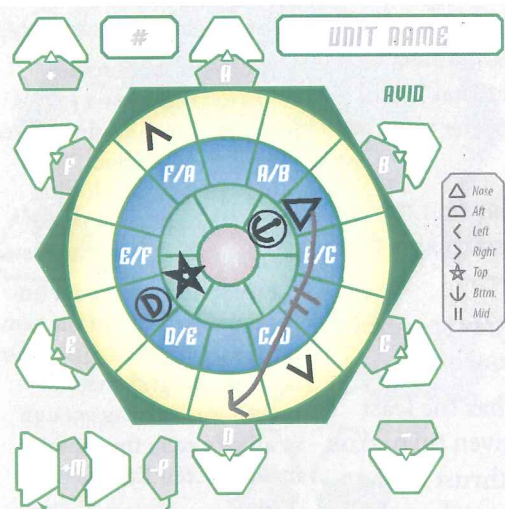
If the speech is insufficiently stirring, the crew mutinies, and the ship is considered captured by the other side at the end of the Crew Activities Phase.

A ramming fighter or shuttle does one damage per three full boxes left on their damage track.

Mode 0 Example #1

For this example, using Mode 0 movement, the ship starts out facing B (blue, upper). This can be seen on the ship control card shown at lower left, and is reinforced with an image of the map (with the box miniature in a tilt block facing direction B, angled up at a 30° angle).

To better visualize what's happening on the AVID, see the rendered AVID ball, which has the orientation markers of the ship sticking out of the appropriate windows.



As can be seen on the Move Card at left, the ship is pivoting to face direction D. The midpoint of the pivot is facing direction C (blue, upper).

This becomes the direction of travel for this turn's movement. The ship is capable of moving 5 hexes per turn, and so we circle the one of the boxes numbered "5" in the blue zone (the direction of travel), which translates into 2 hexes up and 5 hexes forward.

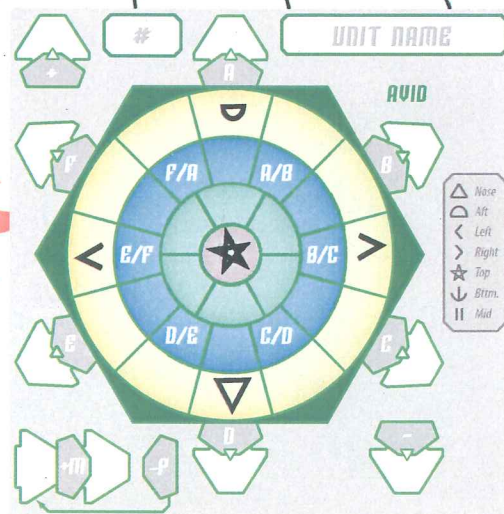
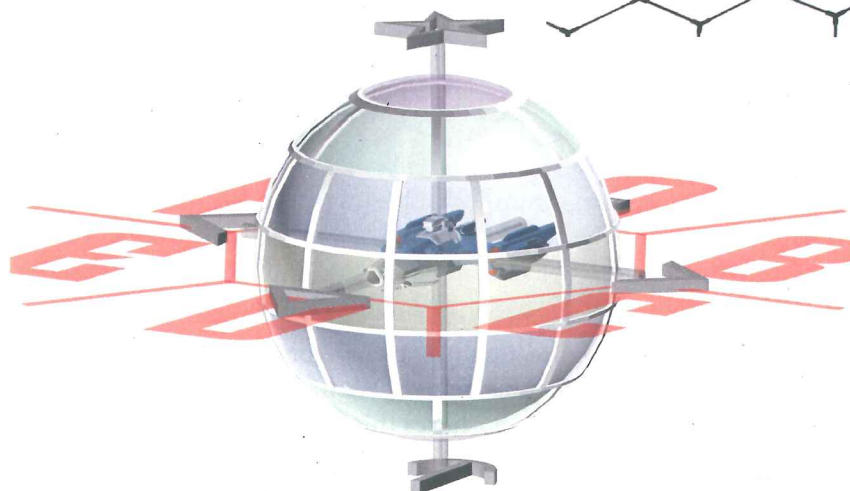
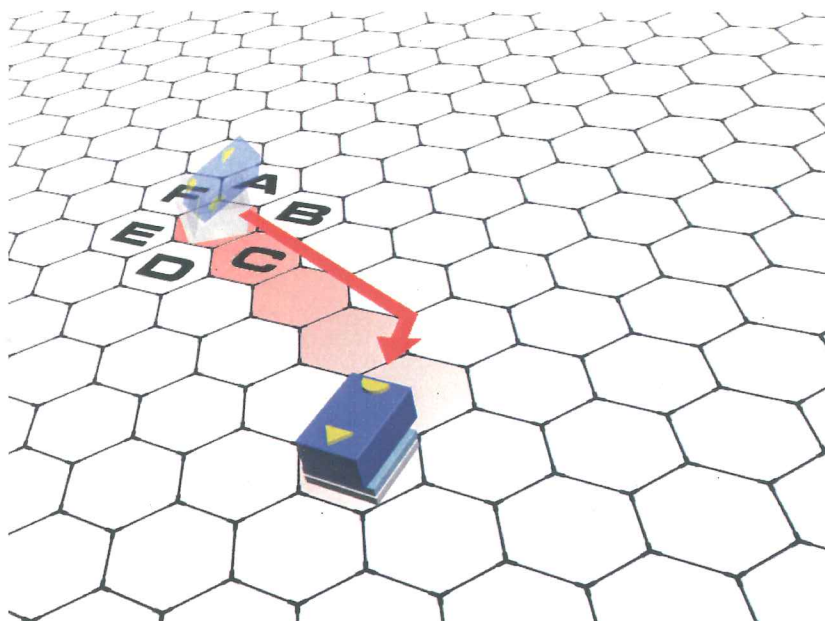
Using the plotting board for the hex edge, we may pick any of the white hexagons with a 5 in it, and choose the rightmost one.

To illustrate the pivot, we've got another rendered AVID ball immediately below; the arrow traversing from B (blue, upper) to D (amber) matches the arrow drawn on the AVID, and the lighter colored cone shows the direction of travel.



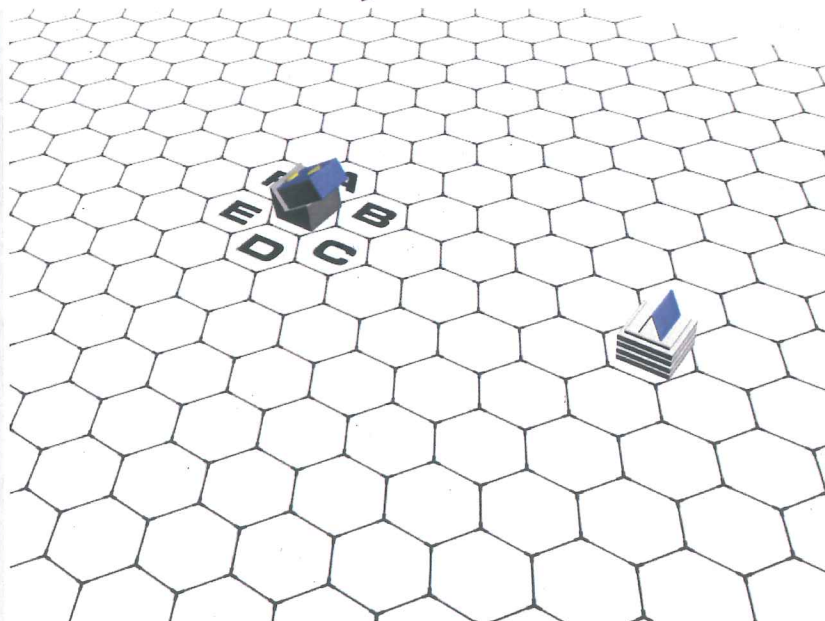
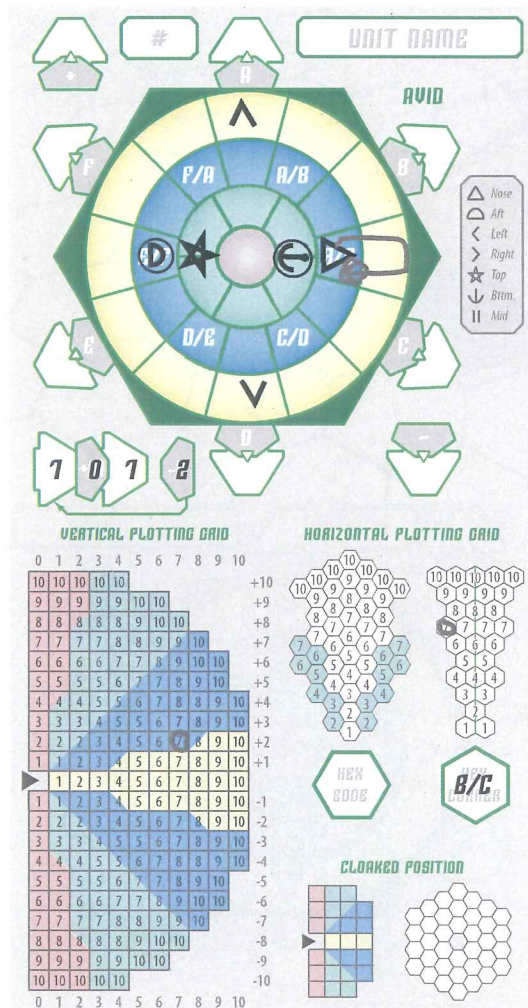
A picture of how we move on the map is shown at right. Note that we've gained 2 stacking tiles under our final position.

At the bottom of the page, we have a rendered AVID ball showing our final orientation, and an AVID with the orientation properly recorded as a reference. Because Mode 0 has no momentum, this completes the example.



Mode 1 Example #1

In this example, our Mode 1 ship is starting with a velocity of 7, and is facing direction B/C (blue, upper). The illustrations below show an AVID ball with the initial orientation, followed by the map view, with the End of Turn marker 6 hexes away from the ship in B/C, going up by 4 hexes. This corresponds to the middle '7' in the upper blue band, the center of the cone of space our ship could possibly move to. Finally, we have the ship's initial plot on the Move Card at lower left.



The ship is pivoting from B/C (blue, upper) to B/C (blue, lower). This is shown by the arrow on the AVID, which "turns back" on hitting the outside edge of the amber ring, and has the arrowhead circled to show that the end orientation is below the map plane.

With Mode 1, the direction of travel is from before the pivot. We move in direction B/C (blue, upper). We have an initial velocity of 7, and 0 thrust, so we'll move 7 hexes this turn. Taking the plot shown at left, going up 2 hexes of altitude and 7 hexes horizontally; somewhat different from our initial EoT marker. This is perfectly legal; movement Mode 1 allows some 'play' in where you end up.

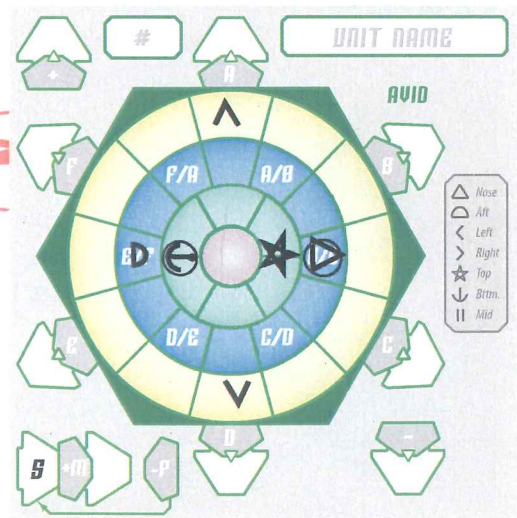
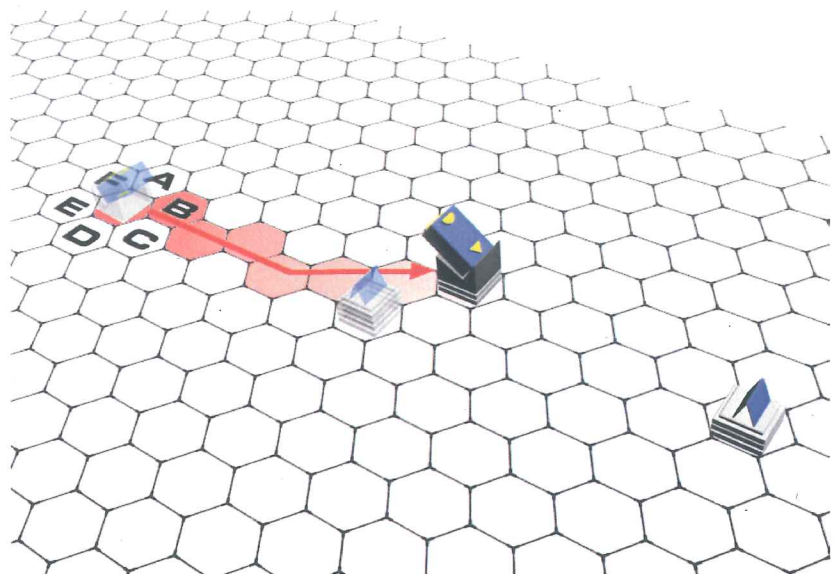
Illustrating the pivot, we have a rendered AVID ball. Note that the “direction of travel” cone sticks out of the window that the ship’s initial orientation was at.



At right, have a picture of how our ship moves, with the initial position and the initial EoT markers faded out, and the path of hexes tinted for us.

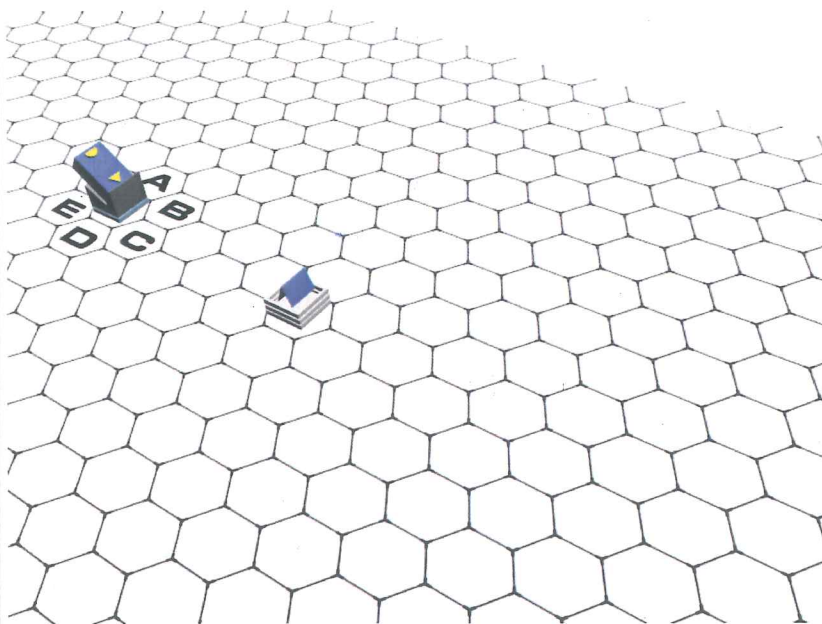
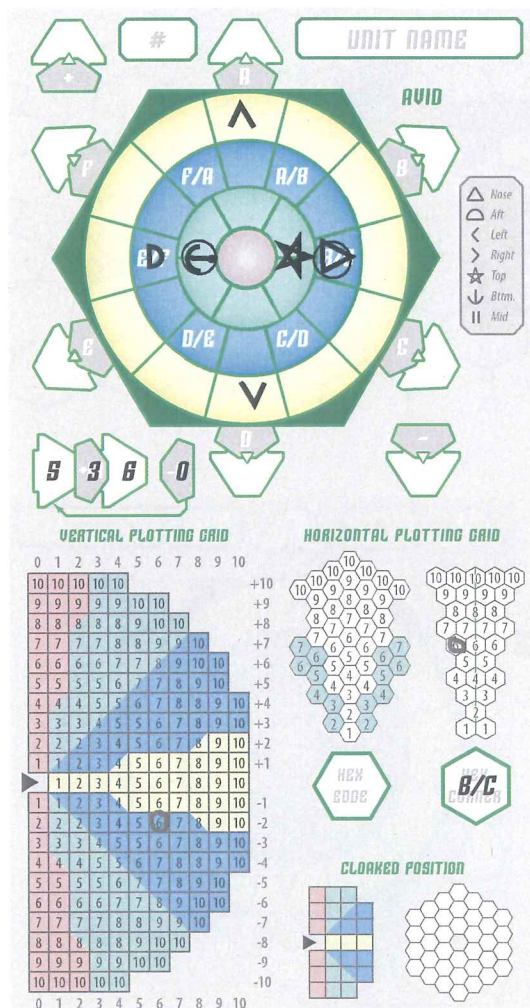
Next turn, we'll start out facing B/C (blue, lower) with an initial velocity of 7 (our initial velocity) - 2 (the number of windows we pivoted) = 5 hexes per turn. The EoT marker placement after movement would correspond to the middle 5 on the lower blue band (reflecting our pivot down), and would be 5 hexes out and 3 hexes down.

At lower right is an AVID showing all steps completed.



Mode 1 Example #2

This example is a continuation of the prior turn's movement. We have an initial velocity of 5, facing B/C (blue, lower). We are not pivoting, but are thrusting. The ship has a maximum thrust rating of 3, and the initial EoT marker is 5 hexes away on the centerline between B and C, and 3 hexes down (shown by the inverted stacking tiles). This corresponds to the middle "5" in the lower blue zone of the Vertical Plotting Grid. What this example will demonstrate is thrust and displacement for Mode 1 movement.



The initial velocity, plus the thrust of 3 (with no pivot) will move us 5 hexes (for the initial velocity) and 1 hex (for the thrust of 3, halved and rounded down), for a total of 6 hexes this turn in the direction the ship's Nose is facing. Using the vertical plotting grid, we choose to go 5 hexes forward, and drop 4 hexes in altitude. On the horizontal plotting grid, we choose to take the left most 6 on the B/C hex spine.

While there is no pivot to illustrate, the AVID ball below shows the direction of travel overlaid with the Nose symbol sticking out of the AVID window for B/C (blue, lower).

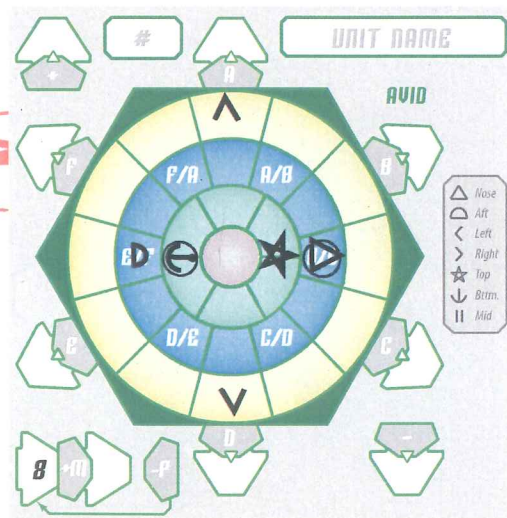
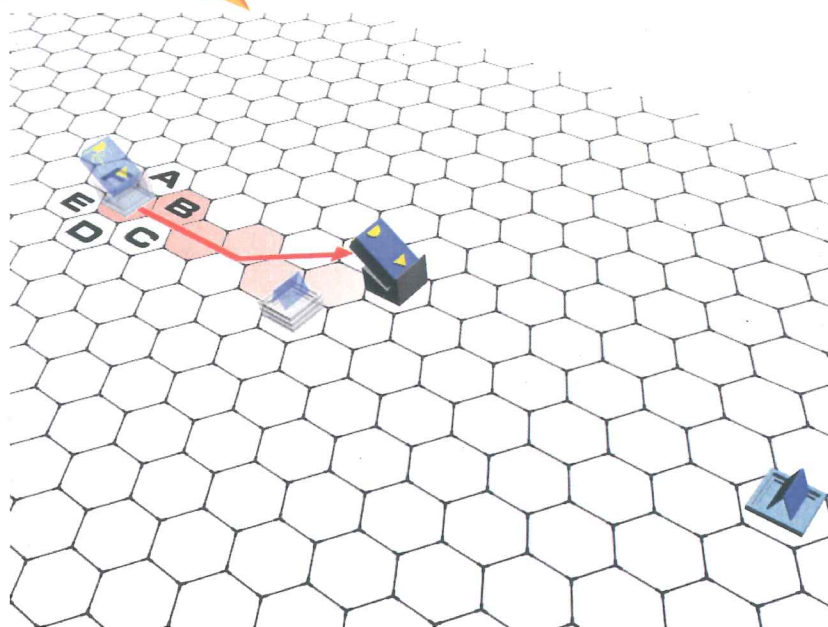


At right, we have a picture of how the ship moves on the map, again, tinting the hexes the ship moves through. Note that we've changed where we ended up by a few hexes as the result of this movement plot.

Next turn's velocity will be 5 (our initial velocity) plus 3 (our thrust), for 8 hexes.

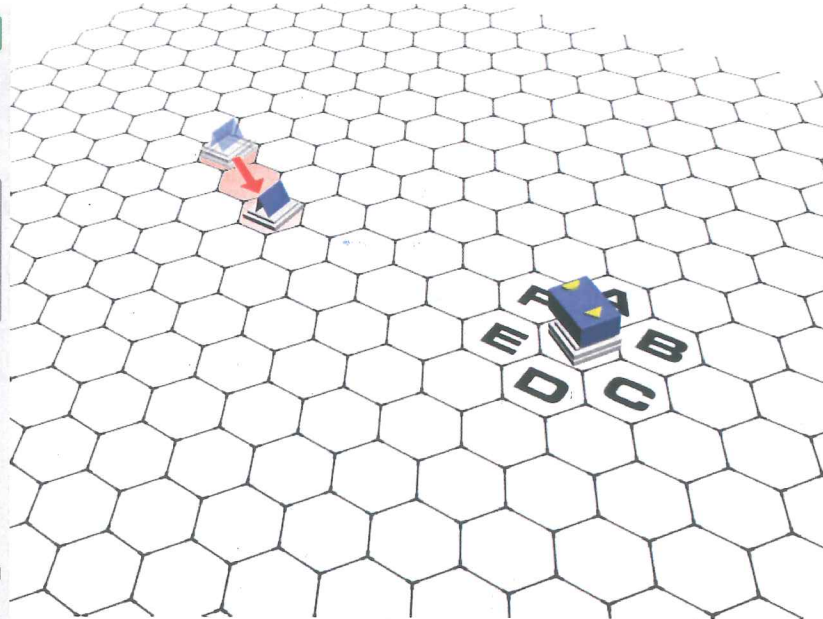
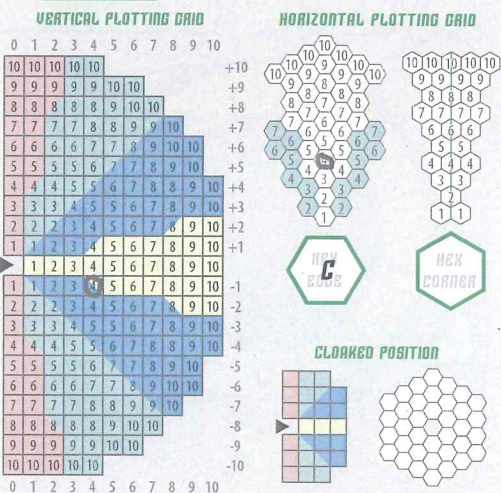
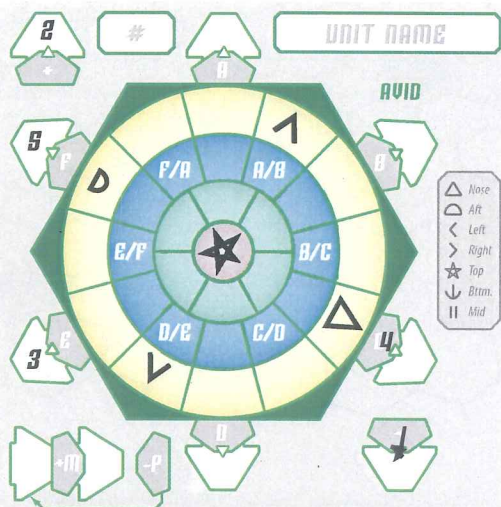
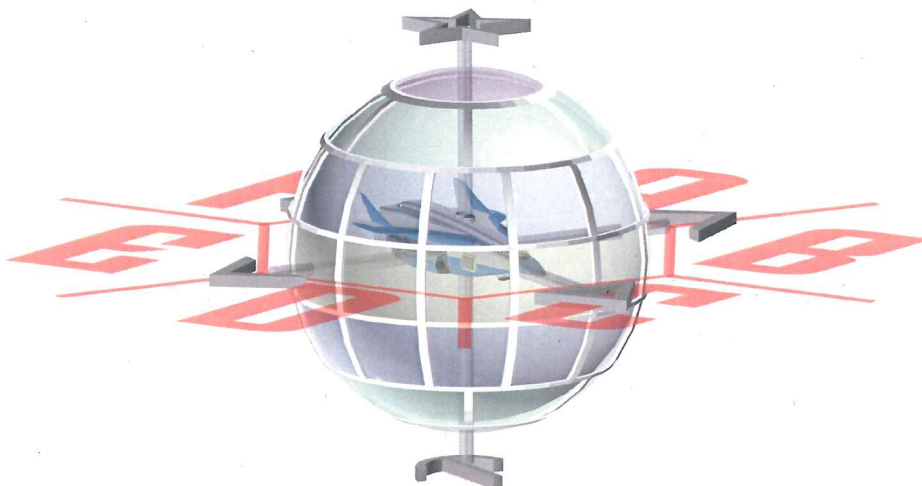
Our initial EoT marker will be placed in accordance with the middle 8 in the lower blue plotting grid, at 7 hexes forward and 4 hexes down.

At lower right is an AVID with all record keeping complete.



Mode 2 Example #1

For this example, the ship is facing direction C (amber) with the map, with initial vectors of 5 in F, 3 in E, and 2 in up (It's coasting backwards and preparing to decelerate). Its EoT marker is placed 5 hexes away in F, 3 hexes away in E, and 2 hexes up. The AVID ball shows the initial orientation, and the map illustration below shows the initial setup.



The ship applies thrust 4, with no pivot, to accumulate velocity in direction C (amber). Using the Vertical move tool, it can select any of the cells in amber that have a 4 in them, including either of the cells that are half blue and half amber. The lower one is chosen, giving a velocity change of 4 in C and 1 in down.

Using the horizontal move tool, we can select any of the hexes with a number 4 in them, and just take a straight acceleration in C. This will displace the EoT marker two hexes in C, and it will have a half-hex displacement carry in down, shown by the shaded hexes in the map above.

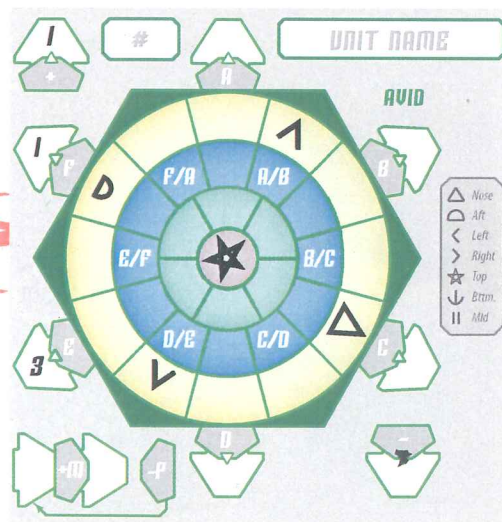
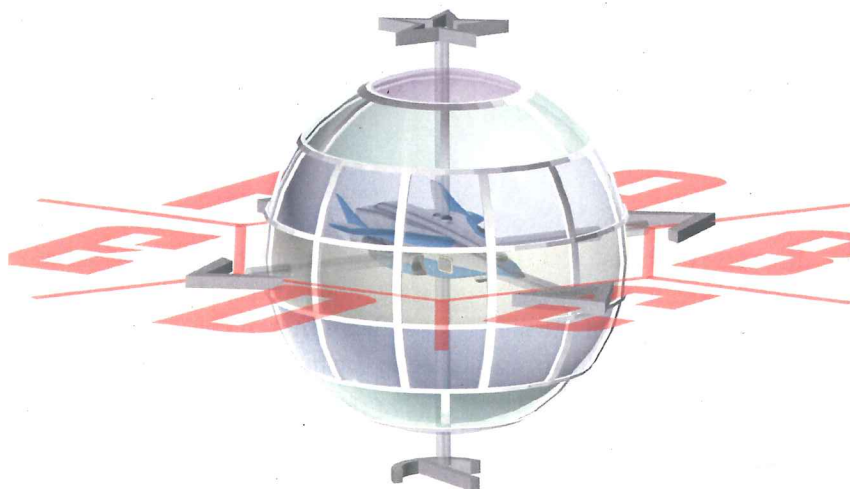
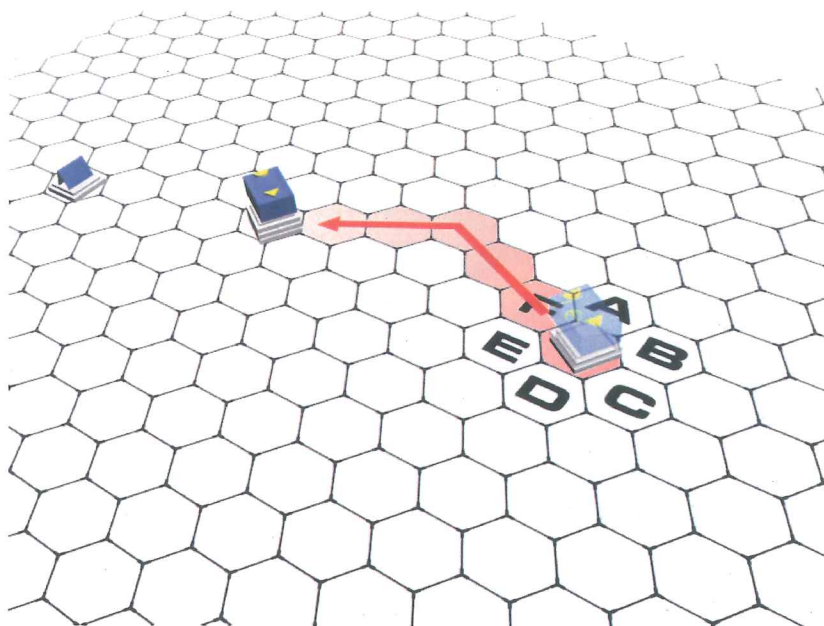
A picture of the ship's movement (the dark flange pointed out the back side of the AVID, and its thrust) can be seen in the AVID ball below.



The movement on the map is shown at right, along the shaded hexes.

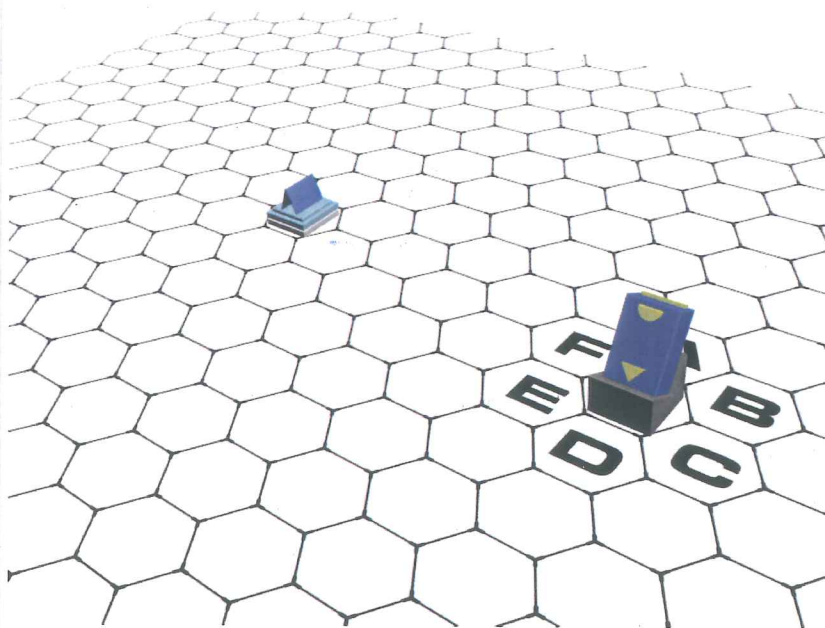
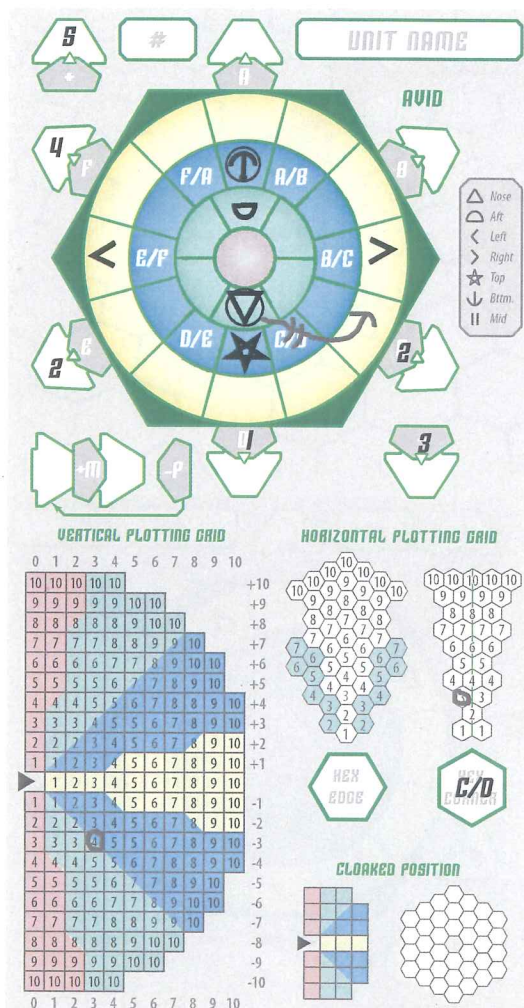
At the end of movement, the vectors would be consolidated, with the 1 accumulated in down canceling one of the vectors going up, and the 4 in direction C canceling out some of the prior turn's velocity of 5 in F. This is shown in the AVID at lower right (note that the triangle for the displacement carry is filled in "down", with both the gray and white "down" arrowheads blank. The rendered AVID ball shows the final orientation.

The map view at right shows the EoT marker placed for the consolidated vectors of 3 in E, 1 in F, and 1 in up.



Mode 2 Example #2

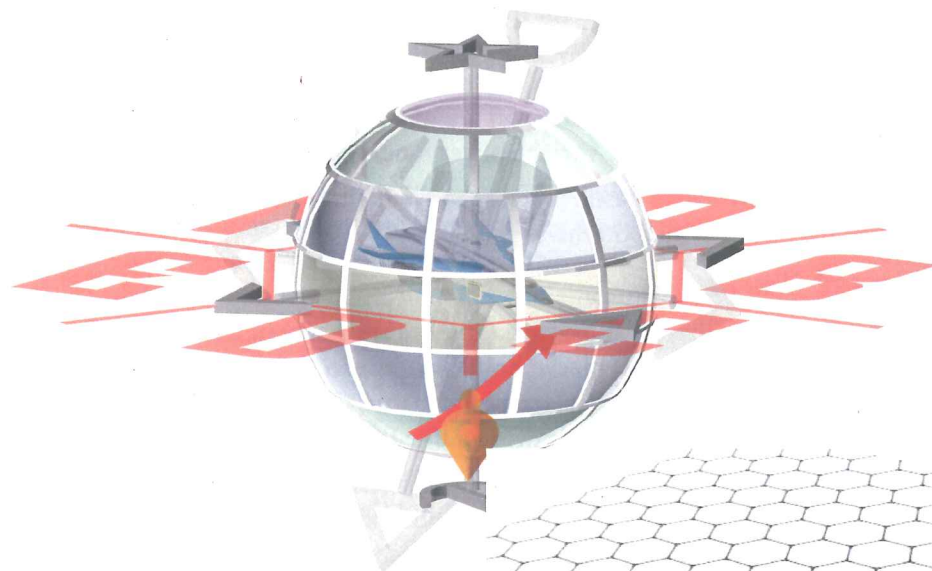
For this example, the ship has initial vectors of 4 in F, 2 in E and 5 in up. The desired maneuver is to pivot from the initial facing of D (green, lower) to direction C (amber), while plotting thrust 4.



Because the ship is pivoting and thrusting at the same time, the direction of thrust is at the midpoint of the pivot, shown by the double hash marks, in direction C/D (blue, lower). With a thrust of 4, we choose one of the blue cells with a 4 in it, picking one giving a vector of three in down, and three in the horizontal.

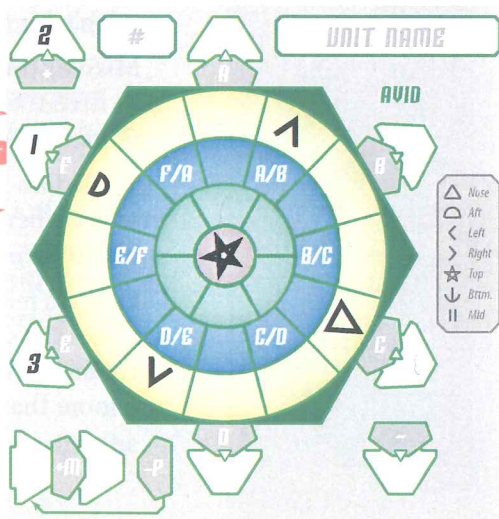
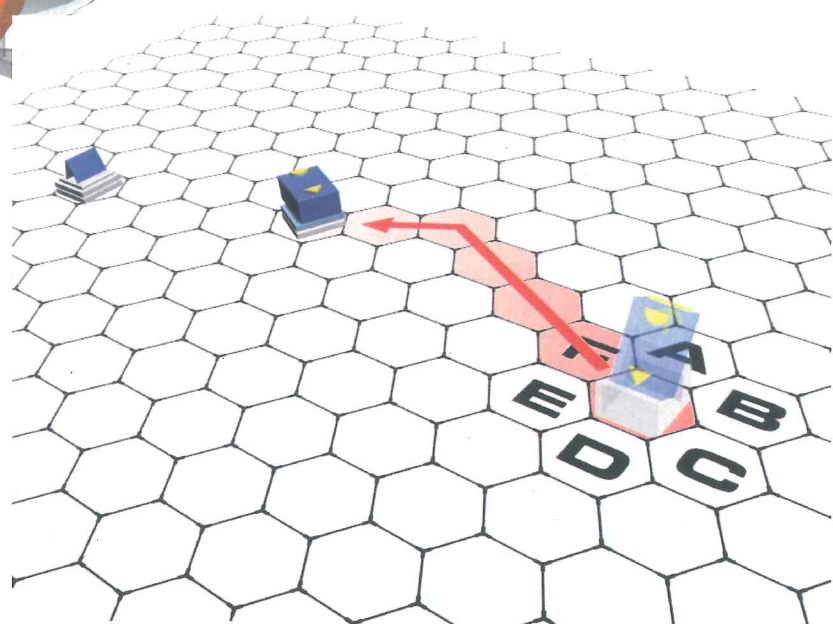
Plotting our horizontal elements of thrust on the hex corner grid, we take the left most 3, which gives as two thrust in direction C, and one in direction D.

Because of the pivot, there is no displacement of the EoT marker; all of the thrust will be used to rewrite next turn's vectors. A graphical image of where the direction of thrust lies is shown on the AVID ball below.



As you can see from the map picture at right, the ship is going to slide into its original EoT marker, but next turn's vectors will be different. The vectors consolidate down to 3 in E, 1 in F, and 2 in up.

At the bottom of the page is a rendered AVID ball showing the ship's final orientation, and how it's drawn on the AVID play aid, with the vector consolidation completed.



Fuel & Movement Mode Balancing

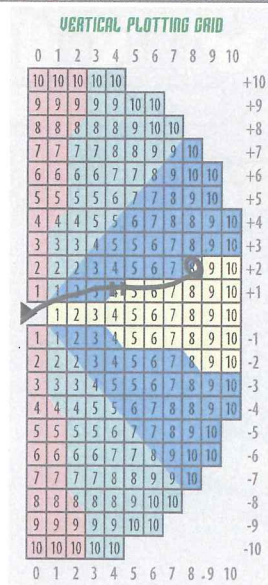
Designer's bias here: I prefer universes with fuel tracking. Most gamers don't. The closest balance between all three movement modes on the same map is to require them to use fuel as described on this page.

Fuel use does make torpedoes more dangerous, because there's a long term cost to running away from them.

Finding the Midpoint

In the illustration below, a ship with velocity of 8 moves 8 horizontal and 3 vertical. By drawing a line on the Vertical Plotting grid and marking where it crosses a cell with the number 4 in it.

The player would pick a hex that's 4 hexes out from its starting position on the shortest path to the initial EoT marker and place their midpoint marker there.



Optional Movement Rules

Fuel Usage

Ships can be built to track fuel for movement. Fuel is shown on the SSD as boxes with hash marks (||) in them, which divides the box into thirds. Each hex per turn of velocity change in Mode 1 or Mode 2 movement marks off 1/3 of a fuel box. Each turn of movement for Mode 0 marks off 1/3 of a fuel box. Whether tactical fuel is required is a universe-specific variable. Everyone uses this rule, or nobody does.

Declining fuel fraction doesn't increase movement/thrust. **Attack Vector: Tactical** has fuel and thrust rules which do this.

Midpoint Markers

Midpoint markers, have a ship move (and fire weapons) in two phases during the turn. The midpoint marker is placed halfway between the ship's initial position and its initial EoT marker, before displacement for thrust. To find the midpoint, use the RALT or Vertical Plotting Grid, drawing a line from the point of origin to the end of the move. Find the cell that crosses the line's midpoint. Displacement from thrust changes the position of the EoT marker, but not the midpoint marker.

Midpoint markers require Mode 1 ships to record the midpoint of their pivot, though travel remains in the direction the ship was facing at the start of the turn. Ships move to their midpoint marker, and face the direction of their pivot midpoints.

The full Combat phase is run after all ships reach their midpoint marker, and run again when they reach their EoT marker. ELINT successes are only counted for ECCM rolls on the second Combat phase. Weapons with a Rate of Fire of 1 may fire from either of these positions, but not both. A Rate of Fire of greater than 1 may divide its fire between them. It may not put more than two thirds of its shots in any one step.

Weapon cool down times are for whole turns. A weapon with a two turn cooldown that fires in the second Combat phase of turn 1 cannot be fired again until Turn 4, though it could fire on either of the Combat phases of that turn.

Fire plotting is done before movement when using this rule. The Rate of Fire used and targets are recorded during the Plotting Phase. Pre-plotted weapons fire can be canceled for 1 AP for any number of weapons.

Damage done to Bridge boxes on the first Combat phase reduces unspent APs available for the second Combat Phase.

Missiles travel half their maximum range on each Combat phase; this means missiles fired from a Midpoint marker can impact a close target on the same turn at their EoT marker.

Torpedoes pivot, bleed speed and apply thrust before moving, then move half their velocity when ships move to the midpoint marker, and the other half when ships move to their EoT marker.

Fighters may pivot before moving, when they reach their midpoint marker (which changes the direction of flight) and again when reaching their EoT marker. Each pivot bleeds speed normally, regardless of the number of windows. A fighter may not use more than half its pivot rating on any single pivot.

The Combat Phase

The Combat Phase uses the following steps.

ECCM Step

During the ECCM phase, players spend APs to activate weapons, ECM and ECCM, then roll ECCM dice for each ship, noting ECM suppressions.

Plot Fire Orders

After ECCM is rolled for, all players secretly and simultaneously pre-plot fire; this keeps the second person to declare fire from gaining an advantage from having seen what his opponent is shooting at. During fire plotting, all players should shoot bearings and see what weapons are in arc, which is explained on the next three pages.

Secret and simultaneous fire uses the Target Assignment tool at the bottom of the Movement Card. The eight boxes are labeled S through Z, matching the letters for the 8 weapon mounts on the SSD. Each box has two rows of diamonds at the top and bottom, matching the diamonds for weapon mounts on the SSD. Write the target ID # of the ship you're shooting at in the space provided, and blacken in the diamonds corresponding to the exact weapons being fired.

Unless a weapon trait (Independent, Interceptor, Aegis) says otherwise, you may not fire weapons from the same mount at different targets.

For weapons fired at small targets (fighters, torpedoes and missiles), put "D" in the box for the hull number. See the description of the Aegis trait on page 40 for an expansion of this procedure.

For weapons being held back as reserve fire, put "R" in the box for the hull number.

Attack Resolution Order

Fire is resolved in the order of Defensive, Offensive, and Reserve fire.

Defensive fire is fire against small targets; all defensive fire is resolved (including Aegis steps) before fire at ships. A handful of weapon traits will let a weapon damage ships during the Defensive Fire phase. Aegis and Interceptor allow more options for defensive fire, Quick allows weapons to fire at ships during the Defensive fire stage. Any weapons destroyed during the Defensive Fire step (on ships or on fighters) are not eligible to fire during the Offensive Fire step.

Offensive fire is resolved against ships. Offensive fire is resolved in the order the weapons are declared in; this can impact how damage is resolved. For example, firing your weapons that batter down shields before firing your armor piercing weapons. Any shields or armor removed by offensive fire are not present when subsequent fire hits the target. Any weapons or equipment (such as ECM or ECCM systems) hit by offensive fire are still present until the end of offensive fire.

Reserve fire allows weapons to be re-targeted after seeing the result of Offensive fire. Any weapon held for Reserve fire that's destroyed prior to its firing cannot fire. Weapons held for Reserve fire secretly re-plot their targets after seeing Offensive fire results, replacing all "R" targets with the actual hull numbers of what's being shot.

Fighters firing on small targets fire during Defensive fire. Fighters firing on ships fire during Offensive fire.

Torpedoes and missiles attack their targets when they enter their hex, during the Offensive Fire step of the Combat Phase.

Bearings & Maneuver

One place where skill with the game shows up is combining bearings with maneuver; particularly for people who can shoot bearings in their head (see the sidebar on the next page).

The principle trick is learning to look at your EoT marker, and the EoT marker of your opponent's ship at the start of the turn. Both ships will be reasonably close to those positions after movement. By mentally shooting a bearing, you can draw your pivots in a way that will put your guns in arc to get the shot you want.

This is easier to do against a target that is likely to pivot on its next movement, and is challenging to do against Mode 0 opponents, who need not place an EoT marker at all. The cone they can be in is much wider, but usually shorter.

This technique is the only way you'll ever get a single window firing arc to work.

Shooting Bearings

The AVID and another play aid, called the *Range/Angle Lookup Table* (or RALT), are used to shoot bearings in *Squadron Strike*. Shooting bearings is a fancy way of saying "Where in the sky do I see that target?"

The illustrations at the lower left corner of this page, and the upper right corner of the next page illustrate, graphically, what shooting a bearing is doing. The ships are about 15 inches apart measured across the spread of these pages, and using the height of the page for vertical separation, the one at upper right is about 10" above.

If you look at each of those images in turn, you'll see that there's an AVID window that's colored differently; this is the window each of them sees the other through.

We'll cover where those ships see each other on the AVID in a little bit. First, we're going to do some target practice using the targets on the map to the right here (where the ships are shown with their icons).

The first targets we're going to shoot bearings to are shown by geometric shape, a square, a triangle and a circle. The altitude of the target is printed in the geometric shape, at +0, -2 and +6, respectively. Our ship is at the bottom of the map, facing direction B/C, and is at altitude zero.

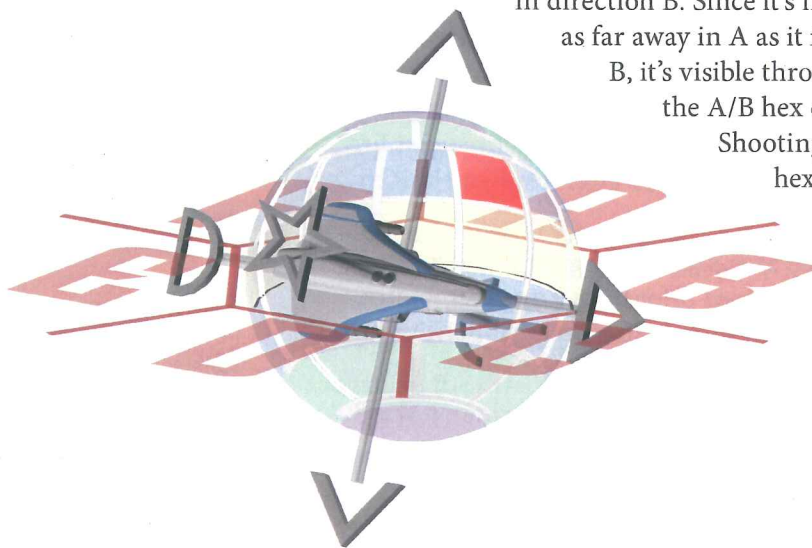
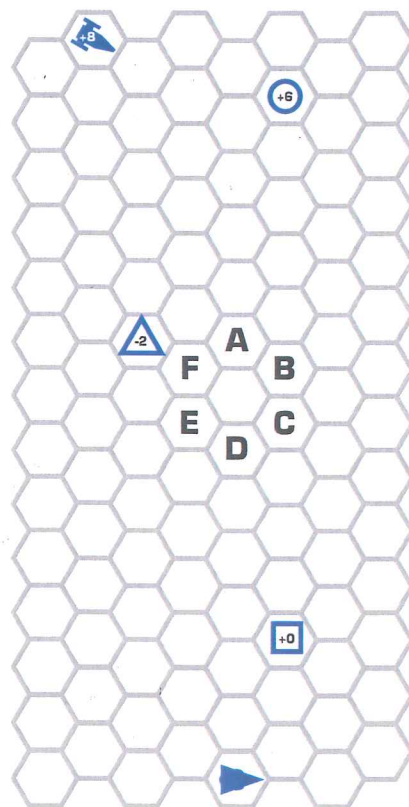
The first step is figuring out if we see the target through the hex edge or hex corner. The rule of thumb is printed on the Reference Card, along with a graphical illustration.

The rule is "If the target is 3 times as far away (or farther) in one map direction as it is in the other, the target is visible down that hex row. Otherwise, it's visible through the hex corner."

Shooting a bearing on the square target, it's 2 hexes away in direction A, and one hex away in direction B. Since it's not 3x as far away in A as it is in B, it's visible through the A/B hex corner.

Shooting a bearing on the triangular target, it's 7 hexes away in direction A, and 2 hexes away in direction F. 7 is at least 3x 2, so it's visible through the A hex side. The circular target is 12 hexes away in A, and 1 hex away in B, making it visible through the A hex side as well.

The next step is finding out what ring of the AVID the target is visible through, and what the actual range to the target is, in 3-D space.



For that, we use the RALT, mentioned earlier, and shown below. The RALT is a table of the Pythagorean Theorem, showing how far away an object is if you go a certain number of hexes out, and cross reference with a given difference in altitude. The color coding on the RALT's cells matches the color coding on the AVID.

We'll start out with the square target, which is at the same altitude level as our ship. Logically, that puts it in the amber ring, and as we determined earlier, in direction A/B. For the other two targets, it gets a bit trickier.

We'll work on the triangular target next. It's visible in direction A, and is 9 hexes away, and is 2 hexes below our ship. Using the RALT, we count 9 out on the bottom axis of the table (for the horizontal distance), and 2 up (for the difference in altitude), and get a distance of 9. The color of the square is amber, matching the amber ring of the AVID, and thus, we see the target in direction A, in the amber ring.

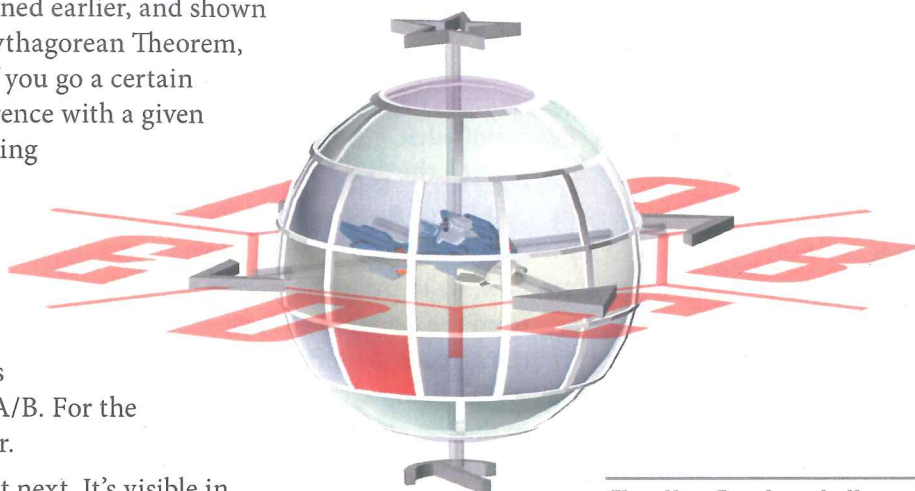
The distant target (shown by a circle) is visible through the A hex side, and is 13 hexes away and 6 hexes up. Using the RALT again, we count 13 out, and 6 up, getting a range of 14, visible through the blue ring.

Now that we've got targets out of the way, let's go back to shooting a bearing on the other ship. It's 12 hexes out in A, and 3 hexes offset in F, making it 15 hexes away and visible through direction A. It's at +10 altitude levels, which puts it at a true range of 18 hexes away and visible through the blue ring.

On the map, it'll look something like the image to the right.

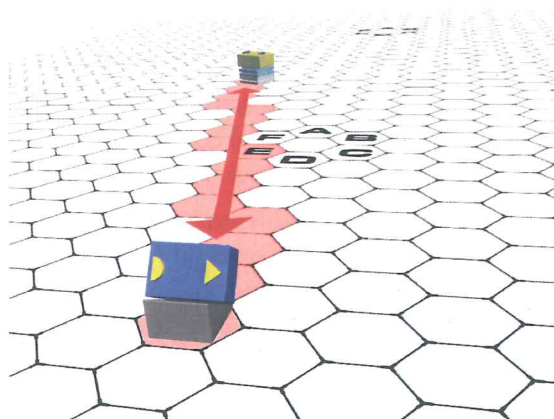
When recording bearings on the AVID, write down the range to the target in the appropriate AVID window; if it's visible through the lower half of the AVID, circle the number to remind yourself that it's below you.

We've put the targets we shot bearings to on the AVID at right. The enemy ship at range 18 would be in the same window that the number 14 is in.



10	10	10	10	10	11	11	12	12	13	14	14
9	9	9	9	9	10	10	11	12	12	13	14
8	8	8	8	8	9	10	10	11	12	12	13
7	7	7	7	8	8	9	9	10	11	12	13
6	6	6	6	7	7	8	9	10	10	11	12
5	5	5	5	6	7	7	8	9	10	11	12
4	4	4	5	5	6	7	8	8	9	10	11
3	3	3	4	5	5	6	7	8	9	10	11
2	2	2	3	4	5	6	7	8	9	10	11
1	1	2	3	4	5	6	7	8	9	10	11
0	1	2	3	4	5	6	7	8	9	10	11

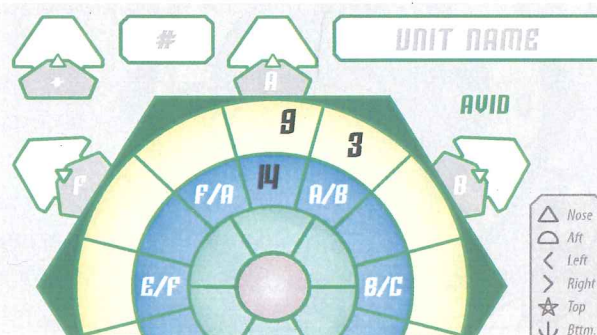
SQUADRON STRIKE! REFERENCE CARD V142



Shooting Bearings In Your Head

The math behind the color coding of the RALT is very simple; and with a bit of practice, you can "shoot the rings" of a bearing in your head faster than you can look things up on the table! This can be a quick check to see if something is in arc or not, where you don't need the exact range, just the angle of bearing.

If an object is 4x as far away horizontally as it is vertically, it's in the amber ring. If the target is 4x as far away vertically, it's in the purple ring. If the vertical distance is greater than the horizontal distance, it's in the green ring, otherwise, it's in the blue ring.



Bearings & Firing Arcs

The usual follow on step to shooting bearings is firing weapons. To fire weapons, we need to know where in the sky the target is (like we just did) and then need to figure out what weapons can shoot at the target. In the sidebar of this page, we've printed the firing arc diagrams of a ship, along with its weapon mounts.

Ships in *Squadron Strike* have up to 8 weapon mounts. The weapon mounts are lettered S, T, U, V, W, X, Y and Z. We'll go over an SSD in short order, but for now, we're paying attention to the firing arcs. The perspective on firing arcs is from the center of the sphere, it's rather like a fish looking out of a fishbowl. On the spreadsheet printed SSDs, they're shown as a pattern of boxes. Just like the AVID, firing arcs have 50 windows; one each at top and bottom, 6 each adjacent to the top and bottom, and 12 each for the center row, and the two rows adjacent to it, with the rows at extreme top and bottom stretched horizontally like a Mercator projected map.

Remember when we said that the AVID was a top down view of a sphere, fixed relative to the map? The fishbowl diagrams are the inside of a nested sphere, looking outwards, and are fixed to the *ship*, with marks for Nose, Left, Right and so on; white windows in the fishbowl can be fired through, and black ones are blocked. Weapon mount S in the sidebar, is centered on the ship's Nose, and can bear through the Nose, and extends three windows out from the Nose to Left and Right, as well as two windows above and below the Nose, and a fair number of other cells.

To figure out what weapon mounts can fire on a given bearing, we need to count windows on the AVID, twice.

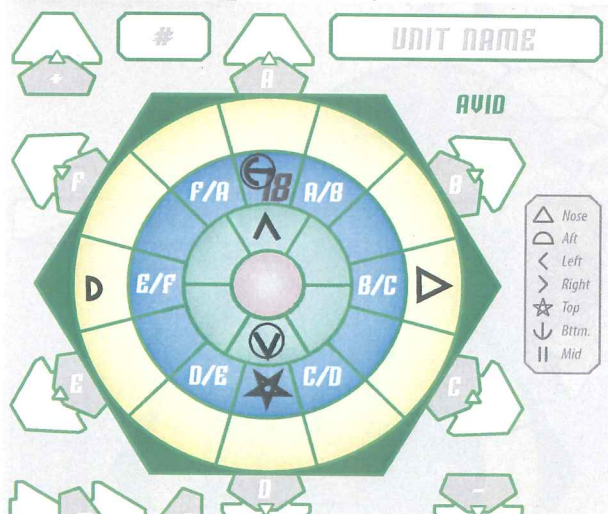
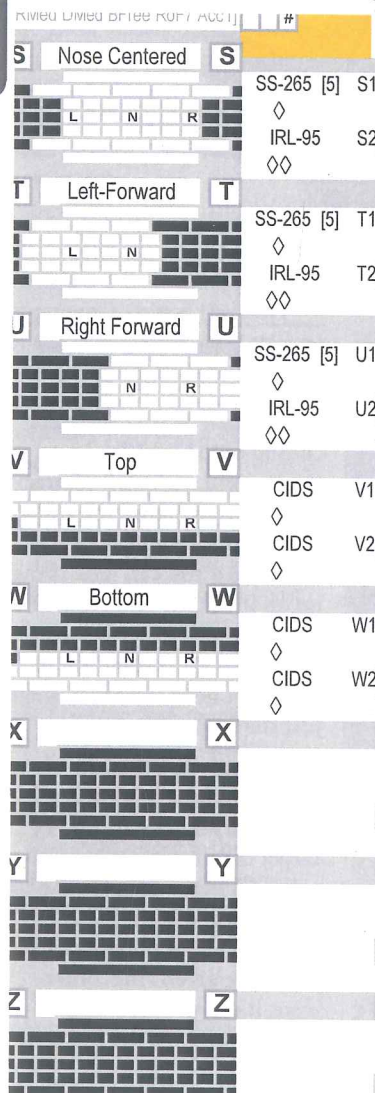
First, count the windows from the Top of the ship (the star on the AVID below) to the target bearing, including the window the target is in, but not the window the Top is in. For each window between the Top marker and the target bearing, you count down one row from the top of a fishbowl diagram. This will tell you which row of the diagram the target is on.

Next, on the AVID, count how many windows the target bearing is from the nearest orientation marker, and in what direction. Count the same number of windows in the same direction on the fishbowl diagram.

Using the AVID at left, and the fishbowl diagrams at the top of the sidebar, the target (at range 18) is four windows away from the Top of the ship, and one window below the Left side marker, in A (blue, upper). This puts it just in arc for weapon mount S, out of arc for mount T, in arc for mount U and in arc for mount W, but not for mount V.

All bearings are reciprocal; if the firing ship sees the target in A (blue, upper), the defender sees the attacker in D (blue, lower). The facing that gets damaged is the one that has the closest orientation marker to the incoming bearing.

We know what weapons bear on the target, the range, and where they'll get hit. It's time to shoot something.



Reading A Weapon Table

There are three types of weapons in *Squadron Strike*: beams, missiles and torpedoes. The tables at right are for a torpedo weapon (the Heavy Fuser Torpedo) and three beam weapons (Gluon Pulser, Heavy Disruptor and Light Disruptor).

The first row of the weapon table has the weapon's name. If the name is in bold text, it's a beam. If it's underlined, it's a missile, if it's in italics, it's a torpedo. A weapon with a number in parentheses after the name has a Capacitor for storing APs. The Hvy Fuser Torpedo can store 3 APs.

Next to the name is the weapon's cool down attribute; if this area is blank, the weapon can fire every turn. Otherwise, each square symbol means the weapon must cool down for one complete turn between firings. If the cool down attribute is shaded, then APs must be supplied for each turn the weapon is cooling; see page 9.

The boxes over each weapon mount in the Target Assignment area of the Move Card are used to track cool down times for weapons in the mount. After a weapon fires, fill in a number of boxes equal to the cool down symbols on the weapon table. At the end of the next turn, erase one box from each weapon that's cooled. When all boxes are clear, the weapon can fire again.

After the cool down icons is the Rate of Fire (RoF) of the weapon, the number of times the weapon can fire in a single turn. Cool down and RoF are independent of one another; you can make a weapon with an RoF of 3 and cool down 2. That weapon can fire up to three times on the turn it's active, but has to cool down for 2 turns between firings. It may not save unused firings for use during cool down turns.

The next four rows of the weapon table are used for Weapon Traits, which are special abilities and limitations; see pages 42-47. Missiles and torpedoes have characteristics specified by traits. Weapon traits may be color coded for APs. If the APs are not spent, the trait is inactive. Weapon traits that don't cost APs are always on.

Under the weapon traits are columns for Range (Rng), Accuracy (Acc), Damage (Dmg) and Penetration (Pen). Torpedoes have Speed for Range; Range/Speed will be shaded for any APs the weapon needs to fire out to a given range.

Weapon Mount Limitations

Squadron Strike allows three limitations to be applied per weapon mount: AP costs per row, extra turns of cool down, and ammunition limits.

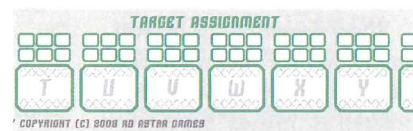
AP costs per row are shown by shading the diamonds on the weapon mount; this AP cost will be used to fire all weapons in the mount at their full RoF and is in addition to any AP costs specified by the weapon design.

Cool down by mount row is shown (along with cool down inherent to the design) next to the weapon diamonds, and applies to all weapons in the row. Cool down by row happens before any cool down on the weapon table.

Ammunition restrictions are shown with the name of the weapon in the weapon mount, and are printed in brackets, like this: [2]. One unit of ammunition will allow the weapon to fire once at its full RoF. Magazines allow weapons to be reloaded, but it takes time. See page 67 for how this works.

Hvy Fuser Torp (2) 1			
Thr 4 End 4 Ev 1 Halves Armor			
Spd	Acc	Dmg	Pen
0-4	2+	18	9
5-8	2+	18	9
9-12	2+	18	9
13-16	2+	18	9
Heav Disruptor 1			
Slag Sweeping			
Rng	Acc	Dmg	Pen
0-6	2+	5	7
7-12	3+	5	7
13-17	4+	5	6
18-23	6+	5	4

Fuser Torpedo 1			
Thr 4 End 4 Ev 9+ Halves Armor			
Spd	Acc	Dmg	Pen
0-4	2+	12	9
5-8	2+	12	9
9-12	2+	12	9
13-16	3+	12	9
Light Disruptor 1			
Slag Sweeping			
Rng	Acc	Dmg	Pen
0-3	2+	4	7
4-8	4+	4	5
9-16	5+	3	4



Cool Down & Capacitors

While you can't use APs stored in the capacitor to meet an arming requirement on a cool down turn, there's nothing that says you can't put extra APs into the capacitor during them, or even instead of paying the arming cycle.

If a weapon needs to be armed during the cool down turns, all arming turns have to be consecutive. You can't "skip" a turn and make it up later. Once the weapon is fully charged, it will 'hold' in a ready state for no APs, though any APs needed on the turn of fire still need to be applied.

Ammunition Restocks

In a campaign game, any time your ship is in a system with a friendly shipyard or Repair base, all of its ammunition reserves are topped off.

When setting up pickup scenarios, roll for Material Condition to see how much ammunition is left on your ship.

The Saga of ECM, ECCM & Profile Numbers

The longest debate developing this title was over ECM and ECCM, with playtesters coming in with backgrounds from different games and settings wanting different things.

One particularly popular setting has huge ECM differences between different factions, another tries to more accurately model the defense/countermeasure cycle, and others were trying to get the ECM rule from their favorite game in, most of which involve more math at the table than we'd like to see.

There were options for rolling ECM dice, and whatever numbers came up would be treated as "misses" for Accuracy rolls, there were proposals for using a deck of playing cards, and proposals for roll-and-match between ECM and ECCM (where any ECM and ECCM dice that matched would be removed).

Further complicating things was the desire to have Profile numbers for ships, so that relative facing mattered.

In the end, we went with simplicity and speed of play. ECM always works, ECCM uses the firing ship's Crew Rate to overcome penalties, while ELINT lets a force slowly work out solutions to an ECM system during a battle.

Profile Numbers & Play

Not all universes need Profile numbers; a size modifier may work better. Leave the cells for length, height and width blank on the ship design tool; the Profile number will be uniform for all facings.

Profile numbers add fun, but add a question-and-response step to each firing cycle, which adds up fast.

Electronic Warfare

Electronic warfare is the interplay of Electronic Countermeasures (ECM) and Electronic Counter-Countermeasures (ECCM). ECM makes weapons miss; ECCM attempts to counter ECM.

ECM is a series of boxes on hit location zone 3. The highest undamaged box not countered by ECCM is added to the Accuracy target of all weapons fired at that ship, just like Profile (see page 39) is. For example, a weapon with Accuracy 2+ is fired at a ship with a Profile of 0 and ECM 3, it needs a $2+0+3=5+$ to hit.

ECCM is a track on hit location 2; the numbers in the track are the number of ECCM dice the attacker rolls. ECCM is rolled for all ships prior to fire allocation; you'll know what ships have good ECCM before committing them to fire.

ECCM dice that equal or exceed the ship's Crew Rate suppress a box of ECM on all targets. If a ship with a Crew Rate of 6+ and ECCM 4 rolled 1, 2, 6 and 9, it would cancel 2 points of ECM against all targets engaged. ECCM cannot counter Profile numbers. To counter Profile numbers on small targets, see the HRT trait on page 40.

Some ships have ECCM usable at range. These are called "scouts". Scout ECCM is shown with the label ECCM rX, where X is the range it can assist at. Both the scout and the ship it's supporting roll ECCM normally; use the higher number of successes to determine ECM suppression; the recipient cannot get more successes from the scout than it could generate on its own; if the recipient's ECCM takes APs, it is not obligated to spend APs to receive successes from the scout. Scout ECCM is omnidirectional, and benefits all friendly units (including fighters) within its range.

Put a die next to each ship showing the number of ECM suppressions scored.

Torpedoes and Missiles use the ECCM of the launching unit. Control of Torpedoes and Missiles may not be switched between units.

Electronic Intelligence (ELINT)

Squadron Strike rolls Electronic Intelligence (ELINT) into the ECCM die pool.

If two of the ECCM dice rolled by the same ship come up as "double zeroes", you've scored an ELINT success. Pick one class of enemy ship present in the battle and within range 50; the leftmost box on their ECM track is disabled, and should be circled. This indicates it no longer functions, but it can be repaired normally. Any repairs must be done individually, not for the entire class of ships.

To get a second "ELINT success" on the same class of ship requires one ship rolling a triple zero (it doesn't have to be the same ship as rolled the original double zero). Each subsequent success requires an additional zero: four zeroes for the third success, five for the fourth, and six (a 1 in a million chance!) for the fifth.

For each technology level of difference between the ECM user and the ECCM user, the N of a kind number goes up or down by one. At one level of inferiority, the ECCM dice have to make three of a kind for the first success. At two levels of inferiority, it's four of a kind, and so on.

If the ECCM user is more advanced than the ECM user, the first success still takes a double zero on the same ship; subsequent successes take one fewer matched zeroes to get the effect, with a minimum of two zeroes at all times.

Thus, a ship with a four tech level superiority cancels each of the first boxes of ECM on two successes.

Making An Attack

When attacking, roll 4 ten-sided dice, two of the same color, the other two of different colors. One die will be for Accuracy, two dice (of the same color) will be for Penetration, and the last for Hit Location. (There are three dice in the box; you may need to re-use the Accuracy die as the Hit Location die if you hit.)

Beam weapons make an attack on the turn of declaration. Missile and torpedo weapons make their attack rolls when they enter the hex of the target (or reach their Stand Off distance if they have that trait).

Rolling To Hit

The basic Accuracy calculation is a weapon's Accuracy target (Acc), plus the Profile number of the facing of the unit being shot at, plus any uncountered ECM.

The Profile number for all small targets (fighters, missiles and torpedoes) is +3.

Penetration & Hit Location

If you hit, roll 2d10-; this number or the Penetration value for the range you fired at, whichever is lower, is added to the base damage of the weapon.

Lastly, roll 1d10 to see what hit location takes the damage (see Damage Allocation, on page 46). When hitting the Aft window, or any window adjacent to it, hit location rolls of "1" are treated as "10", making engine hits more common.

Each weapon hit is rolled separately, each hit is called a "volley".

Large Salvo Combat Tables

On the back of the Reference card are three tables designed to reduce the dice herding in large combats. They're used from top to bottom.

The Large Salvo Accuracy Matrix has the Net Accuracy across the top, and the number of shots fired down the left side.

Net Accuracy is the Accuracy target, plus target Profile and ECM shift.

Cross-reference these, and you'll find the average number of shots that hit. Roll 2d10c and add it to this number; this is the number of shots hitting the target, and cannot exceed the number of shots fired. For more than 10 shots, use one die roll and cross reference the rows as needed. For example, with 18 shots at Net Accuracy 5, and a 2d10c roll of +2, you'd take 6 (the value for the 10 row) plus 5 (the value for the 8 row) and add +2 to the result.

For Penetration rolls, find the number of hits and read from left to right to find how many hits get each Penetration value, capped by the Penetration of your weapon. For example, 20 shots with a Pen of 4 would get 2 0s, 4 1s, 3 2s, 3 3s, 2 4s, and 6 greater than 4. At 5 hits, there's a 50/50 chance you'll get a 0 or 5; roll a die to see which you get. For fewer than 5 hits, roll individually.

Armor failures are distributed evenly among all hits with the last table. For example, with 17 hits striking a ship with armor failures of 2+, hits 5, 10 and 15 would have failures; sequence hits from lowest damage to highest.

Finally, for each group of five hits with the same damage amount, roll Hit Location once, and wrap through the zones for each hit. For example, five hits of 4 damage each has a hit location roll of 8 and hits 8, 9, 10 (and then wraps) to 1 and 2, doing 4 damage to each row. This still can't hit Row 1 from the Aft. This understates streaky dice, but is faster in play.

Nose Directional Damage?

We had a rule that treated rolls of 10 as 1 when coming from the Nose or adjacent windows. It was deleted because nobody remembered it. "Get behind him to hit the engines" was kept.

Large Salvo Point Defense

A ship with 33 point defense shots against 15 missiles allocates 2 shots per missile, and the first three get shot three times.

The first three get resolved individually, and all get shot down.

The remaining 12 get run once through the Accuracy table, killing 5 of them; since the remaining shots can't be reallocated, the second run through the table deals with seven inbound missiles.

LARGE SALVO ACCURACY MATRIX

Net Accuracy ->		1	2	3	4	5	6	7	8	9	10
Number of Shots	1	1	1	1	1	1	1	0	0	0	0
	2	2	2	2	1	1	1	1	1	0	0
	3	3	3	2	2	2	2	1	1	1	0
	4	4	4	3	3	2	2	2	1	1	0
	5	5	5	4	4	3	3	2	2	1	1
	6	6	5	5	4	4	3	2	2	1	1
	7	7	6	6	5	4	4	3	2	1	1
	8	8	7	6	6	5	4	3	2	2	1
	9	9	8	7	6	5	5	4	3	2	1
	10	10	9	8	7	6	5	4	3	2	1
	100	100	90	80	70	60	50	40	30	20	10

LARGE SALVO PENETRATION DISTRIBUTION

Pen ->	0	1	2	3	4	5	6	7	8	9
5	½	1	1	1	1	½	0	0	0	0
10	1	2	2	1	1	1	1	1	0	0
20	2	4	3	3	2	2	2	1	1	0
30	3	5	5	4	4	3	2	2	1	1
40	4	7	6	6	5	4	3	2	2	1
50	5	9	8	7	6	5	4	3	2	1

BOARDING COMBAT

- 1) Attacker rolls for zone, picks box
- 2) If defender is in zone, roll Crew Rate to kill enemy boarders
- 3) If attacker lives, they roll Crew Rate to destroy box
- 4) Failing Crew Rate by 3+ kills squad
- 5) Attacker adds +1 to Crew Rate at the start of each subsequent turn onboard enemy vessel
- 6) Attacker can shift by 1 zone per turn, defender by 2

ARMOR

Act	Failure
1+	none
2+	1:5
3+	1:3
4+	1:2
5+	2:3
6+	3:4
7+	5:6
8+	9:10
9+	all
10+	all

Weapon Traits

Squadron Strike uses weapon traits to customize weapons. Weapons can have up to eight traits, most have two to four.

Independent

Weapons with the Independent trait may be fired at different targets from the rest of the weapons in the mount; the normal case is that all weapons in the mount must engage the same target on a single Combat phase.

Interceptor & Bearing Example

For example, a ship without any Interceptor weapons has two torpedoes coming in at 12 hexes per turn, bearing through the upper green ring. It has an escort two hexes away from it at the same altitude; the escort has a weapon with Interceptor r3.

The torpedoes are placed 3 hexes away from their target in the green ring, the escort shoots a bearing to that point, and uses that bearing to determine which weapons can bear on the torpedoes.

Interceptor (r3, r6, r12) (Beam Only)

Interceptor allows a weapon to engage small targets on the turn of impact at ranges greater than zero during Defensive Fire. Without Interceptor, a weapon can be fired in self defense at a missile or torpedo at a range of 0 in the Defensive Fire step, but may not be fired in defense of another unit, and may not engage a fighter in the Defensive Fire step.

Interceptor has a range; that range does three things.

- 1) When engaging small targets, you may back the target up by a number of hexes equal to this range from its intended target, or half the distance that it traveled on this turn, whichever is less. Ambiguous cases go in favor of the Interceptor weapon.
- 2) When firing in defense of another unit, you must be within Interceptor range of the target.
- 3) When firing at fighters, which don't have an "intended target", interceptor range is the number of hexes you can move the fighter back from where it moved, along the track of its movement.

Aegis

Weapons with Aegis have multiple opportunities to fire in the Defensive fire phase. To get the most out of Aegis, it needs to be combined with the Interceptor trait.

- 1) Designate targets for all non-Aegis defensive fire.
- 2) For Aegis weapons, record which shots are being held for which Aegis step.
- 3) After seeing the results of non Aegis fire, move small targets one hex closer to their target, allocate and resolve all Aegis 1 shots. After Aegis 1 fire is resolved, move all small targets another hex, and resolve any weapons with Aegis 2. After Aegis 2 is resolved, move small targets one hex closer and repeat the procedure for Aegis 3.

Aegis allows one additional range 0 shot against a given target, regardless of the level, using one of the Aegis firings in addition to standard defensive fire at range 0.

Salvo Fire, Linked Fire

A weapon with the Salvo Fire trait rolls its Accuracy once for all shots done by the weapon at the same target; if it hits, all of the shots hit. If it misses, all the shots miss.

Linked fire works as Salvo Fire does, but in addition to one die roll for Accuracy, all Penetration is rolled once per group of shots as well.

High Resolution Targeting (-1, -2)

This sub-trait of Interceptor cancels out some of a target's Profile benefit. It only works out to the range that the weapon's Interceptor trait works to. It can be used to counter the Profile benefit of ships, and can never reduce Profile to less than 0.

Continuous, 10+, 9+, 8+, 7+ (Beam Only)

If a weapon with the Continuous trait hits a target, and the Accuracy roll exceeds the N+ threshold for Continuous, the weapon gets to fire again, above its normal RoF; counting separately against armor and defenses. Additional firings don't cost APs.

Divisible (2, 3, 4) (Beam Only)

Weapons with Divisible may spread their Dmg and Pen among multiple targets, up to the digit in the trait (thus, two, three or four targets). Roll separately for Acc and Pen. Dmg and Pen must be divided equally among all targets, with left over points of Dmg or Pen applied to the target of the attacker's choice.

Area Effect, Explosion, Conic & Smart

Weapons with the Area Effect trait are targeted at a hex and altitude, not a unit. The facing damaged any unit in the area of effect of the weapon is set by the point of detonation; if the detonation is in the same hex and altitude as an enemy unit, the attacker chooses. Area effect weapons ignore the ECM and Profile numbers of all targets in the area, but must make an Accuracy check to hit the point of detonation.

Explosion is identical to an Area of Effect attack in the hex of detonation, but does half its Base damage (and has half the Pen value) for units at radius 1 or 2 depending on the level of Explosion taken.

The Conic Area trait does its full effect to all targets within the AVID window the weapon is fired through, to the range chosen when fired. Conic Area is available only for beams. The Accuracy check is made for the range chosen when fired.

Small units use Evasion to reduce the damage from Area Effect weapons. Roll a die and compare to the unit's Evasion target number. Exceeding the Evasion target number means the unit takes no damage. Matching the number means the unit takes half the Base damage, but no Penetration damage. Otherwise, it takes full damage.

Evasion Roll	Effect
Exceeds	Target takes no damage from Area Weapon
Matches	Target takes half Base, No Pen damage
Fails	Target takes full Pen + Base damage
Expl, r1+, match	Target takes quarter Base, no Pen damage
Expl, r1+, fail	Target takes half Base, no Pen damage.

Fractional damage rounds up.

Smart is a subtrait for Area of Effect and Explosion. Smart weapons do not damage friendly units in the area of effect. Smart only works with Area of Effect Attacks, it has no effect on its own.

Spherical Arc (Missile & Torpedo Only)

The weapon can launch through any window, ignoring the weapon mount's arc.

Stand Off (r2, r5, r9) (Missile & Torpedo Only)

This trait detonates the weapon 1-9 hexes away from its intended target, provided it's in the torpedo or missile's Nose window (Missiles are assumed to have the target in their Nose window), in the Defensive fire step. Every two hexes of detonation increases Acc by +1. Detonation distance (from 0 to the maximum allowed) is recorded at launch, and the weapon will detonate at that distance, and no closer.

Quick (Beams Only)

Quick weapons fire at enemy ships during the Defensive fire step.

Damage Modification Traits

These traits modify how damage is applied to a ship.

High Impact (3:1, 2:1, 1:1)

For every N full pips the net Accuracy target is exceeded by, the weapon will do one additional point of damage. For example, at the 2:1 level, on a weapon needing a 5+ to hit that rolls a 7, it would do one additional point of damage.

The High Impact trait cannot give more than two damage, or an amount equal to the Base Dmg of the weapon, whichever is more. Because of the extra mathematical step involved, this trait can slow the game down.

Double Penetration, Multi-Penetration (2x)

The weapon's Penetration damage is rolled twice and the results are added for Double Penetration. Multi-Penetration means the Penetration dice are rolled twice, and the best result is taken. Both of these traits can slow the game down because of the extra die rolling they require.

Cutting & Sweeping (Beam Only)

The Cutting Trait allows you to accept a penalty of +2 Acc to get +1 Dmg to the target. The Sweeping trait allows you to trade -2 Dmg to get -1 Acc. The degree to which these traits are used is made during Target Assignment.

Sustained -1, -2 (Beam Only)

Sustained gives an Accuracy bonus of -1 or -2 per consecutive turn that the weapon has hit the same target for at least one point of damage. High Rate of Fire gives multiple chances to maintain the beam, but hitting multiple times in the same turn does not count as multiple turns of firing.

It cannot be used in conjunction with cool downs greater than zero.

Overloads (Beam Only), 1, 2 or 3 APs

Overloaded weapons do double their base damage within the range given, but the trait has a mandatory AP cost. The ranges will vary with the "Zoom Level" set for the campaign. An overloadable weapon must have a maximum range of at least 2.5x the overload trait's range.

Zoom Level	Overload Ranges	Weapon Range
Slow	2,4,6	5,10,15
Medium	3,6,9	8,15,23
Fast	4,8,12	10,20,30

Overload damage is additive, not multiplicative, with other weapon traits that alter base damage, such as Enveloping 4x or 7x, Implosion and Cutting.

Hurried Fire -X, (Beam & Torpedo Only)

Hurried fire only applies to weapons that have multiple turn cool down cycles. A weapon with Hurried fire can fire "early", but at a base damage reduction of -1 or -2 times the number of turns "cut short" on the arming cycle. For torpedoes, the damage reduction is doubled.

For example, a weapon with a cool down of three turns and Hurried Fire -2 could fire the weapon on consecutive turns, skipping all three turns of cool down. It would fire at $(3 \times -2) = -6$ damage.

Enveloping & Implosion Traits

The Enveloping traits damage multiple facings of the target; they always damage the facing bearing on the firing ship, and will damage at least one additional facing. Enveloping 2x damages the bearing facing and the one directly opposite (for example, Nose and Aft). Enveloping 3x damages the bearing facing and two adjacent facings 180 degrees apart, chosen at the time of fire. Enveloping 6x damages all six facings of the target. Enveloping 5x does damage to every facing of the target, save the one that's directly opposite the one the damage came in on.

Enveloping 4x works like 3x, but does double base damage to the bearing facing. Enveloping 7x works like 6x, but does double base damage to the bearing facing.

Implosion is an Enveloping subtrait, doing double the base damage to the weakest facing of the target, determined by shield strengths, followed by armor strengths. In ambiguous cases, the attacker chooses the weakest facing. If Implosion is combined with 4x or 7x, and the Implosion damage would hit the facing shield, the weapon does triple base damage, not quadruple.

When combined with a Disrupts trait, Enveloping does not permit those traits to be used more than once with a single weapon.

Penetration is rolled individually per facing with enveloping weapons. Enveloping weapons do their full damage as one volley to small targets; they will hit only one small target in a hex, unless combined with Area Effect.

Defense Altering Traits

Blocks Damage (Beam Only)

Weapons with this trait provide shield bubbles between two units, chosen when the weapon is fired. The shield bubbles can defend the unit that fired the weapon, or be interposed between two units that are both in arc and within the range of the weapon. The weapon must roll to hit the target that's getting its damage blocked. If it hits, roll damage and treat the result as shields that last for the Combat phase. The unit being protected does not have its fire affected by the shield bubbles.

Shield bubbles generated by this trait cannot block damage from Area Effect or Enveloping weapons. This trait allows the weapon to be fired in the Defensive Fire step.

Ignores Shields, Ignores Armor, 10+, 9+, 8+

These traits give a chance of ignoring shields or armor. If the to-hit roll of the weapon equals or exceeds the number in the trait (9+ or 10+), the indicated defense is ignored. These traits can't be combined on the same weapon, or with Continuous.

Piercing, +1, +2, +3

When fired against a defense with a target number (Prismatic Globes, SuperScience Defenses), the add the Piercing modifier (+1 to +3) to the defense's target number.

Shield Leaks, 1/6, 1/4

1/6 (or 1/4) of the damage the weapon does skips shields, rounding down. This trait doesn't effect small targets.

Armor Leaks, 1/3, 1/2

1/3 or 1/2 of the damage the weapon does skips armor, rounding down. This trait doesn't effect small targets. Armor Leaks never gives less damage penetrating armor than if it weren't present.

Enveloping Example

The HMS Unfortunate is hit with a medley of enveloping weapons, the damage is coming in one window to the left of the Nose marker.

The first weapon is 2x enveloping, and does damage to the Nose and Aft facings.

The second weapon is 4x enveloping; the firing player has decided he wants the two adjacent facings to be hit to be Top and Bottom. The Unfortunate takes double the normal base damage on the Nose facing.

The third enveloping weapon is a 5x enveloping weapon, and does damage to every single facing except for Aft.

The last weapon is 7x enveloping with Implosion, which does double damage to the Nose facing, because of being 7x, and then does double damage again (for triple total) because by this time, the Unfortunate's nose shields have been battered down..

Blocks Damage & Sanity

Blocks Damage is a trait that goes outside the bounds of what the weapon rules were meant to do; they rely on players exercising common sense. If your gaming group has "Win at all costs" gamers, Blocks Damage probably shouldn't be used.

It cannot be combined with any limitations that alter how damage is done.

Ignores Component Armor

Damage from this weapon ignores component armor.

Halves Armor

Surface armor is halved (rounding down) when attacked with this trait. It has no effect on component armor on the target, or hardening or armor on small targets.

Damage Allocation Traits***Disrupts (N)***

The first two points of a volley can be used to damage one box of type N; the remaining damage is rolled normally. Disrupts only works once per weapon per turn, no matter how many times that weapon fires, or how many groups its damage is broken down to. Disrupts ignores the component armor of the system it hits. It's available for: Armor, Electronic Warfare (ECM & ECCM, attacker's choice as to which one is hit), Regenerators (attacker's choice as to which one is hit), Movement, Maneuver (Pivot & Roll, attacker's choice as to which one is hit), and Bridge.

Raking Fire 2, Raking Fire 3

Damage that gets past armor is split into 2 or 3 point volleys, which roll hit locations individually.

Splash Damage

Splash weapons multiply the damage done past surface armor by three; doing it to the hit location rolled and both adjacent ones. Damage from Splash weapons never wraps. Splash cannot be combined with the Doesn't Wrap, Raking Fire or Precision Fire traits. Splash weapons hitting locations 1 or 10 lose a damage element.

If Disrupts is combined with Splash Damage, the 2 points needed for disrupt are taken from the damage that penetrates armor before multiplication for splash effects.

Precision Fire

Roll two dice for hit location, taking the result of your choice. If the hit location dice are the same, attacker may shift the zone damaged by one if desired.

Bursting

Weapons with this trait damage each group of boxes twice (using damage normally, including hitting component armor twice) before moving on to the next group. When hitting Structural Integrity, Bursting weapons roll 2d10- twice to see how many SI boxes are marked off.

Slag

SSD boxes hit by a weapon with this trait cannot be repaired in tactical combat. They can be repaired under their normal restrictions (see p. 64) outside of combat.

2x Hits (N)

When this weapon hits the specified system type, it damages two boxes rather than one; ignoring component armor on that system type. Doubled Hits are available for the following systems: Movement, Maneuver, Cargo & Hull and Structural Integrity.

Skips Cargo, Skips Hull

Weapons with these traits skip over Cargo or Hull, losing no damage to them. A weapon with Skips Hull cannot have hull boxes substituted against it.

No Blow Through

When weapons with this trait hit SI, damage over the SI amount rolled is not lost, but wraps to the next row. Damage hitting the SI in the final row still blows through.

Slippery (-1, -2, -3) (Torpedo & Missile Only)

Tractoring torpedoes or missiles with this trait requires tractor strength greater than the negative value of the trait.

Weapon Limitations

Weapon limitations are traits that make a weapon less effective, and reduce its cost.

Shield Damage Only, Small Targets Only

The weapon either does damage to shields only, or to small targets only.

No SI Hits, No Cargo Hits, No Bridge Hits

The weapon cannot damage one of the following: Cargo hits, SI hits or Bridge hits. Any damage points that the weapon delivers to these system types have no effect, but are still deducted from the running total of damage done, including component armor. For "No SI hits", all damage that hits SI is lost.

Launcher Guided (Torpedo & Missile Only)

If the launching ship is destroyed before the weapon impacts, the weapon misses.

Ammunition (1,2,3,4) (Fighter Weapons Only)

The weapon has the specified number of shots before the fighter has to return to the carrier to reload it. The fighter reload procedure will reload the weapon completely.

Never Wraps

Damage from this weapon "blows through" hit location rolls with a ">" rather than wrapping. It is included as part of Splash Damage.

Unreliable (3+, 5+, 7+, 9+)

When firing a shot, roll a d10 for this weapon along with Accuracy. If the unreliability fails to meet the target number for this trait, the weapon fires, but does no damage. Otherwise, it fires normally.

A weapon capable of firing more than once per turn rolls for this trait with each shot. Once the roll is failed, the weapon cannot use any remaining shots on that turn.

Burnout (<2 through <10)

The weapon will be marked as destroyed if the Accuracy roll is less than the Burnout number. The weapon successfully fires before burning itself out, and can be repaired normally. Hull may not substitute for Burnout damage. A high RoF weapon loses all remaining shots after the failed burnout roll.

A weapon destroyed by Burnout cannot count the turn of its repair as a turn towards completing its cool down cycle.

No Cargo Hits Example

This example will make more sense after reading the Damage Allocation rules on page 49.

A ship with Cargo as the first hit on row 9 takes a 3 point hit to row 9; the first damage point hits cargo, but does not damage the box. The remaining 2 points are allocated normally. This same procedure is used for No SI Hits and No Bridge Hits.

Ship Defenses

Starships in science fiction have several types of defenses, and *Squadron Strike* models most of them. Some defense types aren't appropriate to some universes. While we've put a lot of effort towards making sure that there is no 'perfect winning combination' of defenses, some combinations of defenses may be more effective than the sum of their parts would indicate.

Shields & Shield Regenerators

No single concept in science fiction has been interpreted in as many different ways as "force fields" or "shields". Shields are an ablative defense and are shown on the SSD as a set of bubbles on a facing. Shields are bought in groups of six bubbles. Each damage point removes one bubble.

Shield regenerators repair shields; there are two types—general and faced. General regenerators repair bubbles that can be allocated to any shield. Faced regenerators repair bubbles tied to a specific facing. Shield regenerators work in the Crew Action phase. To show ablative armor, like what's used in *Car Wars*, *BattleTech* or *Full Thrust*, build ships with shields and no regenerators.

APs can be used to reinforce a shield at 1:1—one AP spent on shield reinforcement blocks one point of damage at the time the damage is taken. Shield reinforcement cannot be used to cover a facing that has no shield bubbles left.

One AP can be used to move one group of shield bubbles from one facing to an adjacent one, during the Crew Actions phase. This happens before shield regeneration. No facing can receive more than two groups of shield bubbles by this method, and no facing may donate more than one group of bubbles total. Shifted shield bubbles may not raise a shield above its listed maximum, but can be moved to a facing where the shield is knocked down completely.

Shields block transporters; armor does not. Armor is applied after shields.

Armor

Armor reduces the amount of damage each volley does to the target. A weapon doing 7 damage hitting a facing with 4 armor does $7-4=3$ damage to the ship. If the damage is less than the amount of armor, the target is unharmed.

Armor, by default, has an activation number of 1+, meaning it always works. Armor can have an activation number higher than 1+. Armor activation is read from the dice used for Penetration rolls. If *both* of the dice used for Penetration equal or exceed the activation threshold, the armor works, otherwise, it gives no protection. A percentage breakdown for activation numbers is shown below. When using a weapon with the traits Double Penetration or Multi-Pen(2x) against a target with armor with an activation number higher than 1+, the attacker declares which dice will be used for armor activation before rolling.

Activation:	Percentage Chance of Armor Working.	Activation	Percentage Chance of Armor Working
1+	100%	6+	25%
2+	81%	7+	16%
3+	64%	8+	09%
4+	49%	9+	04%
5+	36%	10+	01%

Armor can be made to cost APs. This is a way to make "Deflectors" that require power to operate at full strength. The AP costs are paid at the beginning of the Combat phase, and which armor is paid for is public knowledge.

Component Armor

Component armor is shown in angle brackets next to the label for each group of boxes in the hit location zone; for example FTL <1> on some of the Russian SSDs in the ship book. The number in brackets shows how many additional damage points a box of that track will absorb before being marked off; component armor 1 means that each box consumes 2 damage points, component armor 2 means each box consumes 3 damage points. If there is no number in angle brackets, each box takes one point to destroy. If you hit a box protected by component armor, and there is insufficient damage to destroy the component, the damage points are lost.

Component armor goes away when all boxes in the track are destroyed, even if one of them is subsequently repaired during the tactical game. (Campaign level repairs will restore component armor to full functionality.)

Damage Allocation

All weapons fire in a given firing step is simultaneous. Each weapon hit is a separate *volley*. Each volley is resolved separately as a single hit location.

A ship's hit locations are broken down into ten zones, numbered 1 to 10. The hit location die roll determines which zone takes damage for that volley. Hits from the Aft facing treat hit location roll "1" as "10", making it likelier that you'll hit the engine.

Each zone is made up of groups of boxes. When damage comes in to a zone, one damage point is applied to each group of boxes in the zone in turn, going from left to right along a row, then shifting to the second row, and continuing.

Hull and Cargo, if present, will always be the first group of boxes in each zone. Even when damage wraps from the first row to the second, only one box in that group will be hit.

At the end of each row in the zone is a symbol. A "J" symbol means "jump down to the second row in this zone." A ">" symbol means "Wrap damage allocation to the next zone." A "#" symbol means "take 2d10- SI hits, up to the number of damage points left, damage left over is lost".

Between the last row of boxes and the symbols at the end of the row, there may be 'callouts' directing damage to weapons, Armor or Movement. When damaging weapons, the convention is as follows: "SI" means "damage a diamond in row 1 of weapon mount S". Damage to Armor comes off of the facing the damage was done through if any is available; if none is available, it's done to the facing of the defender's choice. A callout to Movement does an extra hit to the group of boxes labeled Movement in zone 10. After resolving damage on the callout, follow the symbol at the end of the zone the callout was in and continue damage allocation from there.

Unless component armor is present, each box (or diamond for a weapon mount) takes one damage point to destroy. Once per volley, you may substitute a hull box for one other hit, even if a hull box was already taken as the first hit of the volley. When used as a substitution, each hull hit absorbs one damage point regardless of component armor.

Hull hits cannot substitute for Disruptive or Double Damage hits, nor can they be substituted for hits on Armor. The trait "Skips Hull" prevents Hull hits from being used as substitutions.

Weapons with ammunition lose 2d10- hits of ammunition when they take damage.

Bearing Reciprocity & AVIDs

The second AVID in the example below is inverted—this is how they'd be seen from opposite sides of the map, and is done here to make sure that all the cardinal directions line up for each AVID, which is important for reciprocity of bearings.

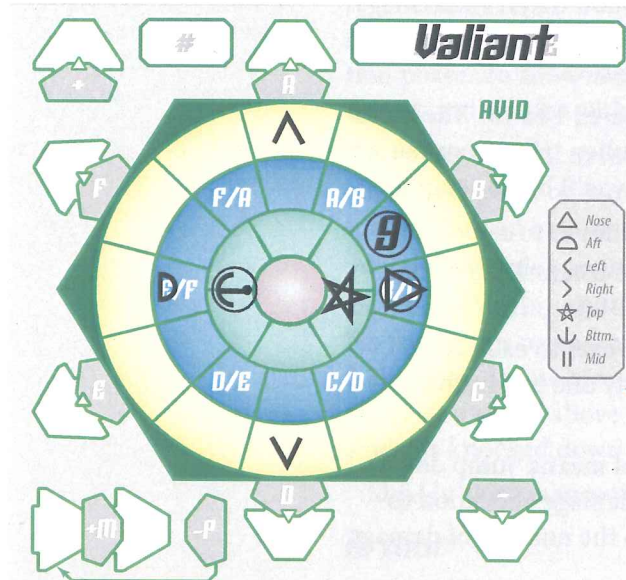
The class name and range in the second (red) AVID are right side up to make it easier for you to read.

Some weapon traits (Disruptive, Double Hits, Skips) will specify where the first element of damage goes (regardless of the hit location roll), or will indicate that two boxes are marked off, or will specify that a given type of system is skipped. These weapon traits also ignore component armor on the system they effect. When combined with traits that break damage into smaller volleys or provide multiple volleys, these traits only apply once per weapon that hits.

When all boxes of a system are gone, any damage to that group is skipped for further volleys; this also means that when all boxes in a group are gone, component armor is ignored.

When the last SI hit (with a # sign) is marked off, the ship is destroyed.

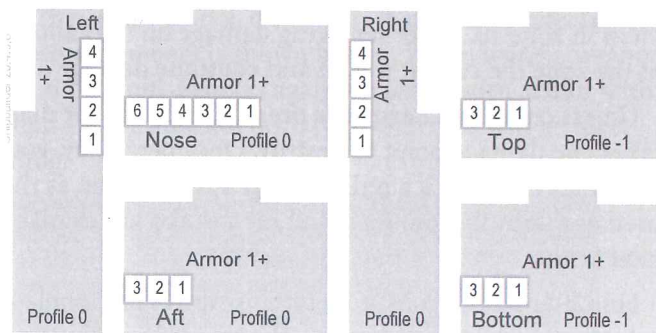
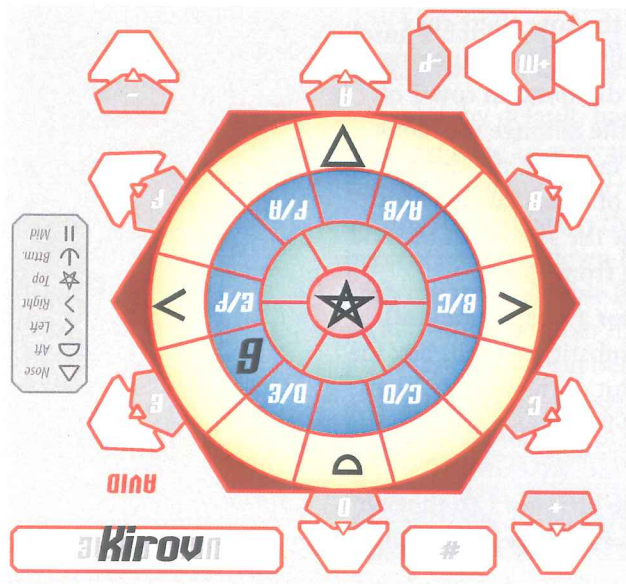
Fortresses have hit location tables with 12 rows; rows 11 and 12 can only be reached from large volleys wrapping to the next row. Fortresses do not convert rolls of 1 to 10 for volleys coming in from the Aft.

**Full Combat Phase Example**

Adam's Valiant-class cruiser has a shot lined up on Bill's Kirov class battlecruiser. His ship is facing direction B/C, with its Nose angled down at a 30 degree angle (as shown by the AVID at right), and Bill's ship is 7 hexes away in B, 1 hex away in A, and 5 hexes below him, giving a range of 9, visible in direction B through the blue ring below the plane of the map (as shown by the circled "9" on the AVID).

Bill's Kirov is facing direction A, level with the map. Reciprocal bearings mean that the incoming fire hits through direction E, in the blue ring, coming from above. His Left side marker is in direction E/F level with the map, so this puts the incoming damage on the Left side facing. (See the second AVID at right for Bill's orientation and the incoming damage bearing.)

The Kirov has 1 level of ECM, and Adam has 1 die of ECCM, with a Crew Rate of 7+. Adam rolls and gets a 3; none of the Kirov's ECM is canceled. From the Left side, it has a Profile number of 0, so there's no modifier for that. That side of the ship has no shield bubbles, but has an armor value of 3.



The Valiant sees the Kirov 3 windows away from its Top marker, and one window to the Left of the Nose marker. Mapping this to the firing arcs (printed at right), that gives us one window directly to the left of the Nose (or the N) in the firing arc diagram. This lets the weapons in mounts S, T, U, V and W bear on Bill's ship. Mount X, which bears out the stern, is out of arc.

Looking at the weapon tables, we're concerned about the beam weapon types. The Light Lepton Torpedo is currently cooling off from a prior launch. We look up the range to the target in the Range column, and find that at a range of 9, all of the weapons can hit.

Adam plots his fire as follows: The Point Defense Lasers, in spite of being in range and in arc are probably best used against the missile salvo the Kirov launched last turn. The three Anti-Ship Lasers will fire first, followed by the Pulse Lasers. Adam is hoping to destroy some of the Kirov's side armor with the Anti-Ship Lasers before the Pulse Lasers fire.

The Anti-Ship Laser has an Acc of 3+; this gets modified to a 4+ due to the uncanceled ECM. Adam rolls a set of 4 dice, getting a 3 for Accuracy, meaning the first one misses. Rolling the dice for the second Anti-Ship Laser, he gets an Accuracy roll of 8, a Penetration roll of 5 Pen (for a total of 10 damage), and a Hit Location roll of 8.

Adam tells Bill "Hit location 8, 10 point hit, halves armor." Bill halves his 3 armor to 1.5, which rounds down to 1, and allocates 9 points of damage, starting at row 8. This marks off one hull, one lab, one roll thruster, one diamond from mount W1, then wraps to the next row of hit location 8, which is blank, but ends in a >, moving to hit location 9. This marks off one cargo, then one shuttle, then one diamond in mount U1, then wraps to the bridge, taking off one box. It wraps to row 10, and destroys a hull box. At the end of the volley, Bill chooses to swap the weapon hit on mount U1 for another hull box, which he decides to take off of row 4.

Because Adam rolled a 7 or higher on the Accuracy, the Anti-Ship Laser's Continuous trait lets the weapon fire again, getting rolls of 5 Accuracy, 3 Penetration and Hit Location 3. This becomes an 8 point hit to location 3, halving armor, for a net of 7 damage. This kills cargo, a Marine squad, an assault shuttle, a diamond on mount T1, wraps to the next row of hit location 3, where it kills the Kirov's ECM box (which is still in effect to the end of the Offensive fire step), then shifts to hit location 4, destroying a hull box, and a lab. Bill swaps the weapon hit on T1 for another hull hit, taking one on row 2.

Adam fires his last Anti-Ship Laser, rolling a 5 Accuracy, a Pen of 1, and Hit Location 7. He tells Bill, "Hit, 6 damage to the 7, halves armor." 6 damage, minus three armor halved to 1 armor is a 5 point hit. This marks off a hull hit on hit location 4, and then hits mount T1, which Bill swaps for a hull hit on row 6. The remaining three points fall to Structural Integrity. Bill calls "SI, max of 3." Adam rolls 2d10-, and gets a 6; this is greater than the 3 damage that hit the # symbol, so Bill marks off 3 SI hits. Had Adam rolled a 0, 1 or 2, Bill would have only taken 0, 1 or 2 SI hits and the remaining damage would have been lost.

Royal Rhodesian Navy Valiant 200 Pts, 203 Boxes, 30 End, TL 0 [ZMed BMed Sp3] [ArR/1+JaR ShR CA2] [RMed DMed BFree RoF6 Acc1]																															
Struct Int (19)			Struct Int (19)																												
S1 ASL	S	Nose Centered	S																												
S2 PL																															
T1 LLT	T	Nose-Left	T																												
U1 LLT	U	Nose-Right	U																												
V1 PDL	V	Top	V																												
V2 ASL																															
W1 PDL	W	Bottom	W																												
W2 ASL																															
X1 PL	X	Aft-Centered	X																												
X2 PDL																															
Y			Y																												
Z			Z																												
<table> <tr> <td>Point Defense Laser</td><td>3</td><td>Light Lepton Torpedo</td><td>1</td></tr> <tr> <td>Interceptor r6</td><td></td><td>Thr 3 End 3 Ev 8+ Piv 2/6 Hrdn 3 Enveloping 6x</td><td></td></tr> <tr> <td>Rng</td><td>Acc</td><td>Dma</td><td>Pen</td></tr> <tr> <td>0-6</td><td>1+</td><td>4</td><td>3</td></tr> <tr> <td>7-12</td><td>2+</td><td>5</td><td>4</td></tr> <tr> <td>13-17</td><td>3+</td><td>6</td><td>5</td></tr> <tr> <td>18-22</td><td>4+</td><td>7</td><td>6</td></tr> </table>				Point Defense Laser	3	Light Lepton Torpedo	1	Interceptor r6		Thr 3 End 3 Ev 8+ Piv 2/6 Hrdn 3 Enveloping 6x		Rng	Acc	Dma	Pen	0-6	1+	4	3	7-12	2+	5	4	13-17	3+	6	5	18-22	4+	7	6
Point Defense Laser	3	Light Lepton Torpedo	1																												
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18-22	4+	7	6																												
<table> <tr> <td>Anti-Ship Laser</td><td>1</td><td>Pulse Laser</td><td>3</td></tr> <tr> <td>High Impact 3:1 Continuous: 7+</td><td></td><td>Interceptor r6</td><td></td></tr> <tr> <td>Rng</td><td>Acc</td><td>Dma</td><td>Pen</td></tr> <tr> <td>0-6</td><td>2+</td><td>3</td><td>4</td></tr> <tr> <td>7-12</td><td>3+</td><td>4</td><td>5</td></tr> <tr> <td>13-17</td><td>4+</td><td>5</td><td>6</td></tr> <tr> <td>18-22</td><td>5+</td><td>6</td><td>7</td></tr> </table>				Anti-Ship Laser	1	Pulse Laser	3	High Impact 3:1 Continuous: 7+		Interceptor r6		Rng	Acc	Dma	Pen	0-6	2+	3	4	7-12	3+	4	5	13-17	4+	5	6	18-22	5+	6	7
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18-22	5+	6	7																												

Next up is Adam's Pulse Laser fire. Pulse Lasers are shorter ranged, less accurate, and do less damage. They also don't have Halves Armor or Continuous as traits. They do have a Rate of Fire of 3.

At this range, they have a base Acc of 4+, a Dmg of 2 and a Pen of 3. Because the ECM hit the Kirov took happened on this turn, it's still adjusting the Accuracy target by +1. (Had Adam plotted the Pulse Lasers for Reserve fire, he would have been better off in this instance, but he didn't think of it when plotting his fire orders.)

From Aft, a "1" hits row 10

Cargo	Magazine, SS-265	Magazine, SS-265	
1	10 9 8 7 6 5 4 3 2 1	10 9 8 7 6 5 4 3 2 1	
	Magazine, SS-265		
	10 9 8 7 6 5 4 3 2 1		
Hull		S2	
2		◇◇	
	ECCM	T1	
	2 1	◇	
Cargo		T2	
3		◇◇	
	ECM	U1	
		◇	
Hull	Damage Control	W2	
4	5 4 3 2 1	◇	
	FTL Drive <1>		
	5 3	#	
Cargo		V1	
5		◇	
Hull	Pivot	V2	
6	3 2 2 1	◇	
Hull	Marine Squad (8 to Co.)	Shuttle (3 HS Cap.)	S1
7	6 5 4 3 2 1	3 2 1	◇
	Marine Squad (8 to Co.)	Marine Squad (8 to Co.)	
	5 4 3 2 1	5 4 3 2 1	#
Cargo	Roll	W1	
8	2 2 2 1	◇	
Cargo	Labs	U2	
9	5 4 3 2 1	◇◇	
	Bridge		
	4 3 2 1		
Hull	Movement, Mode 2 <1>		
10	4 3 2 1		
	Labs	Armor #	
	4 3 2 1		

SS-NS-265
Sz 2 Pro 3 Ev 9
High Impact 2:1
2x Hits - SI

Rng	Acc	Dmg	I
0-5	1+	4	4
6-10	2+	4	4
11-15	4+	4	4
16-20	6+	4	4

CIDS-NS-200
Interceptor r6
HRT-2
Aegis 2

Rng	Acc	Dmg	I
0-3	1+	2	2
4-6	3+	2	2
7-9	6+	2	2

Left
Shoulder 25x30
Armor 1+
4
3
2
1
Nose Profile 0
6 5 4 3 2 1
Armor 1+
3 2 1
Aft Profile 0

Right
Armor 1+
4
3
2
1
Top Profile -1
3 2 1
Armor 1+
3 2 1
Bottom Profile -1

The first shot from the Pulse Laser gets an Accuracy roll of 6, a Penetration of 2 and a Hit Location of 5. Adam says "4 point hit to the 5." Bill subtracts his full armor (3) from this and takes 1 damage to hit location 5, marking off a cargo box.

The second shot from the Pulse Laser rolls a 7 Accuracy, a Penetration of 0, and Hit Location 10. Adam says "2 point hit to the 10", and Bill notes that it's less than the armor, and has no effect. The third shot from the Pulse Laser gets an Accuracy of 5, just hitting, a Penetration of 3, and Hit Location 7. Adam calls out "5 point hit to the 7." and Bill marks off a second hull box on row 7, then the damage falls to weapon mount T2. He substitutes another hull box on row 6 for this, and Offensive Fire ends.

The illustration at left shows Bill's ship. The first volley has diagonal marks from upper left to bottom right, the second has diagonals from upper right to bottom left, the third has horizontal marks, the fourth has a vertical mark, and the fifth has the boxes marked with circles.

Prismatic Globes

Many universes have a defensive piece of equipment that acts like a spherical bubble around the ship, absorbing damage that strikes it, and slowly radiating it away, changing color as it reaches its storage capacity.

This system is a Prismatic Globe. On the SSD, you may have multiple boxes of Prismatic Globe, each with a capacity printed in them, and a set of variables covering the Level (how effective it is at blocking damage), and its radius. Only one Prismatic Globe box may be activated on any single turn, the decision to activate the globe, and which box is active, is made during the Equipment Activation Step of the turn; which is after weapons fire.

For each point of damage that strikes a ship with an active Prismatic Globe, roll 1d10. If the number rolled equals or exceeds the intercept number, the damage point is stored, rather than striking the shields or armor of the ship. Whatever isn't intercepted strikes shields and armor normally.

A ship that's protected by a torpedo with the Bubble trait and a Prismatic Globe is protected by the Bubble before damage strikes the Prismatic Globe. Ships with both a Prismatic Globe and a Super Science defense (see page 67) have damage strike the Prismatic Globe first; anything that makes it through the Globe can then be dealt with by the Super Science defense. (One with all three would be protected by the Bubble, the Prismatic Globe, then the Super Science defense, in that order.)

Each Prismatic Globe box can store a finite amount of damage. Once filled, it offers no further protection; it will still dissipate energy at the end of the turn when shields regenerate. How much energy a prismatic globe dissipates is a function of its radius and the size of the ship; see the table in the sidebar for the exact amounts. A Prismatic Globe that is turned off does not dissipate energy.

A Prismatic Globe that's holding energy when it's damaged releases 1/5 of that energy, rounded down, as an addition to the existing volley of damage done.

Prismatic Globes & Outgoing Fire

In some universes, Prismatic Globes interfere with outgoing fire; this alters the weapon's Accuracy, before modifications for ECM and Profile. The operating ship specifies a flicker rate; the flicker rate can be set to 10%, 25%, 50%, 75% and 90%. Cross reference the weapon's net Accuracy after all modifiers with the flicker rate percentage. Weapons with Accuracies modified past 10+ cannot be fired.

Missile and torpedo Accuracy are checked at launch (to see if the sphere eats them) and on impact as per the normal rules. A torpedo or missile that fails its Accuracy at launch is destroyed by the globe, consuming any ammunition. It does not add any energy to the globe.

Expanding Radius Prismatic Globes

In some universes, Prismatic Globes can be set to expand, greatly increasing the surface area (and dissipation rate), but thinning the protection. The maximum radius of a Prismatic Globe is specified by its type, and ranges from 1 (no expansion) to 3.

The effect of the Prismatic Globe at different radii is shown in the table here. Any expanding Prismatic Globe can be set to any radius up to its maximum. Non-expanding Prismatic Globe may not change their radius. No Prismatic Globe can protect more than one unit.

Errata: Reference Card

The table for Prismatic Globes on the first printing of the Reference Card lists the wrong splits of SI for Dissipation Rates. The correct values are on this page, and on the Reference Cards that can be downloaded from the Ad Astra Games web site..

Flicker Rate Table

Acc	10%	25%	50%	75%	90%
1+	2+	2+	2+	2+	2+
2+	3+	3+	3+	4+	4+
3+	4+	4+	5+	6+	6+
4+	5+	5+	6+	7+	8+
5+	6+	7+	8+	9+	10+
6+	7+	8+	9+		
7+	8+	9+			
8+	9+	10+			
9+	10+				
10+					

Radius & Intercept

Level	1	1.5	2	2.5	3
10	1+	7+	8+	9+	10+
9	2+	7+	9+	10+	10+
8	3+	7+	9+	10+	10+
7	4+	8+	9+	10+	10+
6	5+	8+	9+	10+	10+
5	6+	9+	10+	10+	10+
4	7+	9+	10+	10+	
3	8+	10+	10+		
2	9+	10+	10+		
1	10+				

Dissipation Rate

SI	1-13	1	3	8	16	27
SI 14-22	1	4	10	20	34	
SI 23+	2	5	12	23	41	

Wonder Weapons & Super Science Defenses

Golden Age space opera, and several published universes, rely on a technology/countermeasure dynamic for their feel, where the Gluon Cannon is the uber weapon, until the Gluon Repulser Field is developed, then the new wonder weapon becomes the Needle Beam, until everyone deploys the Needle Deflector, and repeat.

To handle this in *Squadron Strike*, players have to agree that they want this. This is a decision that effects the entire campaign, and if not used, the standard rules apply.

Each player's weapons have to have a descriptor, like "Meson" or "Baryon" or "Nuclear". Any weapon with that descriptor must take a trait with that name in it. This reduces the cost of the weapon.

An item of equipment can be made that blocks or mitigates damage from that specific weapon. The equipment must have the descriptor that it blocks as part of its name; thus the Meson Bazooka is defended against by the Meson Shield. Super Science defenses on a ship with a Bubble defense, or a Prismatic Globe defend against anything that makes it through the Bubble and Prismatic Globe.

If the equipment *blocks* the damage, there is one die roll for the system. If it succeeds, the weapon's fire has no effect. These are named <descriptor> Negators, Deflectors or Dampeners

If the equipment *mitigates* the damage, there is a die roll for every damage point. Mitigators do not store energy for later dissipation. If the die roll exceeds the threshold, the damage point is blocked. Mitigators are named <descriptor> Screens, Shields or Fields.

(Using the correct term makes it easier to remember which item of Super Science Technology goes with which game mechanic..)

Having multiple identical Super Science systems doesn't let you roll more than once. You have a backup in case one breaks.

Weapon countermeasures happen after rolling to hit, but before "conventional" defenses like shields and armor.

Super Science defenses do not interfere with weapons fire by the mounting unit.

Example: The Tetreyonic Blaster vs The Tetreyon Dampener

The Tetreyonic Blaster is a hypothetical weapon; five of them are fired at a ship with a Tetreyon Dampener, each one doing a 10 point hit if they get past the dampener. The defender's Tetreyon Dampener works on a die roll of 6+. For each weapon that hits, the defender rolls a d10; on a 6+ the weapon is deflected completely. If the Deflector fails, the weapon strikes the ship normally.

Because Tetreyon Dampeners (and Super Science defenses in general) show up in the Hit Location zones as groups of boxes, they are considered to be active throughout the fire step that they're destroyed on. Thus, if the Dampener is destroyed on the first point of damage to be rolled out during the Offensive fire step, the ship is still protected for any Tetreyon beams that hit prior to Reserve fire on the same turn.

Example: The Muon Lance vs the Muon Screen

The Muon Screen is a mitigator, and blocks damage on a 4+; for each point of damage the Muon Lance does, the defender rolls a d10. On a 4+, that damage point is blocked, before it reaches any conventional shield bubbles or the ship's armor.

Missiles

Many SF settings use missiles, some as secondary weapons, some as primary weapons. In *Squadron Strike* terms, a missile is a weapon that pursues the target, but not for more than one turn. The target can change facing relative to the missile, but usually can't outrun it, save at extreme range. Missiles can be shot down by other weapons, usually beam weapons.

Missile weapon names are underlined on the weapon table on the SSD. There are small square missile markers on the countersheet.

Launching Missiles

Missiles are launched at a target's EoT marker, not where the target is at the time of launch. When facing Mode 0 opponents, which lack EoT markers shoot a bearing to where the ship is currently to see if they can fire, and use its final position to determine the range the missiles traveled.

This can mean that launchers that don't bear on the target, but *do* bear on the target's EoT marker can be fired. Be sure to shoot a bearing on the target's EoT marker when you're planning on firing missiles.

When a missile is fired, put a small counter in the hex and altitude of the launching ship to note where it was fired from, and a second marker halfway between the launching ship and the target; if there's any ambiguity over which hex the midway marker is placed in, it's chosen by the attacker.

After movement of the subsequent turn, determine the range from the launch point to where the target is, and roll for the missile's Accuracy at that point. If the target manages to run out of range, the missiles miss.

If the target has not moved out of the range of the missiles by movement on the turn after launch, they may allocate Defensive fire to deal with missiles. Missiles that survive Defensive fire roll for Accuracy, Penetration and Hit Location like other attacks.

Missiles inherit no velocity from their launching ship. They're assumed to be accelerating at Starkly Incomprehensible Gs, and have a flight time, but are slower than a beam weapon.

Missile Size, Profile & Evasion

Missiles have a number of aspects that are recorded as a weapon trait. These are:

Size (Sz): The number of damage points needed to shoot down the missile.

Profile (Pro): The missile's Profile number for dealing with defensive fire. The default is +3; making this lower makes missile weapons less expensive, making it higher makes them more expensive.

Evasion (Ev): The number that the missiles have to equal or exceed to evade or mitigate damage from Area Effect weapons.

Missiles commonly have an ammunition restriction on their weapon mount listings.

The hex that a missile is targeting is known at launch; if there are multiple valid targets in that hex, determining which missiles are going after which target can be identified with labs during the Use Equipment step of the Crew Activity phase. The distance for using labs is the distance from the identifying ship's current position on the turn of launch, and the midpoint marker for the missiles.

Firing On Missiles

Missiles have a Profile number specified in one of their traits; the default is +3, and may go higher.

Missiles can be engaged by any beam or missile weapon held in Reserve and fired on the turn of launch. Reserve fire engages missiles at their midway marker. If missiles are used to target other missiles in the Reserve phase, randomly determine which enemy missile in the group is engaged by the defensive missile. Missiles fired on other missiles during Reserve fire impact their targets during the Defensive Fire step of the next turn, and may be engaged by other Defensive weapons normally.

All missiles launched at the same time from the same hex at the same hex are in the same hex for Area Effect purposes.

To engage missiles on the turn of impact, they have to be engaged in Defensive fire. Interceptor, Aegis, High Resolution Targeting and Divisible are all useful against missiles.

Damage From Missiles

Each missile that impacts is treated as a separate volley for the purposes of damage allocation.

Missile Specific Weapon Traits

There are a number of missile-specific weapon traits.

Stand Off r2, r5, r9, Spherical Arc

These are explained with Targeting traits on page 41.

Launcher Guided

This is explained on page 45.

Tactical Roles For Missiles

The primary users of missiles are fighters and small ships, where missiles can provide a large amount of damage in a smallish weapon. Against ships with significant amounts of armor, missiles have a distressing tendency to "bounce off", though they can batter shields down in no time flat.

The secondary function of missiles is as weapon absorbers. Any weapon used against a missile isn't being used against another target.

Torpedoes

Torpedoes pursue their targets across the map. Unlike missiles, which attack after one turn, torpedoes chase their targets for multiple turns. Torpedoes use Mode 1 movement, bleeding speed from facing changes and accelerating to close the range.

Torpedoes are shown by fold-up tent markers; as they do not roll, torpedoes can get by with single tilt blocks to show their pitch.

Torpedo weapons have their names in italics on the weapon tables; the Range column is renamed the Speed column on Torpedo weapons.

Torpedo Launch

Torpedoes are launched during the Standard combat phase by placing tents in their launch hexes. Torpedoes begin with a percentage of their launching ship's initial velocity. For Mode 0, it's zero velocity in all cases. For Mode 1 ships, it's the direction the ship's Nose is facing, and Mode 2 ships, shoot a bearing to the launching ship's EoT marker. This is the direction your velocity is going in.

The percentage of the launching ship's velocity that the torpedo inherits is based on the offset in windows between the launching ship's EoT marker, and the direction the torpedo is launched in. It may be a negative number. See the table at right, round all positive fractional velocities down. If the velocity inherited is a negative number, the torpedo **MUST** spend one turn of thrust at the time of launch to accelerate to a positive speed. If a turn of thrust is not sufficient to generate a speed of 0 or higher on the turn of launch, the torpedo cannot be launched.

Starting on the turn after launch, torpedoes move closer to either the target's current position or EoT marker. The controlling player makes this choice before moving the torpedo each turn, and may change it from turn to turn.

At launch, the torpedo must face a direction the launcher can bear on (exception: the Spherical Arc trait), while also facing the target or the target's EoT marker. The target of a torpedo, and its Dmg, Pen and traits are recorded secretly. The defender may use Labs to reveal this information prior to impact. A torpedo cannot change targeting to a different ship from the one it was set to seek at the time of launch.

Torpedo Thrust

Each row of the Speed column is one full turn of thrust for the torpedo; the number of rows is the number of turns that a torpedo can apply thrust on. The highest value in a given row is the total amount of speed the torpedo would gain after that many turns of thrust without pivoting.

The owning player determines if the torpedo thrusts or not on a given turn; a torpedo that doesn't thrust will move at its existing speed (minus any adjustments for pivots). A torpedo may use less than its maximum thrust on a turn, but doing so does not give it additional turns of thrust. Torpedoes may not thrust in reverse.

Torpedo Pivots

Torpedoes move on the map by Mode 1 movement, during the step labeled "Torpedoes move after their targets". Torpedoes move after all other units have moved.

Torpedoes pivot *before* moving, and bleed 10% of their speed per pivot instantly, regardless of the number of windows. This 10% rounds normally, but will always be at least -1 to their speed. Torpedoes must pivot to bring their target into their Nose window.

INHERITED VELOCITY

If inherited velocity plus one turn of thrust results in a negative number, there is no launch solution, and the torpedoes or fighters may not launch.

Offset	Percentage
0 windows	100%
1 window	90%
2 windows	50%
3 windows	0%
4 windows	-50%

Example: Torpedo Launch

Our ship has a Mode 1 speed of 8, and launches a torpedo with a thrust of 4 at 1 window off of the direction of travel (which is the same as the Nose window)

90% of 8 is 7.2, which rounds down to 7. The torpedo inherits a velocity of 7, and on its first turn of thrust, can boost this to 11.

Had the torpedo been launched at a target 4 windows off the Nose, it would have been -50% of 8, or -4. One turn of thrust would result in 0 speed, and thus it's a valid shot. The first turn of thrust would be used on the turn of launch, and starting on the next turn it would accelerate after its target at thrust 4.

Torpedo Attributes

Like missiles, torpedoes have aspects that are recorded as weapon traits. These are:

Thrust (Thr): The thrust rating of the torpedo.

Endurance (End): The number of turns of thrust the torpedo can use while on the map.

Evasion (Ev): The number that the torpedoes have to equal or exceed to evade or mitigate damage from Area Effect weapons.

Pivot (Piv): Expressed as two numbers separated by a slash, like 2/8. The first is the maximum number of windows a torpedo can pivot by in a single turn's movement. The second is the maximum number of windows the torpedo can pivot by in its entire duration on the map.

Hardening (Hrtn): The amount of additional damage needed to reduce the Damage value of the torpedo by one. See Damaging Torpedoes, below.

A torpedo that has used its last turn of thrust, or used its last pivot, without reaching the hex of its target, is removed from play at the end of movement.

In addition to the traits above, torpedoes have Accuracy, Penetration and Damage as other weapons do; Torpedoes can have very high damage caps.

Torpedo Impact

Torpedoes that enter the hex of their target during the Movement phase impact in the Standard fire phase, rolling for Accuracy, Penetration and Hit Location normally. Each one is treated separately against a target's defenses. A torpedo will not "over-shoot" the hex of the target and miss it if it has more speed than is necessary to hit the target.

A torpedo that misses (rolls under its Accuracy target) is removed from play.

Firing On Torpedoes

Any weapon can fire on a torpedo; simply shoot at it as you would any other object on the map. Torpedoes, like all small targets, have a Profile number of +3, and may be engaged by allocation of Defensive Fire. Interceptor, Aegis, High Resolution Targeting and Divisible are all useful against torpedoes.

Damaging Torpedoes

One damage point in excess of the torpedo's hardening level reduces its Dmg value by one. A torpedo whose Dmg value is reduced below 0 is destroyed. Torpedoes can have hardening from 0 (the default) up to 7.

No single weapon hit can reduce a torpedo's Dmg value by more than one (Exception: The Fragile trait).

The Hits trait increases the number of individual weapon hits needed to reduce the Dmg value.

When engaging torpedoes with beam weapons, allocate targets as you would against any other small targets, including holding back weapons for subsequent Aegis opportunities.

Unless the Launcher Guided trait is taken, torpedoes will continue to pursue their target, even if the launching unit is destroyed.

Torpedo Record Cards

Available as a download off of the Ad Astra web site is a template that can be printed and cut apart. These are meant to be slid into the fronts of card sleeves over whatever poker sized cards you use, and give a convenient place to write down commonly needed information on torpedoes.

The six ovals on the left are for recording the target, stand off distance, Penetration, Accuracy, Damage and hardening levels of the torpedo.

The track of boxes under the Damage oval is used to track the current warhead strength. Mark off the boxes in excess of the torpedo's warhead; as the torpedo is reduced by damage, or has its warhead drop as the result of travel, mark off the additional boxes until the correct warhead strength is the highest unchecked box. The additional columns rows of boxes underneath are for tracking damage to torpedoes with Hits 2x or Hits 3x as a trait.

In the center of the card is a wheel, labeled pivots. Put the maximum pivot the torpedo can have before the slash in the center, and the total number of windows the torpedo can pivot after the slash. As the torpedo pivots, mark off spaces in the outer ring, one per window pivoted. (The ring has 15 spaces for a torpedo that can pivot 15 windows while in flight. It's unlikely you'll ever use all of them, but they're there if desired.)

On the right hand side, there's an oval marked Thrust: put the Thrust rating of the torpedo in this oval. Under it are seven check boxes. Each turn the torpedo thrusts, mark off one check box, and add the thrust to the torpedo's Speed.

Remember that for every pivot (not window of pivot) that a torpedo makes, the torpedo sheds 10% of its speed, rounding normally, with a minimum of -1 speed.

Torpedo Specific Weapon Traits

There are many torpedo specific weapon traits, because torpedoes can be used to simulate so many different weapons in SF.

Hardening 1-7

This acts identically to armor, except it's immune to the Ignores Armor, Armor Leaks and Halves Armor traits.

Hits 2, 3, Fragile

Instead of one weapon hit past hardening removing one point of Torpedo Dmg rating, it takes two or three hits to reduce the warhead strength by one with this trait.

Fragile torpedoes are destroyed by the first weapon hit that exceeds their hardening value. Fragile may not be taken on torpedoes with warheads of less than 3.

Constant Burn

A torpedo with this trait may not "drift". It must apply thrust for each turn it's on the map.

No Inherited Velocity

A torpedo with this trait ignores the inherited velocity of its launching ship.

Torpedo Record Card

Target	Std Off	Pivots	Thrust
<input type="text"/>	<input type="text"/>		<input type="text"/>
Pen	Acc		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Dmg	Hrdn		Speed
<input type="text"/>	<input type="text"/>		<input type="text"/>

20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Example: Bubbles

Our ship has a Mode 1 speed of 8, and has launched a Bubble with a thrust of 5, End 3, and pivots of 2/10. The Bubble has a Dmg of 15, and Pen 5 for its first turn of endurance, Dmg 12 and Pen 4 for the second turn, and Dmg 9 and Pen 3 for the third turn. (It's not required to have the damage drop off by the Bubble trait, but it was cheaper to build this way.)

While the Bubble is active, if the ship pivots farther than 2 windows, or thrusts more than 5, it will run into its own Bubble from the inside.

The ship is targeted by 12 missiles, each taking 3 damage points to stop, while the Bubble is in its first turn of endurance. After defensive fire, there are six targets left that are unharmed, two targets left with two points of damage on them, and one target with a single point of damage.

The first two damage points from the bubble kill off the two missiles that needed a single damage point to kill them, leaving 13 damage points left and eight targets. Each takes one point of damage, leaving 5 damage and 5 Pen left, with the two that had taken a point previously getting its damage first, killing them, and leaving 3 damage and 5 pen left to spread among the remaining 6 targets. Assuming that the Penetration rolls are made, the Bubble will kill two more missiles, letting four hit the ship.

Launcher Guided

This is explained on page 45.

Stand Off r3, r5, r9, Spherical Arc

These are explained with Targeting traits on pages 41.

Bubble

A torpedo with this trait creates a spherical bubble around the launching ship on the turn of launch, that will stay with the launching ship within the basic maneuver parameters of the torpedo, including the torpedo's limits on pivots and thrust. The bubble will last for as many turns as the basic torpedo could apply thrust or until it runs out of pivots or runs out of damage.

The bubble protects the ship by doing its basic damage to any small targets that reach range 0 from it, after Defensive fire, but before they damage the ship. The bubble divides its base Dmg and Pen equally among all targets that impact it on a single turn, with a minimum of 1 point of either per target. When a bubble has used up all of its damage, it vanishes until a new bubble torpedo can be launched. Bubbles ignore ECM and Profile numbers of their targets. A bubble will damage another ship at range 0.

When bubbles damage multiple targets, they distribute their damage equally, counting from the smallest target to the largest, during the Defensive Fire step and outgoing small targets during the Reserve Fire damage step. Any remaining damage for the bubble is available to deal with targets on the next turn.

Up to three units with the same position, altitude and velocity can be protected by a single radius 0 bubble; if one of them diverges in course, the bubble will damage the ship that leaves; the bubble will always attempt to stay with the ship that launched it.

If the ship the bubble is protecting moves in a way that the bubble cannot match, the ship runs into the bubble and takes its damage on the facing most consistent with common sense; if common sense does not give an unambiguous facing, the facing is chosen by an opposing player. Bubbles around Mode 2 ships will hit the ship unless final consolidated vectors match up with a legal move for the Bubble. Bubbles around Mode 0 ships must be able to make a legal move to the ship's final position.

Bubbles cannot be launched to stay with another unit. Two bubbles on different ships will damage each other when the ships are in the same hex. Multiple bubbles on the same ship do not damage each other. Bubble torpedoes can be shot at like any other torpedo, they have a Profile number of -1. Damage done to a bubble never transitions to the ship that mounts it. Enveloping weapons fired at a ship protected by a bubble will hit the bubble once for every facing they strike, but will not damage the ship until the bubble goes down.

Bubbles do not interfere with outgoing beam fire; they will do their damage to outgoing missiles and torpedoes normally. Multiple bubbles generated by the same ship do not interfere with one another. Bubbles generated by multiple ships in formation with each other will not damage each other; bubbles out of formation (two ships with overlapping bubbles but with non-identical courses) will damage each other.

Tactical Roles of Torpedoes

Torpedoes give ships a reason to maneuver, try to change the angle of the intercept, or even turn tail and run. Like missiles, they also serve as weapon sponges as the target must shoot them rather than shoot at you.

Fighter Operations

Fighters are essential to some settings, and not present in others. Fighters can be described as torpedoes that move independently, fire weapons from stand off distance, and head back to the carrier to be refueled; many fighter weapons have limited ammunition.

For simplicity, fighters are moved in squadrons, not as individual units. Squadrons are limited to no more than 12 fighters each; many universes limit fighter squadrons to smaller numbers than that.

Fighters have sizes, ranging from 3 to 10; this is the number of damage points each fighter can take before being destroyed. While a squadron can have multiple types of fighters in it, the attacker chooses which fighter in the squadron gets hit. The player running the squadron may use evasion to swap which fighter takes the damage after the damage amount is known.

The cost of the entire squadron is shown at the top of the squadron block; it's the sum of all fighters in the squadron. The thrust, pivot and endurance rating of the squadron is also shown. Endurance is two numbers separated by a slash, with the second one showing a target number, usually 3+

Reading The Fighter Track

Each fighter in the squadron is a row of boxes. The symbols in the boxes indicate capabilities the fighter loses due to damage.

Blank boxes are structural hits; they just reduce the damage needed to kill the fighter.

Letters in a box are weapons; the letter is the first character of weapon's name.

Boxes with a number followed by a + sign, like "4+" in the example at right, are the fighter's evasion numbers; always use the lowest evasion number on the fighter. See Fighter Evasion on page 59 for all the uses of the Fighter Evasion box.

Boxes with numbers in square braces, like this: [6] are space control systems. This number is subtracted from the distance between the squadron and the carrier for movement precedence.

Boxes with numbers between vertical lines, like this: |1| are fighter ECCM boxes; the ECCM benefits the entire squadron. The Crew Rate target for the ECCM roll is the Crew Rate of the carrier.

Boxes with numbers in angle brackets, like this: <1>, are armor, and deduct from the damage done to the fighter so long as they remain.

Boxes with numbers in parentheses, like this: (3), are shield generators, each turn they generate a spherical shield of the strength indicated. One flight crew action will regenerate one box's worth of shielding each turn.

A box with an at symbol (@) is additional flight crew. The last box in the track, with a # sign, destroys the fighter when it's hit; it's where the pilot sits. The pilot contributes one flight crew action, each @ in the fighter contributes 2 more.

Fighter Weapon Tables

Fighter weapon tables are identical to ship weapon tables. Fighter squadron casualties generate Accuracy penalties on the weapons. See Combat on the next page.

Squadron 1		210 Points	Thr 8	Pivot 4	End 6/3+
1	MiG-74		C	4+	#
2	MiG-74		C	4+	#
3	MiG-74		C	4+	#
4	MiG-74		C	4+	#
5	MiG-74		C	4+	#
6	MiG-74		C	4+	#
7	MiG-74		C	4+	#
8	MiG-74		C	4+	#
9	MiG-74		C	4+	#
10	MiG-74		C	4+	#
11	MiG-74		C	4+	#
12	MiG-74		C	4+	#

Fighters & Bridge Boxes

Players who want to limit the number of fighter squadrons are welcome to use this optional rule:

The maximum number of squadrons a carrier can have 'in flight' at any time is equal to the APs it can generate.

If the carrier loses Bridge boxes, the owning player decides which fighter squadron is orphaned - it must break off and return to a friendly carrier.

Landing and reloading a fighter squadron switches which carrier the fighter is tasked to.

Fighter Pivot Example

A squadron with a current speed of 12 and a pivot rating of 4 chooses to pivot two windows before movement, and 1 window after movement.

The pivot before movement reduces its speed by 20%, or by 2.4, which rounds down to 2. It will, barring use of thrust, move 10 hexes after its pivot. It also thrusts (and uses afterburners) to move 16 hexes this turn.

For the post-movement pivot, it will bleed 10% of 16, or 1.6, which rounds up to 2, and start next turn with a speed of 14.

Mode 2 Fighters

Players who want the hassle can track fighter squadrons by mode 2 movement; this will require that a Move Card be kept for each squadron to better track its vectors, which is the main reason it's not done.

Fighters using Mode 2 movement get the full benefit of their thrust when pivoting, and pivot both before and after thrust as Mode 1 fighters do; because of limited fuel and ability to change directions, they are significantly less useful in combat, and will die horribly when faced with Mode 1 fighters.

Fighter Launch, Movement & Recovery

Fighters are launched and landed during the Combat phase of the turn, as a standard weapons fire order. Fighter catapults and landing bays are shown in the weapon mounts of the carrier.

Fighters launch from catapults; these are rated by the size of the fighter they can handle, and have a number of fighters they can launch per turn. Fighter parking holds ready fighters to feed into catapults. The maximum number of armed fighters a carrier can hold is equal to its fighter parking. Some carriers have parking equal to the number of catapults, some have more parking than catapults, and so on.

Fighter landing bays recover fighters; the fighter must approach from the direction the landing bay faces. Emergency landing procedures can triple the number of fighters recovered, but each one takes a point of damage.

Fighter hangers ready fighters; hangars have varying capacities per fighter box. The number of hangars times the number of fighters per hanger is the maximum that can be readied at the same time. Readying all fighters in the hanger takes turns equal to half the Crew Rate of the carrier, rounded up; this refuels the fighter as well.

Fighters launch like torpedoes and inherit the same percentage of the carrier's velocity that a torpedo does (including inheriting a velocity of 0 from a Mode 0 carrier).

Fighters thrust and move by Mode 1 movement. Fighters can pivot before and after thrust is applied; the total amount they pivot cannot exceed the pivot rating for the squadron, and they may not use more than half of their pivot in either opportunity. (A fighter with a pivot rating of 4 could pivot 2 windows, move, and pivot 2 more windows. It could not pivot 4 windows and then move.) See Fighter Evasion for the use of evasion boxes as afterburners. Fighters move just before torpedoes do, using the following order of precedence:

- 1: Fighters farther from their carrier move first. Space control suites reduce the effective range to the carrier for this purpose.
- 2: If condition 1 results in a tie, the one with the lowest thrust moves first. Afterburners do NOT alter thrust for order of precedence.
- 3: If condition 2 results in a tie, the larger fighter moves first.
- 4: If condition 3 results in a tie, roll a die; lowest roll moves first.

Fighters bleed 10% of their speed per pivot, rounding normally, with a minimum of -1 speed reduction per pivot. If they pivot before movement, the speed is bled instantly. If they pivot after movement, the speed is bled from next turn's starting velocity.

Fighters have an endurance number that determines when their "bingo fuel" point is, listed as two numbers separated by a slash: 6/3+. The first digit is the number of turns a squadron can apply thrust; any turn that it coasts doesn't count against this limit. At the end of the last turn of thrust, the squadron has to roll a d10; if the roll equals or exceeds the number after the slash, they can continue normally, making the roll after each subsequent turn.

Once the roll is failed, the squadron must head back to the carrier to refuel. They may engage targets en route, but may only apply thrust once, and may not use evasion, even as afterburner boxes.

A carrier's damage control parties can be assigned to repair damage to fighters using the normal rules. Each box is one repair.

Fighter Evasion

Fighters have evasion boxes on their tracks; and evade as other small targets do, using the evasion box of their choice. Fighter evasion can also be used to protect a specific fighter in the squadron. Once the damage amount against a target is known, the defending player may attempt to substitute another fighter by having the substituting fighter equal or exceed the target for an evasion roll to cover its wingman. No more than one evasion attempt can be made per incoming attack in this fashion; this can be combined with an evasion attempt to avoid Area Effect damage.

A fighter evasion box can be 'burned' at any point during its move. This destroys the chosen evasion box on the fighter, and the owning player chooses which ones are burned (usually the ones with the highest numbers). Burning a box lets a fighter thrust up to two higher than normal, or to pivot one window further than normal; the extra windows of pivot can be used before or after the fighter moves. A fighter may not burn more than two evasion boxes in a single turn, and may not burn evasion boxes at all after the bingo fuel point is met.

Fighter Combat

Using a weapon, shield regenerator, space control system or ECCM system requires the use of a flight crew point; movement does not require a flight crew point. The pilot of the fighter (in the # box) contributes one flight crew point each turn. Additional flight crew (shown by @ boxes) contribute two flight crew points per turn.

Fighters engage other small targets in the Defensive Fire step. A fighter with an Aegis weapon may use it to its full ability. When engaging larger targets, fighters fire in the Standard Combat step. A squadron of fighters with weapons that take Action Points to use can use APs from their carrier, provided there is a fighter with a working space control system in the squadron. Each weapon requires its own APs, you can't spend one AP for all weapons in the squadron.

Fighter weapons can bear on any target within two windows of the Nose of the squadron; when engaging a target at range 0, fighter weapons can engage in any direction, and they may choose which facing of the target to attack.

For every quarter of the squadron that's destroyed, dropping fractions, the squadron takes a penalty of +1 to the Accuracy of all weapons fire, reflecting the morale impact of losing their squadron mates. See the sidebar for a breakdown. It is possible to merge damaged squadrons during fighter reloading; this is assumed to happen unless the player decides he doesn't want it to happen.

Damaging Fighters

Fighters have a Profile number of +3. They apply the full damage (Dmg plus Pen) from left to right down their damage track for any weapon that hits. A fighter that loses a box with some special capability in it loses that capability.

Fighters may make evasion checks as other small targets do.

Tactical Roles For Fighters

Fighters are not the decisive arm of combat in *Squadron Strike*. This was a deliberate design choice for balancing the game; to make fighters more effective, outlaw the Aegis and Area Effect traits on weapons, and restrict Interceptor to range 3.

Using the rules as written, fighters run around the battle with their superior maneuverability intercepting missiles and torpedoes and other fighters. They can finish off cripples and threaten smaller ships.

Morale & Casualties

Cross reference the initial squadron size with number of fighters killed to see the morale effects.

Fighter Morale Penalty			
Sqd	+1 Acc	+2 Acc	+3 Acc
12	3	6	9
11	3	5	8
10	3+	5	7
9	2	4	6
8	2	4	6
7	1	3	5
6	1+	3	4
5	1	2	3
4	1	2	3
3		1	2
2			1

**Collisions, Mecha, Assault
Shuttles & Boarding**

In any universe where the laws of physics matter more than coolness, these rules should not be used at all. They not only play fast and loose with physics, they stick their tongue at it.

Realistically, these maneuvers would result in fiery collisions.

Mecha Lamprey Example

A flight of 6 Amptron class mechas is pursuing a target with out shields; through careful flying, they pivot three windows, and burn an evasion box to gain one thrust, just enough to reach the target's hex without taking damage.

After defensive fire, two of the mecha still have legs and land on the ship, on the Port side. They may not attack on the turn they landed. The two of them spend their next turn walking to the Nose facing of the ship, and attack into the spinal mount's opening; their weapons do 6 damage each, and the ship's Nose armor is 4. The first damage point destroys a spinal mount laser, the second damage point is rolled for hit locations normally.

Mecha In Ground Combat

Every squadron of 12 Mecha can fight on the ground as a company of armor using the ground combat rules on page 98-99.

They are more expensive than an armor company, and much higher maintenance; to get them back into space requires taking the objective.

Mecha As A Fighter Type

Many anime-influenced universes use humanoid robots (mecha) as a space-going fighter type. Mecha have two special systems, called "Arms" (shown by a percentage sign (%)) and "Legs" which are shown with an ampersand (&). A mecha may "lamprey" to an enemy ship; doing so requires that the mecha be able to fly into the hex of the enemy ship. Mechas land during the Offensive Fire step and may not damage the ship on the turn they landed. The mecha takes one point of damage per two full hexes of movement it had in excess of what it needed to reach the target, rounding down, regardless of the relative directions and velocities. Any Prismatic Globes or shields facing the mecha must drop before they can land; if neither of these conditions are met, they fly through the target's hex, having given them a free shot at closerange. The Quick trait (page 41) is useful for shooting down shields just before mecha land. A mecha that crosses a Bubble will take damage as any other small target would. The facing they lamprey to is the one they entered the target ship's hex from.

Once the mecha has lampreyed, it travels with the target. If it still has a functional Legs box, it may walk from the facing of the ship that it's on to any adjacent facing of the ship during the movement phase of the turn, when other fighters move, and it is considered inside any Prismatic Globes or shields of the target.

A lampreyed mecha cannot be shot at by the ship it's on, but other units can shoot at it. If it's moved to a facing protected by the shields of the ship that it's on, the shield has to drop before the mecha is damaged. Any shot missing the mecha by 3 or less hits the ship it's lampreyed on to.

Lampreyed mecha with functional arms and a weapon on the facing of a ship with a weapon mount may attack *through* the weapon mount; the first damage to exceed hull armor hits a weapon in that mount of the attacker's choice. This damage point ignores component armor; the rest of the damage is allocated normally. Mecha on Top, Left, Right or Bottom facings may attack roll thrusters. Mechas on the Nose or Aft facings may attack pivot thrusters. Engines cannot be targeted this way.

A lampreyed mecha with functioning arms may also spend one turn attempting to reduce the effectiveness of the armor on whatever surface it's on. Have the mecha make a Crew Rate check (same rate as its carrier). On a success, the armor's activation number has worsened by 1 (1+ becomes 2+, 2+ becomes 3+). This is done instead of attacking the ship with a weapon, not in addition to it.

Shuttles & Assault Shuttles

Shuttles have a thrust of 4, pivot 2, take three damage points to destroy and have an endurance of 8/3+. They cannot harm any other unit in the game. They can transport one hull space of cargo between ships, or one Marine boarding squad. They may not ram to board a hostile vessel, but can be used to send troops to a friendly ship.

Assault shuttles have a thrust of 6, pivot 2, take six damage points to destroy, have an Endurance of 8/3+, and transport ten hull spaces of cargo, or three marine boarding squads. They may ram to board a hostile vessel. Ramming to board is identical to mecha lampreying to a target.

Each group of shuttle boxes on the SSD may launch one shuttle per turn during the Crew Action phase. Shuttles inherit velocity as torpedoes and fighters do.

For boarding party combat, see the next page.

Transporters & Boarding Actions

Many settings have the ability to “beam” people from ship to ship, and even beam boarding parties aboard hostile ships; sometimes boarding parties are moved to enemy ships by way of shuttles or assault shuttles.

For reasons which vary, this mechanism is rarely used to beam nuclear weapons into an enemy ship for a quick kill. As this tactic would make for a very dull game, we’ll assume that it can’t be done.

To beam boarding parties into an enemy ship, both ships must have down shields facing one another during the Equipment Activation step of the Crew Action phase.

Transporters are activated at the start of the Crew Action phase, and a squad is sent over. Each box of Marines provides a boarding squad that can be used to offensively board. Each box of Infantry provides two squads, but they may only defend. Transporters are rated in how many squads they can beam per turn, and the range at which they’re effective.

An assault shuttle that successfully enters the hex of enemy ship may attempt to ram and board during the Equipment Activation Step. Ramming requires a Crew Rate check; if it succeeds, the troops on board are able to participate in boarding party combat after a one turn delay. Otherwise, the shuttle fails to ram, and completes its move normally.

Assault shuttles are stopped by shields and Prismatic Globes. Ramming with an assault shuttle will do three damage to the shuttle; it may only ram once per tactical combat. The boarding parties may reboard the shuttle and depart at any point in time.

Boarding Party Combat

Once you’ve gotten boarding party squads on board the enemy ship, roll a hit location for each one during the Activate Equipment step. The squad may destroy one box in that zone (of their choice) with a successful Crew Rate check, and cannot destroy Armor or SI boxes. If the roll fails by three or more, the squad is destroyed. Each turn the squad is on board the ship, their Crew Rate worsens by one (for running out of ammo, tripping defenses, and more). The Crew Rate will revert to normal after an Operational turn on their home ship.

Squads can be recovered during the Crew Actions phase of any subsequent turn, prior to another round of combat, and only if all the conditions for transport are met. Squads that boarded by shuttle have to return to the hit location zone they originally landed in to reboard the shuttle.

Defenders may use troops for counter-boarding. Specify which zones are guarded; defending troops make a Crew Rate check before the attackers do; if they succeed, the attacker’s boarding party is destroyed before it attacks.

Attacking squads on a ship may spend a turn to shift their “position” by one zone; Defenders can shift by two zones in one turn.

If boarders have destroyed the last bridge boxes on the ship, it is captured. Its new owner cannot maneuver with it, nor can they fire its weapons. It will continue on its existing course until the battle is over.

First generation transporters have a range of 1, second generation has a range of 4, and third generation has a range of 9. Transporters cannot be used by or against ships under cloak.

Crew Rate Reference

Grade	Rating
Legendary	2+
Elite	3+
Superb	4+
Veteran	5+
Average	6+
Mediocre	7+
Poor	8+
Terrible	9+
Horrible	10+

Just remember that lower numbers are better.

Marines vs. Infantry

The ship design tools let you put both Marines and Infantry on the same ship. In boarding actions, the difference between Marines and Infantry is this:

Marines can make hostile boarding attacks, Infantry squads may only defend.

When used in the abstract ground combat system, Marines have comparable combat factors, but higher casualty rates because the units have fewer people in them. They are, however, easier to transport.

Damage Control

A ship shows damage control parties as a track of boxes on the SSD. Each damage control party allows you to make one repair attempt to repair a damaged box or weapon system. A repair attempt succeeds if a Crew Rate check is made.

A ship may spend APs as ad hoc damage control parties in addition to these. Two APs spent act as one damage control party.

On each turn, during the Damage Control step of the Crew Actions phase, ships assign damage control parties to repair systems. Each party makes a Crew Rate check; if the roll succeeds, the system is returned to functionality. If it fails, it's destroyed for the rest of the tactical game. Multiple damage control parties may not be assigned to the same box on the same turn, in the hopes that one succeeds.

You may attempt to repair a system on the turn it was destroyed. Any system other than Structural Integrity, armor or shield bubbles can be repaired by damage control parties during tactical combat.

Damage control attempts happen before shield regeneration, allowing any shield regenerators that have been repaired to generate shield bubbles on the turn of repair.

A weapon that is destroyed and subsequently repaired does not count the turns destroyed towards completing its cool down or arming cycle.

All tactical damage control repairs fail at the end of the current operational turn, or immediately after the ship has moved on the operational scale.

Long Term Repairs

Tactical damage control is quick-and-dirty, jury-rigged repairs. Long term repairs require work crews and more time. You may make a number of automatic long term repairs equal to your damage control parties. APs may not be used as ad hoc damage control parties for this purpose.

Each permanent repair takes six operational turns (one day) to complete.

You may make two additional permanent repair attempts per damage control party above and beyond the guaranteed ones; these repairs require a Crew Rate check. You may try multiple times on a failed permanent repair.

More extensive repairs are in the Campaign rules.

Storage Bays & Parasite Craft

Some universes have tenders and battle riders, where the riders lack FTL capacity and several other long term habitability features.

To show this, design the parasite craft, and then buy storage bays with enough hull spaces to hold them.

Parasites do not consume any of their cruise endurance when they're docked to their tender; they may not transfer cruise endurance capability TO their tender.

Cargo & Storage Bays

Cargo on the SSD is a measure of your ship's cruising endurance. Each cargo box on your ship is ten days of strategic endurance; in the tactical game, they are 'padding hits'. The campaign rules have more information on cargo on a strategic level.

A storage bay is a system on your ship for bulk transport to other places. In a campaign game, this might be used for carrying troops, or for cargo carried for a specific set of victory conditions. Storage bays do not provide extensions to your cruise endurance. They can be used as proxies to show docking points for tenders carrying parasite craft.

Storage bays come in four standardized sizes: 50, 100, 200 and 500 hull spaces.

Magazines & Reloading Weapon Mount Rows

It is possible to design ships that have ammunition requirements for specific rows of weapon mounts. This ammunition can be replenished from magazines, which are purchased as systems on the ship.

Magazines, like fighter hangers, come in 1x and 4x varieties, showing the number of units of ammunition they carry for a weapon. One unit of ammunition is enough to load a single weapon for one full salvo at its full rate of fire.

Reloading Procedure

Reloading a magazine requires taking the row of the weapon mount offline; this is done during the Crew Action phase during the Activate Other Equipment step. Weapon mount rows can be brought back online in the same step on subsequent turns.

Mounts that have been taken offline may not be fired, armed, or have APs assigned to their Capacitors. The turns spent offline do not count as turns of cool down for the weapon. An armed weapon, or a weapon with APs stored in its capacitor system that is taken offline loses all stored APs as part of taking it offline.

Once the mount has been taken offline, make one Crew Rate check for the weapon mount row during the Damage Control step. Failing this Crew Rate check does not damage the weapon or the magazine, it means that on the next turn, you'll need to make the check again.

Once the Crew Rate check succeeds, during the Damage Control step of the turn, you may transfer two units of ammunition per Damage Control party assigned to reloading the weapon mount. While performing this duty, they may not be used for any other function. You may use APs to transfer one unit of ammunition per AP spent, and may not spend any APs stored in the weapon's capacitors.

Once you have loaded as much ammunition into the weapon mount as desired (or it can hold, whichever is less), make a Crew Rate check during the Damage Control step. If this Crew Rate check succeeds, you can bring the weapon back online during the Activate Other Equipment step of the next turn. If it fails, you try the Crew Rate check again on the next turn.

Damage To Weapons While Reloading

If the weapon mount row is damaged while it's being reloaded, it takes the normal 2d10- ammunition hits. Roll a Crew Rate check for each damage control party being used for reloading that weapon mount. If it fails, that damage control party is marked as permanently destroyed.

Damage to Magazine Hits while a weapon is reloading has no effect, other than reducing the amount of ammunition available. It's assumed that empty magazine boxes are destroyed first.

Reloading Example

A ship with a mount row carrying three weapons, each with four units of ammunition, needs to reload at the end of turn 7. To completely reload the weapons will take $3 \times 4 = 12$ units of ammunition.

It has 6 damage control parties available.

On turn 7, the row is taken offline, and a Crew Rate check is made - which fails, with a roll of a 1.

On turn 8, another Crew Rate check is made, and succeeds. The player of the ship sets 4 damage control parties to reloading the weapon (needing the other two to fix other systems on the ship).

On turn 9, the player has a choice:

- 1) Continue reloading
- 2) Close it up with a Crew Rate check so it can fire a turn earlier.

The player chooses to finish reloading the weapon; this takes two damage control parties to finish off.

On turn 10, the player attempts a Crew Rate check and succeeds

On turn 11, the player can bring that row of weapons back online, which would allow them to fire on turn 12.

Competitive Games and Cloaks

First of all, we recommend not playing with cloaking devices with people who are ultra-competitive. With so much of the information hidden and off the map, and the record keeping involved, it's far better to play a game you'll enjoy with someone you trust than to cloak against a stranger who's out for blood.

With that said, in competitive games, prior to plotting, a cloaked player should write down the following information:

Begun at: Hex XXXX, altitude Y, Nose facing Direction(color), Top facing Direction(color), speed/vectors of ZZZ, thrusting N. Ship offset by Y hexes out, Z hexes in altitude.

Ended turn at: Hex XXXX, altitude Y, Nose facing Direction(color), speed/vectors of ZZZ. Ship offset by Y hexes out, Z hexes down.

This can slow the game down to a crawl. It does make it possible to track back and see what your opponent did at the end of the game.

Cloaking Devices

Cloaking devices are a universe specific variable; not all settings have them, and these rules should be used with caution. Nothing can destroy the fun of a tactical space combat faster than cloaking devices, especially if one player isn't prepared for them, or is unfamiliar with the rules.

Cloaking devices have a Level (from 1 to 3) and a duration (set by the number of cloak boxes on the ship). Each "Cloaking Device" box on SSD allows the ship to remain under cloak for one turn. Damage to a cloaking device while under cloak destroys the "used" boxes first. If the cloak is set up to use APs, the cost to remain under cloak is the AP cost of a single box.

Cloaks are activated (or deactivated) during the Use Equipment step of the Crew Activities phase of the Sequence of Play, and are always the first action taken in that step. If the last box of a cloaking device is lost as the result of taking damage, the cloaked ship surfaces at the end of that damage step (Defensive fire, Offensive fire or Reserve fire).

A ship that uncloaks must remain visible for two complete turns before the cloaking device can be engaged again. A ship held in a tractor beam cannot cloak.

Movement Effects of Cloaking Devices

A ship under cloak leaves their box miniature on the map at their last known altitude and orientation. They remove their EoT marker completely. On subsequent movements, they place a flat "Cloaked" counter on the map rather than move their ship; this counter must be within a number of hex and altitude levels from their actual position equal to the ship's Cloak Level.

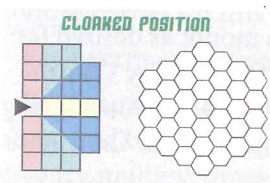
During the Plotting phase of the next turn, the cloaked player plots normally, and records the offset between their actual position and the hex their flat counter will be in. On the Cloaked Position tool, the center of the vertical diagram and the center of the hex grid reflect your actual position. Put an X on the tool showing where your cloaked marker is relative to this.

On subsequent moves, a cloaked player moves their flat marker according to their movement plot, adjusting the cloak marker by the offset recorded on the Cloaked Position tool; this effectively adds a fourth step to the plotting phase.

Full Example of Cloaked Movement

A Mode 1 ship with a Level 3 cloak is in hex 0416, facing A/B (blue, upper), with a speed of 6. Its EoT marker, prior to cloaking, is 6 hexes away on the A/B hex spine (hex 0712), and 3 hexes above the map. After activating the cloaking device, the EoT marker is removed.

During the plotting phase, the cloaking ship pivots to A (blue, lower), which is a two window pivot, and applies thrust 1. Their plotted movement (on their original velocity of 6) will still be in A/B (blue, upper) for this turn, and they plot to go 5 hexes forward and 4 hexes up. Their actual position ends up being in hex 0612, 4 hexes above the map.



They may place their cloaked marker 3 hexes away from this position; knowing that their box miniature and original orientation are plainly visible, but their pivot is not, the cloaking player gets tricky: He places his cloak marker in 0711 at 3 levels above the plane of the map, a position he could have reached if he hadn't pivoted and had thrust by 2 towards his original future position marker (halved for displacement). The combined offset is 1 hex down, and two hexes away in direction B.

On the plotting phase for turn 2, the cloaking player is facing A (amber) in hex 0612, with a speed of $6+1-2=5$. If their future position marker were placed, it would be placed in hex 0607, down by 3 hexes. The plot is taken to 5 hexes out and 2 hexes down, putting them in 0708, at two above the map. They offset their cloak marker 3 hexes away in direction B (to hex 1006), and keep at 3 levels above the map.

As you can see, the cloaked player is trying hard to convince his opponent that he's moving in a way that he isn't, perhaps trying to get his foe to either slow down to keep near the cloaked marker, or overshoot, so the cloaked player can uncloak in a good position to fire on their rear facing.

Cloaking & Fire

Ships under cloak may not fire or launch weapons, launch or land fighters or shuttles. They may not use ECM or ECCM while under cloak. A cloaking device does not alter the target's Profile if something successfully shoots at it, nor does it reduce damage or give additional defenses.

Firing on a cloaked ship requires that it be pinned by lab operations, using the general lab procedure on the next page. Area effect attacks can be used to target the volume it may be in.

One lab point generated on a cloak marker means that the ship using the lab has spotted a cloaked ship. The ship that spotted the cloaked unit knows what AVID window the target is visible through. (When this happens, the cloaked ship shoots a bearing to the ship that spotted it, and gives that player the reciprocal bearing)

Two ships that have each gained one lab point against a cloaked ship from two different bearings have pinned the cloaked ship. A pinned ship must reveal its correct EoT marker, but does not have to reveal its actual location and orientation. Once a ship has been pinned, it will remain pinned for as long as one of the pinning ships succeeds in generating a lab point against it.

To fire on a pinned ship, the firing ship needs to generate a number of lab points equal to the cloak rating plus two; this is called the lock-on threshold. The lab point needed to maintain the pin counts towards meeting the threshold. A lock-on forces the cloaked ship to reveal its correct hex, altitude and orientation immediately; this state persists until the next Equipment Action step. Effectively, it forces the ship out from under cloak, and a turn where they can be fired on, but may not fire back.

If a cloaked ship is pinned, any unit may fire torpedoes or missiles targeted at its EoT marker. For them to hit, the controlling ships must have a lock-on on to the cloaked ship when they enter the hex of the target; if this is not done, they miss automatically.

Labs are specifically allowed to be used in reaction to cloaking by a target. A locked-on cloaked ship may not uncloak on the same turn it was locked on to.

Labs

Labs are used to analyze tactically useful data. Labs are arranged on the SSD in groups, like other boxes. Each group of lab boxes may analyze one subject per turn. Lab data gathering and analysis happens during the Crew Activity phase of the Sequence of Play, and may be done immediately on a ship that cloaks.

To use labs, the player commanding the ship decides how many labs in each group are being used for data gathering, and how many are being used for analysis. Data gathering is a range function; the distance to the target being analyzed cannot exceed the quantity of labs assigned to data gathering, plus one, squared. Each tech level difference from Standard adds or subtracts one from the number of labs used for data gathering, before squaring. Labs in different groups on the SSD may *not* be combined for the purposes of data gathering.

Analysis is a Crew Rate function, and every group of labs gets one free analysis roll against one target within range. Each lab in a group that is NOT used for data gathering grants an additional roll. Each roll that exceeds the Crew Rate gives one lab point on the target.

Each lab point on a missile or torpedo reveals the labbing player's choice of the target, the base Damage rating, the hardening (of a torpedo) or the Size (of a missile), or all traits. To lab missiles, use the range from the ship using labs to the missile's midpoint marker.

Because the hex a torpedo or missile is seeking is known at launch, it may be possible to determine the target without labs. If they're targeted on a hex with a single EoT marker in it, they're targeting that ship.

Some scenarios require a certain number of lab points for a victory point bonus.

The specific requirements for lab points against a cloaked ship are covered in the cloaking rules.

Integrated Lab Example

A ship with two groups of lab boxes is attempting to identify the targets of a group of torpedoes; at the time that the labs are being used, the torpedoes are 13 hexes away. Each group of lab boxes has four labs in it. The player allocates 3 labs to ranging, which lets him attempt analysis on targets out to $(1+3)^2=16$ hexes away. This gives him one attempt per group (base), plus one additional attempt for the fourth lab in each group.

There are six torpedoes in the group, numbered one through six. Because he has two groups of labs, he may attempt to analyze two of them. For each of his four analysis attempts, he has to specify what information he wants, and which torpedo he's analyzing. The Crew Rate on this vessel is 5+, and he chooses to learn the warhead and hardening of torpedo #1, and the targeting of torpedoes #1 and #2.

The dice are thrown, getting a 4, 7, 8 and 10, in the order specified. He knows that torpedo #1 has hardening 4, and he knows what ship torpedoes #1 and #2 are targeted on.

Handy Table of Squares

1^2	1
2^2	4
3^2	9
4^2	16
5^2	25
6^2	36
7^2	49
8^2	64
9^2	81
10^2	100
11^2	121
12^2	144
13^2	169

Tractor Beams

Tractor beams are activated during the Crew Activity Phase with other systems. They are mounted in weapon mounts and can only be used on targets that mount bears on. Tractor beams are like very simple weapons, and operate during the Defensive fire step of the Combat phase. They have a Range and Accuracy. Rather than a Damage and Penetration, they have Strength. Tractor beams show in a ship's weapon mounts.

Attaching A Tractor Beam

To attach a tractor beam, you need to be within its range, it must bear on the target, and you must make an Accuracy check. Tractor beam Accuracy is affected by ECM, ECCM and Profile numbers normally. Tractor beams may be used on small targets.

Targets may attempt to fight the tractor beam. To do so, the target spends Action Points. Each AP spent gives one Crew Rate check. If the total number of Crew Rate successes exceeds the tractor beam's Strength, the target has broken free. Fighters may burn evasion boxes to gain a Crew Rate check to break free from a tractor beam.

The Slippery trait for missiles and torpedoes reduces the Strength of a tractor beam by the amount specified in the trait. a tractor beam with a strength of less than 0 has no effect.

Effects of Being Tractored

Small targets held in a tractor beam are prevented from moving relative to the tractorship. A missile held in a tractor beam is destroyed at the end of the turn. A torpedo held in a tractor beam will pivot to keep its target in arc, and if released, will resume pursuit, inheriting velocity from the tractorship as if it had just been launched. (Being held in a tractor beam does not give the torpedo any additional endurance, though it is not spending thrust while tractored.)

For two ships linked by a tractor beam, only the one with more SI may apply thrust; the other is dragged along. If both ships are the same size, neither may apply thrust.

Regardless of whether or not a ship can apply thrust, the ships will move according to the EoT marker of the largest unit. If both ships have exactly the same SI rating, consolidate their vectors to make one EoT marker for the tractored pair.

For Mode 1 ships, treat the speed and direction of their non-Newtonian movement as thrust for a Mode 2 ship and consolidate by the usual procedure. For example, a Mode 1 ship moving in direction A (blue, lower) with a velocity of 7 picking the lower 7 on the Vertical Plotting Grid would be treated as having a vector of 7 in A, 3 in "-" when consolidating with another ship.

While under a tractor beam, both ships may pivot and roll freely. Note that the tractorship still needs to keep the beam "in arc" relative to the unit being tractored. Mode 1 ships still bleed speed normally when tractored.

Both ships may fire beam weapons at any other target. A unit in a tractor beam may only launch missiles and torpedoes at the unit tractorshiping it. They are not considered to be tractored on launch. A ship held in a tractor beam by a unit with more SI than it has cannot launch or land fighters. A unit held in a tractor beam may not cloak.

Layered Defenses

The order of precedence for layered defenses are:

- 1) Bubble torpedoes
- 2) Prismatic Globes
- 3) Super Science defenses
- 4) Shields
- 5) Armor

Towed Arrays

Some universes take a more literal approach to translating naval technology into spaceships, and one way this is done is with towed arrays.

Using Towed Arrays

Towed arrays are shown as boxes on the SSD. To deploy one, the ship deploys one during the Activate Other Equipment step of the Crew Actions phase. The towed array is assumed to be at range 0 from the deploying ship, and only protects the ship that deployed it. It does not interfere with weapons fire by the deploying ship.

While deployed, the towed array adds its bonus to all Profile numbers on the ship versus torpedo and missile weapons only. Multiple arrays deployed by the same ship have no additional benefit, but they do allow for redundancy of coverage.

Once deployed, if the ship uses movement (regardless of movement mode), pivots, rolls, or uses a booster, the array is automatically destroyed.

While deployed a towed array is vulnerable to being hit by the weapons its distracting. Any missile or torpedo which rolls a natural "1" on its Accuracy check should be set aside. Roll a d10 for each weapon set aside in this way; if the result is less than the towed array's Profile bonus, the array is destroyed.

A towed array can be deliberately targeted by weapons fire, but has a Profile number of +3, or the bonus it gives its ship, whichever is higher. It takes 4 damage points to destroy. An area effect weapon damaging the ship it's protecting will also damage the towed array. A towed array that hits a Bubble torpedo is treated as a separate object from its deploying ship.

A towed array destroyed while deployed is unrepairable.

Booster Rockets

Boosters are expendable rockets that give additional options in maneuvering. There are two kinds - Retro Boosters and Forward Boosters. Retro-boosters thrust towards the Aft of the ship. Forward boosters thrust to the Nose of the ship. When used, they are marked off as damage on the ship, and are unrepairable.

The decision to use a booster is made in the Plotting Phase. Movement from boosters can come before or after the pivot of the ship (or, if more than one booster is used, both). Each booster used will move the ship one hex in the appropriate direction.

For Mode 2 ships, each booster used also gives two units of thrust in that direction.

For Mode 1 ships, each booster used immediately adds or subtracts from the initial speed carried over at the start of the turn. A retro-booster still won't allow a Mode 1 ship to fly in reverse.

For Mode 0 ships, boosters do not add momentum, but do allow the ship to move before its pivot, along the line of its pivot, and in the direction its facing at the end of its pivot.

A booster can be spent to add two windows to the pivot or roll rate for the ship, or add one to each.

When using more than one booster on a single turn, divide the ship's SI rating by 5, rounded up, and roll that many 2d10- rolls for each additional booster; mark off SI boxes equal to the cumulative total of the rolls.

Scenarios

Any time two fleets meet on the map with the intention of firing weapons at each other, it's a scenario. Scenarios can range from the very simple (two fleets enter, one fleet leaves) to the complex (both sides have hidden victory conditions). The setting book has a number of scenarios to play to get you started.

In most cases, the winner of a scenario is easily determined. Victory point calculations and victory point ratios are used to show who won more closely fought scenarios, or who won scenarios that had other objectives.

Scenarios come in three types.

Published scenarios are part of historical settings; they may be tied to a chronology; part of the challenge of playing a set of historical scenarios is seeing if you can come through with better results than they did. Published scenarios will have a pre-defined ship list, the map edge they start from (including initial altitudes) and initial velocities. All ships will have Crew Rates assigned after the unit name.

Pick up scenarios (also known as "simple scenarios") are built to a point budget, and may or may not use the optional hidden victory condition card rules at the end of this section.

Campaign scenarios are tied to a campaign position using the strategic level rules starting on page 73.

Maps & Scenarios

The game comes with two map sheets, printed on white and blue paper, printed up in an array of hexagons, with small hexes on one side and large hexes on the other. At the center of each sheet are two rosettes, labeled A-F, and 000 through 330. *Squadron Strike* only uses A-F, the outer rosette is used for other products we also publish.

When setting up the maps, make sure direction A is pointed in the same direction for both ships. The maps are geomorphic, meaning that all the hexes line up on adjacent edges, and when a fight moves off of one map, the map can be leapfrogged to the opposite edge of the current map. Laying the map sheets short-edge to short-edge allows the scenario to run down a long corridor of space. Laying them long-edge to long-edge gives a nearly square area of space to play in. Using the large hex size typically puts ships just outside weapon range, and shooting happens within a turn or two of initial maneuver. If using the small size hexes, there will be a longer stretch of time for ships to maneuver around each other, which is fitting for very large fleet actions.

When using Mode 2 movement, you can also assign a map a velocity, subtracting that velocity from all units on the map; this is a convenient way to keep ships on the map when all ships have accumulated a velocity of at least 10 hexes per turn in the same direction. Setting the map's reference frame to a velocity should not be done if units using Mode 1 or Mode 0 movement are in the engagement.

In any case not otherwise specified, we assume the scenario is using the large hex side of the map, laid out long-edge to long-edge.

Ad Astra Games sells black felt hex maps, which add to the visual appeal of the game.

Victory Point Example

A ship that has 86 boxes, and is worth 121 points is partially damaged, but disengages after taking 24 boxes of damage. The force that attacked it gets $24/86 \times 121 = 33.76$ points.

In that same fight, the Russian force scored 172.46 points off of his opponent, and had brought in a 500 point fleet. His VPR is $172.46/500$, or 0.34.

The Japanese side scored 91 points out of a 700 point fleet, scoring a VPR of $91/700 = 0.13$ a VPR of 0.13.

The Russian victory level is equal to $0.34 - 0.13 = 0.21$, or a Minor Victory.

The Japanese victory level is $0.13 - 0.34 = -0.21$, which is a Defeat.

Scenario Setup

For simple scenarios, take two map sheets, lay them out long-side to long-side, start the fleets on opposite corners, with the one on the blue map at 15 altitude above it, both fleets at speed zero, with Average crews, and a disengagement timer of 15 turns.

For scenarios that tie into the operational movement scale (described later in this book), set the maps out in a mutually agreeable manner (long edge to long edge, or short edge to short edge). The side with the better Crew Rate on its flagship may take a number of turns of pre-game acceleration equal to the difference in Crew Rates, and should lay its EoT markers appropriately.

Disengagement Timer

A unit may disengage from the fight after a certain number of tactical turns, Its disengagement timer is set by rolling 4d10+ (once) for the flagship, subtracting its FTL speed from the result, and adding one to the result per ship in the task force.

After a number of turns equal to the disengagement clock, any ships with functional FTL drives may jump out of the engagement during the Crew Activity phase. They must have the Action Points needed to activate their FTL drives.

Scenario Size

Both players need to reach a mutually agreeable point budget for the scenario. For simple scenarios, assume that the forces are within 5% of each other. For campaign scenarios, the force sizes will be specified by the campaign.

Victory Point Calculations

Scenario Victory Points (SVPs) are equal to the enemy ship or fighter squadron's cost times the percentage of the ship you destroyed, going from boxes damaged divided by the total boxes on the ship. A ship that's destroyed gives its full VPs. A ship or fighter squadron left behind when the rest of the force disengages gives 125% of its victory point total, as it's considered captured. You can gain bonus victory points by reaching some scenario objectives.

The SVPs earned are divided by the cost of the force you brought to the battle, generating a Victory Point Ratio (VPR). The enemy does the same thing. The larger VPR wins the fight; the Margin of Victory comes from subtracting the VPRs from each other, and comparing to the table below.

VPR Difference	Margin of Victory	Tourney Match Points
Less than -0.60	Crushing Defeat (must play the largest ceasefire card available at the next opportunity in campaign game)	
-0.31 to -0.60	Major Defeat	
-0.11 to -0.30	Defeat	
-0.01 to -0.10	Minor Defeat	
0 to 0.10	Draw	5
0.11 to 0.30	Minor Victory	10
0.31 to 0.60	Victory	20
0.61 to 0.90	Major Victory	25
0.91 to 1.30	Overwhelming Victory (1 campaign VP)	30
1.31 or higher	Legendary Victory (2 campaign VPs)	35

Overwhelming Victories and Legendary Victories give Campaign level victory points, Crushing Defeats require the loser to play a ceasefire card immediately, or play the next one they draw. For tournament play, the victory level determines the tourney match points earned.

Pick Up Game Scenario Objectives

If you're playing a pick up game, and want a scenario more interesting than "Two fleets make a train wreck in the middle of the map", drawn from a deck of cards using the table below. These objectives should be secret until the end of the scenario.

Card	Objective
Ace	Secretly record one enemy ship as having a spy on board. At any point during the scenario, you may declare it unable to maneuver, pivot or roll due to sabotage for 3 turns, or destroy three boxes on it of your choice. When declared, the enemy immediately gets VPs equal to 10% of the cost of your fleet.
King	Double VPs for destroying the largest enemy ship.
Queen	Bonus VPs equal to 5% of the cost of the enemy force for every turn they're kept on the tactical map past turn 20.
Jack	Double VPs for enemy ships that lose FTL capabilities.
10	One of your ships has a Politically Important Person on board. If that ship is left behind or destroyed, the enemy gets double victory points for it.
9	Your disengagement time is halved; the enemy scores half VPs for any of your ships that disengage.
8	Due to the belief by your government that peace is on the horizon, your mission is to demonstrate your capabilities to damage the enemy force, but stop short of destroying them. Half VPs for destroying enemy ships.
7	Your force has been in a prior battle, and the enemy knows it. Resolve 10 points of damage per ship you brought in volleys of 3 points or larger on the ships of your choice; all volleys ignore all defenses. None of this damage may be repaired during the scenario.
6	As the result of a deep strike gone bad, any forces with fewer than 5 strategic turns worth of endurance at the time of disengagement are considered destroyed.
5	Secretly pick one enemy ship at the start of the scenario. If you destroy it, you get triple VPs for it. If it disengages, the enemy gets double VPs for it.
4	You only score half VPs for damaged enemy ships, but full VPs for destroyed enemy ships.
3	20% of your force take half their SI hits prior to the start of the scenario; you get 50% of their cost as bonus VPs if they successfully disengage. Wounded ships must be selected before the delay timer is set.
2	Force preservation is paramount. The enemy gains a 125% bonus on all ships of yours that are destroyed or left behind at the end of the fight.

Material Condition

Not all ships go to battle fully ready; Material Condition rolls reflect this.

Roll 2d10- and subtract it from the cargo boxes on the ship; this is the amount of strategic endurance left, treat negative numbers as 0. Take this number, subtract the Crew Rate from it, add it to a second 2d10- roll, comparing to the chart below.

Die Roll	Material Condition
7+	Material Condition A+ Not only is the ship in perfect condition, but because of heightened readiness and pride, it has +1 to its movement rating until it takes a box of engine damage. All weapons are at 100% ammunition loads, all fighter squadrons are at 100%.
3 to 6	Material Condition A The ship works exactly as designed.
0 to 2	Material Condition B The ship has expended 10% of any ammunition stores prior to the battle; 10% of its fighters (owning players' choice) are unable to fly.
-1 to -3	Material Condition C The ship has expended 25% of any ammunition stores prior to the battle, 25% of its fighters (owning player's choice) are unable to fly. Roll 4 random hit locations and take 2 damage points to each.
-4 to -7	Material Condition D The ship is out of supply; only 50% of the fighters are capable of taking flight, and only half of the missile ammunition remains. Mark two damage points to each hit location zone for poor maintenance.
≤ -8	Material Condition F The ship is held together by duct tape and prayers. Only 10% of any ammunition is left, no fighters can be launched, take 3 damage points on every hit location, and all weapons have Burnout <4 when fired.

Hex Size Used For Planets

While tactical scale combat has no formally defined scale: it's easier to treat things as "movement units" and let you select whatever's appropriate for the setting you're using. The numbers for planets were based off of the following:

A thrust of 1 is 1 G, and is 9.765625 m/sec/sec. One turn is 360 seconds, or 6 minutes. A thrust of 2 Gs for one turn results in a displacement of 1,265 km, which gives us our hex size, since a thrust of 2 will displace one hex.

This has the added benefit of making the amount of time needed to play a typical turn close to the in game time scale.

When designing ships to match specific settings, we recommend the mantra "A hex is a hex is a hex". Trying to reconcile different SF universes methods for thrust, weapon ranges and physics is a sure fire way to get involved in internet flame wars and things less enjoyable.

Terrain

Space is big, and mostly empty. Space combats will probably happen around points of strategic interest. For *Squadron Strike*, these are habitable planets, moons, gas giants, and asteroids.

All terrain types are defined as a point and a radius. The point is the center of mass, and the radius is how far away from that point that the object blocks line of sight. In a very real sense, anything larger than Earth should be treated as a side of the map that's impassible.

A generalized rule of thumb for checking blocked line of sight is that if you're closer than three planetary radii away, the planet blocks line of sight. If you need something more exact than that, shoot a bearing to your target, and to the nearest hex and altitude that the planet obscures; if they're visible through the same window, and the planet is closer, the planet blocks line of sight.

Radius	Real World Example	Game Effect
<1 Hex	Ceres, Phobos, most asteroids	Collision on a failed Crew Rate check when flying through the hex. Blocks line of sight for objects 1 hex away.
1.5 Hexes	A bit smaller than Luna	Blocks line of sight for targets within 2 hexes of the object.
2.5 Hexes	Mars	Blocks line of sight for targets within 3 hexes. Atmosphere.
5 Hexes	Venus, Earth	Blocks line of sight for targets within 5 hexes. Atmosphere.
33 hexes	Uranus, Neptune	Atmosphere.
41 hexes	Saturn	Atmosphere.
50 hexes	Jupiter	Atmosphere

Bodies with an atmosphere can be entered by Aerodynamic ships. An object in an atmosphere cannot be detected without generating 2 lab points, and are not placed on the map until detected. Fighters are automatically Aerodynamic. Aerodynamic ships may move within the atmosphere at one hex per turn.

To leave a body with an atmosphere, the ship must thrust away from the center of the planet, and must have thrust equal to 1/10th the radius of the planet. While Hollywood is full of examples of ships whipping around planets in orbit, in practice, any drive that has enough thrust to be interesting in game scale can ignore orbital mechanics...and making orbital mechanics work in 3-D is more complexity than *Squadron Strike* was meant to handle. (If doing proper orbital mechanics in 3-D is of interest, check out *Attack Vector: Tactical*.)

Otherwise, entering the hex of a planetary body destroys the ship. Entering the hex of a small asteroid requires a Crew Rate check; if the check is failed, the ship has collided and is destroyed.

To make a cinematic asteroid field, spread a selection of small asteroids around the map; place the first one in the center hex of the map at 3d10 altitude; then randomly determine an AVID bearing and place another asteroid 2d10+ hexes away on that bearing. Continue until you've placed 12-13 asteroids. (A real asteroid field would have one asteroid on the entire map, which isn't a lot of fun.)

Surprise

Some scenarios will specify that a ship starts out surprised; while surprised, their bridge track is completely disabled; use the penalties on the sidebar of page 8. Any system that can store Action Points is empty; all weapons with a cool down cycle must wait that number of turns after activating a bridge box before they can fire.

Each turn, the unit may make one Crew Rate check to activate one bridge box.

Strategic & Operational Movement

Squadron Strike has hooks for a strategic game, allowing players to run a campaign, generating interesting battles with pasts and futures. The primary hooks are the FTL drive on ships, and the ship's Cargo capacity, which gives cruise endurance in 10-day long strategic turns. 36 strategic turns make up a year. For each strategic turn a ship spends away from a base, circle one cargo box as having been used up.

Movements are made on the strategic map, a section of which is shown below. A typical campaign map is 8 sheets, arranged in a cubic lattice.

Each strategic hex is half a parsec from edge to edge, and half a parsec tall.

Reading A Strategic Hex

Altitude: Shown in an upward pointing arrow on the right side of the hex, this is the number of hexes the system is above an 0 level..

Stellar Push: This is the strategic velocity your ship gets from pushing off the star. It's shown as the number in the center of the star and matched by the number of prongs. Smaller stars in a multiple star system show push only with prongs.

Supply Base Cost: The italic number(s) at the bottom of the hex are the costs to establish Supply bases at each star in that system. Their positions in the bottom of the hex go from the largest star in the system to the smallest from left to right.

Installation Cap: The number(s) to the left of the star are the maximum number of installations and fortresses that can be built in each star in the system. From top to bottom, they're for the stars in the hex from largest to smallest.

Habitable World: Stars with a green ring have a habitable worlds; a 5 pointed star (as in 2214, below) is a homeworld. Homeworlds have installation caps of 12, and Supply Base costs of 76.

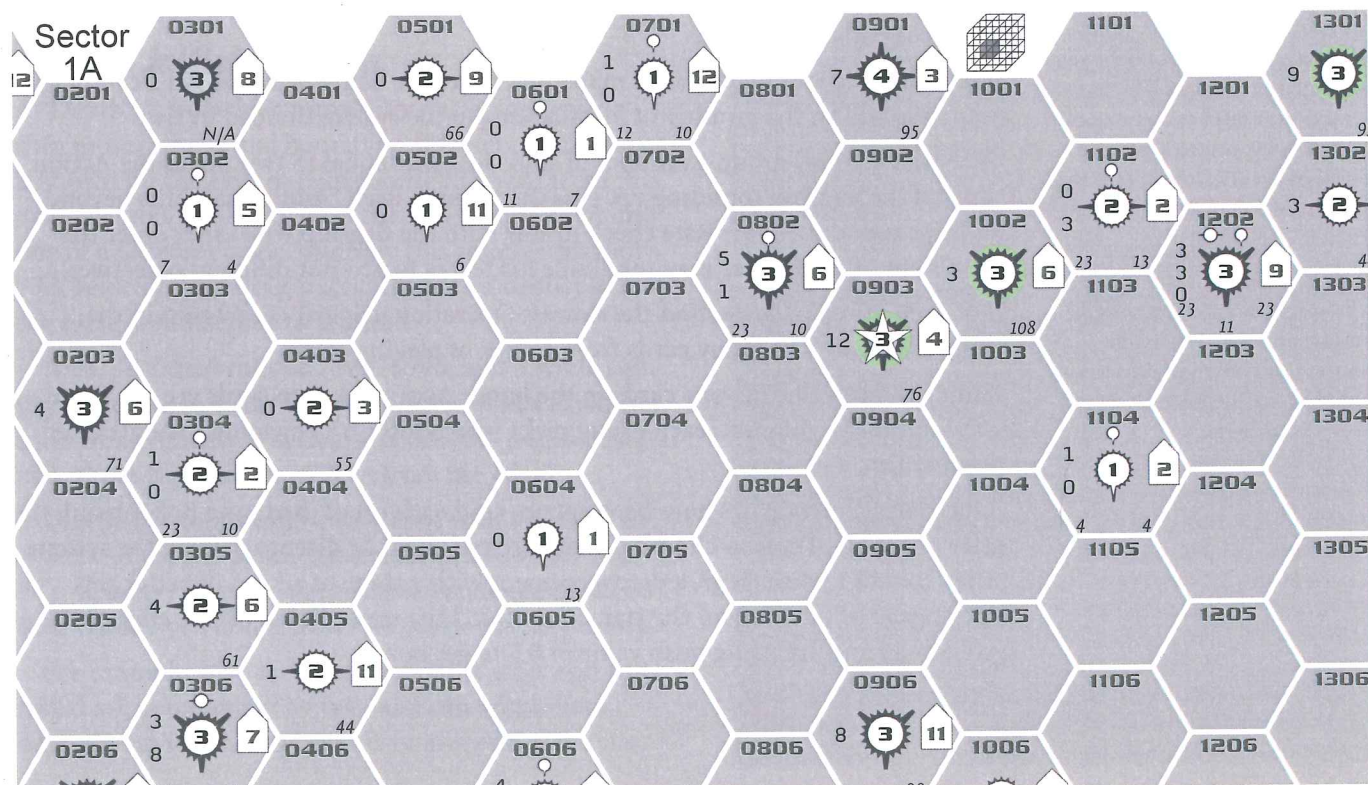
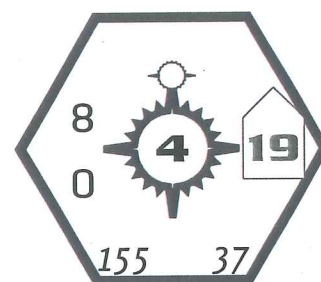
Indigenous Populations

1 in 10 Habitable worlds have an intelligent species. For each inhabited world, roll 2d10- to see where their tech level is.

<8: Stone Age (3d10 Pop)

8: Metal (5d10 Pop)

9: Industrial (8d10 Pop)



Why Is There Only One FTL System In Squadron Strike?

Most SF representations of FTL, if examined logically for all their implications, eliminate tactical game play. For example, if ships can jump out of combat at any time, then it's very hard to force an enemy to fight. If fighters can jump independently of carriers, then carriers cease to be tactically interesting, and so forth.

The FTL movement system is meant to give the widest range of interesting tactical fights, and doesn't reflect the models used by any television or movie series directly.

That being said, the ship design engine does support a few variants, notably Traveller's FTL fuel system.

FTL Fuel

FTL fuel is important in some universes, and ignorable in others. The ship design system for the game allows you to choose between a 'high percentage' FTL fuel fraction (useful for when one jump takes you to a new star system), and a 'low percentage' FTL fuel fraction.

The low percentage system can be used with the standard Squadron Strike operational movement engine: Each operational turn of movement burns one fuel unit, as does each push away from a star.

Interstellar Movement

Without interstellar travel, it's hard to have a space war. *Squadron Strike* provides an interstellar movement engine that works well for setting up campaigns.

Stellar Push

Ships push off of stars by being in close proximity. This generates a hyperspace velocity; their hyperspace velocity is a function of the mass of the star they're pushing off of. One solar mass star is a push value of 3.

To move in hyperspace, shoot a range and bearing from the star you're starting from to the star (or hex) you're going to, using the RALT. Divide this range by the push value. This tells you how long the journey will take in strategic turns. Remainders can be converted to operational turns by dividing them by 0.0167, rounding up. (One strategic turn is 10 days. One operational turn is 4-hours; there are 60 operational turns in one strategic turn. One tactical turn is carefully left undefined.)

Hyperspace can be entered without a star; you have to go to the edge of the star system, outside the exclusion zone (see below) and turn on the FTL drive. Entering hyperspace without a star to push off of gives a hyperspace velocity of 0.5.

In round numbers, the "slow" FTL mode gives ships a velocity of 30 times the speed of light; stellar push values range from 60 to 900 times the speed of light.

Ships are undetectable while in FTL transit; any time they enter a star system, all units in that star system know they're there. A ship that leaves a star system reveals what system it's leaving for to any other units in that system.

Quick & Dirty Operational Movement

This is a card driven way to generate scenarios when two fleets are in the same strategic hex. It's suitable for campaigns that don't want to bother with an operational map, or the attendant record-keeping, or for tracking time in any increment smaller than 10 day strategic turns.

First, the defender defines how many objectives are being defended; in a campaign game, this will be the number of installations in the system divided by five.

The attacker may group a number of ships together equal to two thirds the Action Points of the flagship rounding up, plus the flagship itself. Additional units beyond this have to make a Crew Rate check to stay with the flagship when they enter the star system. The attacker may subdivide his forces to go after different objectives.

For each group of ships, find the slowest Operational Speed of any ship in the group, and draw that many cards from a deck of playing cards.

Sum the face value of your cards in the hand, Aces are 1, face cards are 10. From lowest number to highest, each group picks which force it's engaging. The attacker wins any ties.

Once engagement pairs have been set up, read each set of cards as a poker hand; the better poker hand gets to choose if they stay and fight, or disengage from the system. If they choose to disengage, a disengagement with a three of a kind of better gets to disengage by pushing off the star, otherwise, they were chased off the edge of the system map and are using push value of 0.5 to get home.

Full Operational Movement

Star systems have a spherical “exclusion zone” that prevents continuous operation of the ship’s FTL drive, though micro-jumps of a few seconds are possible. The numbers in a ship’s FTL track are its Operational Movement speed, and are how many microjumps it can make per Operational turn.

The exclusion zone is a function of the push value of the star times a multiplier; these parameters can be set when generating a campaign file.

When ships enter this FTL exclusion zone at interstellar FTL speeds, they go into the zone some distance (called depth) before turning off the drive. Ships enter star systems at high FTL speeds, and roll for depth and scatter along their inbound bearing line.

The inbound bearing line is the reciprocal of the bearing they shot to plot the initial course to the destination star. Thus a ship that shot a bearing to B (blue, lower) would appear in the destination system from the direction of E (blue, upper).

A flagship can declare a number of additional ships equal to two thirds of its Action Points (rounded up) as being “synched in”. These ships use the same depth and scatter rolls as the flagship. All other ships have to make a Crew Rate check to remain synched in with the flagship. Any that fail this check roll for depth and scatter individually.

Depth & Initial Position

“Depth” is how deep into the exclusion zone your ship moves; the initial boundary of the exclusion zone is shown on the system map. Going sunward from this distance, roll 3d10med, with two dice of one color and one of a different color. Multiply this number by your FTL velocity, rounding fractions up, and deduct it from the exclusion distance to the star.

Thus, 3d10med rolls of 2 red, 5 red, and 3 white coming from a push 2 star to a star with a 24 hex exclusion zone would enter the system 6 hexes (the middle die roll of 3, times the velocity of 2) in from the edge).

This initial depth can be modified with a Crew Rate check. Adjust the depth (after multiplication for your FTL velocity) by up to the amount you made the Crew Rate check by; a failed crew rate check has no penalty.

For example, if your Crew Rate check is 5+ and you rolled a 7, you made it by two, and can adjust your depth by up to 2 hexes towards or away from the star.

Dist	Blue Ring	Green Ring	Dist	Blue Ring	Green Ring
1	1H, 1V	1H, 1V	61	53H, 31V	31H, 53V
2	2H, 1V	1H, 2V	62	54H, 31V	31H, 54V
3	3H, 2V	2H, 3V	63	55H, 32V	32H, 55V
4	3H, 2V	2H, 3V	64	55H, 32V	32H, 55V
5	4H, 3V	3H, 4V	65	56H, 33V	33H, 56V
6	5H, 3V	3H, 5V	66	57H, 33V	33H, 57V
7	6H, 4V	4H, 6V	67	58H, 34V	34H, 58V
8	7H, 4V	4H, 7V	68	59H, 34V	34H, 59V
9	8H, 5V	5H, 8V	69	60H, 35V	35H, 60V
10	9H, 5V	5H, 9V	70	61H, 35V	36H, 61V
11	10H, 6V	6H, 10V	71	61H, 36V	36H, 61V
12	10H, 6V	6H, 10V	72	62H, 36V	36H, 62V
13	11H, 7V	7H, 11V	73	63H, 37V	37H, 63V
14	12H, 7V	7H, 12V	74	64H, 37V	37H, 64V
15	13H, 8V	8H, 13V	75	65H, 38V	38H, 66V
16	14H, 8V	8H, 14V	76	66H, 38V	38H, 66V
17	15H, 9V	9H, 15V	77	67H, 39V	39H, 67V
18	16H, 9V	9H, 16V	78	68H, 39V	39H, 68V
19	16H, 10V	10H, 16V	79	68H, 40V	40H, 68V
20	17H, 10V	10H, 17V	80	69H, 40V	40H, 69V
21	18H, 11V	11H, 18V	81	70H, 41V	41H, 70V
22	19H, 11V	11H, 19V	82	71H, 41V	41H, 71V
23	20H, 12V	12H, 20V	83	72H, 42V	42H, 72V
24	21H, 12V	12H, 21V	84	73H, 42V	42H, 73V
25	22H, 13V	13H, 22V	85	74H, 43V	43H, 74V
26	23H, 13V	13H, 23V	86	74H, 43V	43H, 74V
27	23H, 14V	14H, 23V	87	75H, 44V	44H, 75V
28	24H, 14V	14H, 24V	88	76H, 44V	44H, 76V
29	25H, 15V	15H, 25V	89	77H, 45V	45H, 77V
30	26H, 15V	15H, 26V	90	78H, 45V	45H, 78V
31	27H, 16V	16H, 27V	91	79H, 46V	46H, 79V
32	28H, 16V	16H, 28V	92	80H, 46V	46H, 80V
33	29H, 17V	17H, 29V	93	81H, 47V	47H, 81V
34	29H, 17V	17H, 29V	94	81H, 47V	47H, 81V
35	30H, 18V	18H, 30V	95	82H, 48V	48H, 82V
36	31H, 18V	18H, 31V	96	83H, 48V	48H, 83V
37	32H, 19V	19H, 32V	97	84H, 49V	49H, 84V
38	33H, 19V	19H, 33V	98	85H, 49V	49H, 85V
39	34H, 20V	20H, 34V	99	86H, 50V	50H, 86V
40	35H, 20V	20H, 35V	100	87H, 50V	50H, 87V
41	36H, 21V	21H, 36V	101	87H, 51V	51H, 87V
42	36H, 21V	21H, 36V	102	88H, 51V	51H, 88V
43	37H, 22V	22H, 37V	103	89H, 52V	52H, 89V
44	38H, 22V	22H, 38V	104	90H, 52V	52H, 90V
45	39H, 23V	23H, 39V	105	91H, 53V	53H, 91V
46	40H, 23V	23H, 40V	106	92H, 53V	53H, 92V
47	41H, 24V	24H, 41V	107	93H, 54V	54H, 93V
48	42H, 24V	24H, 42V	108	94H, 54V	54H, 94V
49	42H, 25V	25H, 42V	109	94H, 55V	55H, 94V
50	43H, 25V	25H, 43V	110	95H, 55V	55H, 95V
51	44H, 26V	26H, 44V	111	96H, 56V	56H, 96V
52	45H, 26V	26H, 45V	112	97H, 56V	56H, 97V
53	46H, 27V	27H, 46V	113	98H, 57V	57H, 98V
54	47H, 27V	27H, 47V	114	99H, 57V	57H, 99V
55	48H, 28V	28H, 48V	115	100H, 58V	58H, 100V
56	48H, 28V	28H, 48V	116	100H, 58V	58H, 100V
57	49H, 29V	29H, 49V	117	101H, 59V	59H, 101V
58	50H, 29V	29H, 50V	118	102H, 59V	59H, 102V
59	51H, 30V	30H, 51V	119	103H, 60V	60H, 103V
60	52H, 30V	30H, 52V	120	104H, 60V	60H, 104V

System Entry Example

A task force of 12 ships is entering a star system with a threshold of 24 operational hexes from direction B/C (blue, lower), with an FTL velocity of 2; they're coming from direction B/C (blue, lower), at 21 out, and -12 altitude. The flagship is synched in on 7 ships, the remaining 4 have to check Crew Rating; two fail the Crew Rate check. The flagship fails its crew rate check for modifying its depth roll. Ship 1 can modify its depth roll by up to 3, and Ship 2 fails its roll to modify its depth.

The rolls (same colored dice are **bold**) are:

Flag&Main: **5,6**,10: Depth 12, scatter 5+6-10=1, direction of scatter 05 (12 o'clock)

Ship 1: **2,7**,1: Depth 4, modified to 7, scatter 2+7-1=8, direction of scatter, 12 (1 o'clock)

Ship 2: **2,10**,3, Depth 6, scatter 2+10-3=9, direction of scatter 32 (3 o'clock).

For the incoming fleet, the star is in E/F (blue, upper), 12 o'clock is on the spine of B/C (green, upper), 1 o'clock is A/B (blue, upper), and 3 o'clock is in A (amber). The initial distance is 24 from the star. The flagship and the main body of the fleet penetrate 12 hexes inward, for a distance of 12, which becomes 10 and -6 altitude on the map. The scatter in direction B/C (green, upper) translates into an additional hex in up, and a hex towards out, for a final position of 11 out and -5 vertical, on the B/C line from the star.

Cont'd Next Sidebar

It is possible to overshoot the star system you're entering, particularly if hitting a small exclusion zone at a high FTL velocity. If a unit overshoots, roll 6d10+, minus their operational speed from FTL drives, to find the next operational turn that they can attempt system entry on. This attempt will be from six windows off of the original one, and will have an FTL velocity of 0.5.

This delay is also used by ships leaving the system via the edge of the exclusion zone and attempting to "circle around by FTL" to the other side.

If you're entering the star system through the yellow windows or the purple window, place your fleet that many hexes from the star in the appropriate direction.

If you're coming in from the blue or green rings, your initial position needs to be converted to a distance out from the star and an altitude relative to the map. On the following table, the numbers followed by H are distances in the map plane, the numbers followed by V are differences in altitude from the map plane.

Coming in from the lower blue, green or purple windows gives negative altitudes.

Scatter Off The Initial Bearing Line

Scatter is how far off the bearing line your ship has drifted. Using the same die rolls as you used for the 3d10med for Depth, add the two same colored dice together, and subtract the different colored die from the total. Results of less than 0 are treated as 0. Using the roll from above, this results in a scatter of 2+5-3=4 hexes.

Scatter direction uses the odd colored die as a 10s die and the lower of the same colored dice as a 1s die for a d100 roll, using the table below. (Or, if you have one, roll 12 sided die and read it as the "o'clock" direction.)

Die Roll	Direction	Die Roll	Direction
01-09	12 o'clock	51-59	6 o'clock
10-17	1 o'clock	60-67	7 o'clock
18-25	2 o'clock	68-75	8 o'clock
26-34	3 o'clock	76-84	9 o'clock
35-42	4 o'clock	85-92	10 o'clock
43-50	5 o'clock	93-00	11 o'clock

Scatter direction is counted as the set of 12 windows 3 off the original bearing line. For example, if the star were visible in direction A (blue, lower), 3 o'clock would be direction B/C (amber), 2 o'clock would be B/C (blue, upper), 4 o'clock would be B/C (blue, lower), 5 o'clock would be C (green, lower), and so on.

To convert your scatter depth and direction to a map hex, start from the hex you'd be in if you didn't scatter, take the color of the AVID window you're scattering through, and use the table on the previous page to convert the distance into the appropriate offset if you're scattering through a blue or green ring on the AVID.

Once all units are on the system map, go to operational movement.

Detection

The number (but not size) of all ships in an operational hex are always known. The SI rating of each ship is identified when it reaches the tactical map.

Fighting In Interstellar Space

If two or more enemy forces appear in the same empty strategic hex on the same strategic turn, they may attempt to search for each other. Roll a d100 for each command group attempting to search. If two groups EACH roll a 00 result, they've found each other and may set up a tactical combat. In that tactical combat, either side may disengage by FTL on any turn of the fight.

System Scale Movement

Ships that turn on their FTL drives within the exclusion zone of a star can only keep them on for a few seconds before they're shut down again; doing so allows them to make a one operational hex microjump. Having multiple drives that can be run in sequence allow a ship to do microjumps more frequently. The number of operational hexes a ship can cover per Operational turn is shown in the FTL track on the SSD.

Additionally, each ship may make a Crew Rate check; if it succeeds, this adds 1 to their Operational Movement speed. For every month (three strategic turns) that a force has been in that particular star system, add one to their Crew Rate die roll, to a maximum of +3, reflecting experience with the hazards of that particular system.

When plotting movement in the system, all friendly ships in the same hex are moved together. One Crew Quality check is made for the flagship, and applies to all ships in the hex. Each force in a different hex makes its own Crew Quality check.

The force that's newest to the star system moves first, allowing the defenders to move in reaction to them. If all forces are equally new to the system, movement is based on Crew Quality checks, going from highest die roll to lowest die roll.

Operational hexes are large enough (approximately 83.33 light seconds) that ships can move into or through hexes of planets and (most) stars, with no ill effect. Exceptionally large stars may take up more than one operational hex; red giant stars can end up over 20 operational hexes in radius!

Leaving A Star System

To leave a system, you need to either run to the star or the edge of the exclusion zone. Once you're eligible to leave, shoot a range and bearing to the star you wish to go to and divide by the push value you're using.

Transitioning To The Tactical Scale

If two fleets end up in the same operational hex, they've shifted to the tactical scale. See the rules for setting up scenarios on page 70.

Disengagement To The Operational Scale

Engaging forces have the disengagement timer described on page 70. A force that has disengaged has moved back to operational turns. The pursuing force needs to detail sufficient forces to secure any enemies left behind. Transitioning back to the operational scale requires both sides plot a one hex movement. If they don't end up in the same hex, it goes back to normal operational movement.

Order Of Precedence Example

Force A is defending a system. Force B is attacking the system. Force A2 is scheduled to arrive in-system on operational turn #4

For operational turns 1 through 3, force B moves, then force A moves.

When operational turn 4 comes about, force A2 moves, force B moves, then force A moves.

If force A2 links up with force A, it ceases to be a separate force for the purposes of movement. It goes back to force B moving, then force A moving.

However, if every single ship in the original detachment of force A is destroyed, force B will have been in system longer than the remnants of the combined force, and it will be force A2 moving, then force B.

System Entry Example, cont'd

Ship 1 penetrates 4 in, which gets modified to 7 in due to its Crew Rate check, and this translates into a distance of $24-7=17$ hexes from the star. A quick look at the table gives 15 out and -9 altitude. The scatter is 8 hexes in A/B (blue, upper), which becomes 7 in A/B and 4 up, for a final map position of 19 hexes in direction B from the star, at altitude -5.

Ship 2 penetrates 6 in, which translates to 16 out and -9 altitude, with a scatter of 9 hexes in direction A. The final distance is 17 hexes in direction B, and an altitude of -9.

Movement Between Stars In The Same Hex

Some star systems have multiple stars in them, making it desirable to put facilities around one and use the other for strategic movement.

To find out how much additional time it takes to get from one star to the other before beginning strategic movement, do the following:

Roll 3d10 low and multiply by the task force's Operational speed. This is the number of operational turns needed to get from one star to the other before using the larger star to generate an operational movement.

For round trip calculations, the 3d10low roll is treated as a die roll of 2..

FTL Communications & Operational Movement

Much of this sidebar won't make sense until you've read the campaign rules, however it's here, next to the rules it applies to to make it easy to find.

For the sake of simplicity, during campaign games, it's assumed that anything that happens as a result of playing a card in the Production Turn is public information; this means there are no secret War declarations.

Likewise, any missions aborted by a ceasefire cards are, in fact, aborted. Presume that when the ships running on old operational orders reach their destinations, there were passcodes passed and authentication put in place to stop a "Battle of New Orleans" type scenario.

During a time of war, any ships must fight according to the operational orders they have on hand; this is why FTL radio exists as a national technology advantage.

Writing Operational Orders

When you send a fleet off, it needs orders to follow. The orders are written down when the fleet leaves, and referenced when it arrives at its destination.

Operational orders can give a very modest amount of the Fog of War with low overhead, and if you have players who only run tactical battles, Operational Orders give them a template for what the fleet is intended to do.

Operational Orders have six parts, acronymed as MIDDIE: Mission, Intention, Destination, Deadline, Intensity & Exception,

The Mission is what the fleet is supposed to do, be it destroy enemy commerce, bombard an installation, picket a star system and run if something comes by it, patrol a system, or garrison a facility.

The Intention is the "why" of the order, the reason that mission was set for this fleet. By the time the orders are referred to, the circumstances the fleet is in may be very different.

The Destination is the system the Mission takes place in.

The Deadline is "When does this have to be done by?" Some missions will have shorter deadlines because of limits on the onboard supplies carried by the ships or task forces undertaking them.

Intensity ranges from 1 to 5, with higher numbers meaning "Be willing to take more casualties". Intensity 1 means that the force will avoid combat. Intensity 2 will disengage when 10% of its units are destroyed. Intensity 3 will disengage when 25% of its units have been destroyed, Intensity 4 means the force will not disengage unless it's taken more than 50% casualties, with 5 being "Fight to the last bullet."

Exceptions is a specific set of conditions that means the objective has failed, and what should be done next. This includes where the ship should withdraw to, including the travel time to that system, so that a commander knows if it's possible.

Once a fleet has been sent out, its operational orders cannot change (Exception: FTL communicators).

A sample OpOrd might look like this:

Desron 2.2:

Mission: Picket

Intent: Confirm the location of the second Kodolian League Bellerophon-class carrier.

Destination: 1D-2812-0

Deadline: If no contact is encountered prior to 1:20, withdraw to base in 1D-2412-10 for resupply, and new orders.

Intensity: 1. If you encounter Kodolian forces, observe only. Do not engage them.

Exception: Withdraw to base in 1D-2412-10 (4 turns away). If that avenue is not feasible, make your way to closest convenient supply node.

A second OpOrd might look like this:

CruRon 4.22.

Mission: Engagement

Intention: Two Nike-class hybrid carriers have been reported in system 1D-2316-10. Attempt to cripple or destroy the two Nikes.

Destination: do a circuit patrol of systems 1D-2316-10, 1D-2516-4 and 1D-2514-10.

Deadline: If this cannot be achieved by 1:27, return to base by 2:12.

Intensity: 3

Exception: Withdraw to base of your choice if you encounter a Bellerophon-class carrier.

Running A Campaign

Squadron Strike has hooks for a campaign game, notably cruise endurance by cargo tracks, and integrated strategic and operational movement. The end goal of the campaign system is to generate interesting tactical battles with a past, a future and some reasons for force preservation. Winning the campaign means being the first player to achieve a specific number of Victory Points (VPs); we recommend 20 VP per player for a good campaign.

Campaign Setup

In the campaign setup phase, you will select a government type (Bureaucratic, Representative, Expansionistic, Feudal, Autocratic or Hive), generate a campaign map using the online tools, and generate a deck of victory conditions, derived from your government type and the file used to generate the campaign map. Players mutually agree on the number of Resource Development Points (RDPs) to spend; 40-45 per player is normal. RDPs are spent in two rounds, the first covers infrastructure spending (shipyards and Repair bases, early colonization, defining your tech level), and setting limits national limits on several technologies. The first round is revealed, including the number of unspent RDPs, and the second round (covering ship design and weapon design) is handled secretly. You may not spend second round RDPs on the items from the first round.

Squadron Strike uses five technology (or tech) levels to describe broad capabilities of player empires. The tech levels for player positions are Very Early Interstellar, Early Interstellar, Standard Interstellar, Advanced Interstellar and Very Advanced Interstellar. There are four tech levels below player positions—Atomic, Industrial, Metal and Stone.

Once the campaign has been started, any RDPs generated since the start of the campaign (or held over from the campaign setup phase) can be implemented. See below about implementation costs.

By default, all players start at the Standard Interstellar tech level. Going down a tech level gives you more RDPs to spend, proportional to the number of players in the campaign. Going to a higher tech level costs RDPs.

Government Types

One of the earliest decisions you make in setting up a **Squadron Strike** campaign is choosing your government type. There are eight types allowed in the game, and while they've been labeled with convenient descriptors, you shouldn't get wound up too tightly if the name of the government type doesn't exactly match what you expect. The goal in setting the government types was to make a set of different governments that could all compete on a campaign level with different strategies, and many things were adjusted to ensure that all the governments had something to recommend them, even the ones that, historically, have proven to be disastrous.

You may not change your government type during the campaign; this prevents the "shifting gears" approach to governmental oversight. The government types are:

Autocracy: Your government is ruled by a dictator or autocrat. This impedes economic growth and population growth, but gives significant freedom in starting wars.

Bureaucracy: Your government is ruled by an oligarchy of nobles or bureaucrats; it uses the default values for most things, and has a drawback in using the Slow build construction times. It has an advantage in mothballing ships.

Why Are There Two Rounds Of RDP Allocation?

Two reasons. The first, and most important, is to ensure that the game is fun for all players. Nobody likes sitting down to a miniatures game where their ships have no chance of hurting their opponent before they're destroyed.

The second reason is a little bit of simulationism. It's very rare that any nation doesn't have *some* intelligence about its political rivals and their capabilities; this data is used to make informed decisions on what kinds of weapon systems and ships to design.

Optional Rule: Three Round RDP Allocation

With this optional rule in place, the first round of RDP allocations goes normally. The second round is split into two rounds, the second and third. In the second round, players allocate all their RDPs for weapons traits and weapon limits, which are then revealed. The third round is secret and all players design ships and weapons.

This puts more setup time in before anyone puts ships on the map, which is why it's an optional rule.

Making Victory Decks

Victory decks are generated by the applications available through the subscription areas of the web site, as are campaign maps. When you generate a deck of cards, cut them apart (you get 9 cards per sheet) and put them in plastic card sleeve protectors with poker sized cards (or old Magic: The Gathering cards). Options exist to print card backs as well; these include the government a card belongs to, making sorting out cards (from the end of a war) easier.

Republic: Your government is ruled by the people. It has the best odds of generating an RDP, and has bonuses for economic growth. Any year where economic growth is 0% or less, a Republic **MUST** play a ceasefire card if one is available.

Feudal: Your government is built on feudal obligations; it has penalties on economic growth and average RDP generation. Active combat units (brigades and warships, but not fixed installations) count as 90% of their point costs against the economic cap. Ship construction is slow due to decentralization, but you may make two additional commerce raiding attempts per production turn rather than one.

Expansionist: Your government has put great emphasis on colonial expansion, giving subsidies to citizens to move. You add 2 to all colonization growth rolls. Commerce raiding against you results in -80 production cap rather than -50, because of the higher volume of shipping your government engages in.

Hive: Your society is a hive mind. Your home world is Population 60, and IP 75. You have no economic rolls; all of your colonies start at IP 75. You add +1 to population growth rolls. Your RDP odds are poor. Other nations do not lose VPs for exterminating your population centers, nor do you lose VPs for exterminating theirs.

Corporate: Your society is competing megacorporations. Both good and bad economic times are exacerbated. Installations and Fortresses are built at a bonus in construction time and maintenance.

Theocracy: You build ships like cathedrals - slow and steady. Likewise, being bountiful and populous is a decree. You gain bonuses for capturing and occupying enemy populations, because they are new souls to be brought into the faith.

You may not change government types during a campaign.

	Autocracy	Bureaucracy	Feudalism	Republic	Expansionist	Hive	Corporate	Theocracy
Econ Modifier	-2 on all rolls; no penalty for being at war.	No change	-1 to all rolls that are less than 6	+1 on rolls greater than 5	No change	No rolls at all; IP fixed at 75	+1 on rolls of 8 or more, -1 on rolls of 3 or less	-1 to all rolls that are less than 5
Population Growth	-1 on all rolls	No change	No change	No change	+2 on all rolls	+1 on all rolls	No change	+1 on all rolls
RDP Chance (Peace/War)	9+/10+	8+/10+	8+/10+	7+/9+	8+/10+	10+/10+	7+/10+	9+/9+
Peacetime Production Cap)	90%	70%	80%	60%	70%	100%	60%	70%
Construction Time	105%	114.28%	114.28%	100%	100%	100%	100%	114.28%
Mothball Failure	≤1	≤3	≤2	≤5	≤4	≤3	≤3	≤4
Mission Cards	12	10	10	8	9	10	11	10
War Cards	4	2	3	2	2	4	2	4
Tech Cards	5	7	6	10	7	6	8	3
Objective Cards	19	20	18	18	22	20	19	22
Raid Cards	4	3	5	2	4	7	1	3
Ceasefire 6	1	1	1	2	1	3	1	1
Ceasefire 3	1	2	2	3	3	1	2	2
Ceasefire 2	3	3	3	3	3	3	5	3
Ceasefire 1	5	6	6	6	3		5	6
Special Ability	May use Tech card as a War card with a roll of 4+; may decide use after rolling	Mothballed units cost 5% of BPV rather than 10%	Active combat units count as 90% of BPV; first two commerce raiders draw twice	Must play a ceasefire card on any turn where economic growth is 0% or less	Growth roll bonus applies to spontaneous colony formation. -80 per commerce raid	All colonies are at a fixed IP of 75. May only place size 1 colonies during setup.	Base construction 20% faster, bases count at 80% of price. -80 per commerce raid.	1 VP per captured population level, rather than 0.5 per. Bonuses on occupation rolls.

Campaign Sequence of Play

Annual Events

Roll for economic effects for each population center.

Roll for population growth for eligible colonies.

Multiply IP by population for each population center, and sum the results. This is your cap limit for the year.

Production Turn (4 per year)

Make sure that all units in play do not exceed the cap limit. Shift units from Active to Reserve or Mothballs, or scrap them to free up cap space

Shift units from Reserve to Active; they'll be considered Active at the start of next turn. They cost their Active cost, but are still under all Reserve restrictions this turn.

Roll for RDP attempts, either from RDPs gained from population and time, or from RDP cards played on a prior production turn.

Spend production cap to activate RDPs

Spend RDPs that are active. New colonies founded affect next production turn's cap numbers, not this turn's

Draw victory deck cards, 2 in peacetime, 3 in war.

Bid for the number of rounds of victory cards to be played. The second highest bid determines how many rounds are played.

Play cards, and resolve effects. No more than one card may be played per round.

Ships are allocated for commerce raiding and escort duty; commerce raiding happens. Ships assigned to either raiding or escort duty must be Active.

Write operational orders for task forces. If combat looks likely, shift down to Strategic turns.

Write production orders for shipyards

Write repair orders for Repair bases, including bringing ships out of Mothballs. Ships brought out of Mothballs will begin the next turn at Reserve status.

Strategic Turn

Note what strategic turn ships reach their destinations.

If necessary, convert fractional strategic turns into operational turns and proceed to system scale movement.

Resolve tactical combats.

Secret Information & Campaign GamesDecks

If the campaign game were a stand alone game, rather than a framework for making interesting tactical battles, secret information would be less of a problem. As it is, there are several decisions your play group needs to make about what information is publicly know. The list of possible information types is shown below.

1) The location of any installations or population center built prior to the start of the campaign is known.

2) A nation's Production Cap is always known, but not what it's spent on..

3) The locations of bases built after the start of the campaign is hidden. If a base's Construction target card is hit, the raiding player knows what hex the base is being built in.

4) any system that has a Population center is revealed on the production turn the Population center is placed or spontaneously generates.

5) The number, class and readiness status of all units in the same strategic hex as a Population center is known. A ship that departs is listed as "not present" until it arrives at another system with a Population center.

6) A ship assigned to either Commerce Raiding or Escort duty is listed as "not present" from whatever system it started out in.

7) While it's tempting to keep weapon designs and SSDs secret in a campaign game, experience has shown it to be a bad idea. By default, all SSDs and weapon designs are public information.

Campaign Time Keeping & Economics

The *Squadron Strike* campaign system is designed, once the campaign is running, to minimize the record keeping, and to allow you to fast-forward through the stuff that happens in between battles to get to blowing up spaceships. As a result, it has several abstractions and design choices. (See the sidebars on this page and the next for some of them.)

One strategic turn is 10 days. There are 60 operational turns to the strategic turn.

One production turn is 90 days (9 strategic turns). One year is 36 strategic turns. (On system maps with inhabited planets, they're all placed 6 hexes out from their stars, allowing them to move one operational hex per strategic turn.)

Example of Annual Record Keeping:

Adam has his homeworld (Population 50, IP of 103), and two colonies, one at Population level 2, and IP 60, and one at population 1 and IP 40.

After three rolls on the economic growth table, his homeworld's IP drops to 101, his large colony's IP rises to 61 and his small colony's IP rises to 41; this is a mild recession at home, and booming frontiers.

His points cap (explained on page 92) for this year is $(50 \times 101) + (2 \times 61) + (1 \times 41)$, or 5,233 points. It may be further reduced by card plays against him or commerce raiding.

Annual Record Keeping

First, see if you've accumulated enough victory points to win the campaign.

At the start of the year, for each population center you have, roll on the Economics Table, which will alter the industrialization potential of that center by a percentage. The population level times the industrialization potential will set the production cap for that system.

The sum of all your production caps is the total number of points you can have in military forces each production turn. Anything over that must be scrapped, put into reserves, or put into mothballs.

Production Turn Record Keeping

If there isn't a war going on, run through a campaign year on production turns.

The first thing you should do on a production turn is make sure that the sum total of all of your forces do not exceed your national production cap. You may shift units from active to reserve, active to mothballed, or from reserve to active at this point. (Bringing mothballed ships to reserve status is done at the end of the production turn.) You may also scrap units to clear up production cap room.

Next, roll for any RDPs you're eligible to get. See Generating New RDPs for the exact procedure.

After checking your production cap and rolling for RDPs, draw and play victory deck cards. Players draw two cards per production turn in peacetime, three in war. Some mission cards will allow a player to draw more cards, or hold an extra card in their hand after the discard limit. Once everyone has drawn cards, each player secretly bids how many rounds of card play they'd like to participate in, with a minimum of 1. The second highest bid determines how many rounds of cards are played, and each player must play one card from their hand each round. Once all cards have been played, players discard down to their hand limit (3 in peacetime, 7 in war). Any Tech Advance cards played count as an RDP chance on the next production turn.

After cards have been played, players write their orders and send out their ships. See the example of operations orders for how to do this. Players should note how many strategic turns the ship can cruise for (based on cargo boxes), when the ship leaves, when it arrives, how long it's staying wherever it arrives, and the route it will take to get back to a friendly supply base. Players may also assign ships to the convoy and commerce raiding pool at this point, and each player who played convoy raiders may draw one convoy raid. (Feudal governments draw two raider cards for the first two commerce raiders assigned.).

At the end of the production phase, and after any combat that may have happened, players decide how many shipyards and Repair bases will be building or repairing ships to cover losses; each ship will have a build time specified by its design. Bringing a ship out of mothballs is done as part of this step of the production phase. If a mothballed ship fails its corruption roll, you may attempt to recover another ship.

Strategic Turn Record Keeping

The primary record keeping on a strategic turn is tracking where ships are, how much supply they have left, and when the last time they spent a strategic turn in a friendly supply base was. During war time, when it's important to know where everything is and when it will arrive, most of the decision making will be made on the strategic turn level.

Ships have an endurance specified in strategic turns. Star systems may have supply bases installed in them. Each supply base can handle 5 ships at a time. This will also restock any ammunition it has.

Winning A Campaign

Campaigns are won when a specific number of victory points are accumulated by a single player. Victory points are gotten from the following sources:

1) Taking and holding systems listed on Position Objective cards, whether they're publicly played or in your hand. Each Population Level that's friendly to your government on one of those objective cards gives an extra VP. Each one that's unfriendly, but which you're occupying, gives half a VP (full VPs for Theocracies)

Position objective cards, when played publicly, do NOT go back into the discard pile; they're public and on display for as long as the war lasts. A position objective card held in your hand that you hold still counts for VPs if you hold the hex it indicates.

Holding a system requires having a population center or an infrastructure facility in it, or having occupation troops holding an enemy population center. If the system is worth VPs, but does not have either an infrastructure or population center in it, the system is held by the empire with forces in it at the end of the production turn. If multiple forces hold it, the system's victory points are divided proportionally, based on the total SI points of the ships in the system.

2) Completing Raid objective cards. A Raid objective card gives you 1 VP per 350 points of enemy warships you destroy during the current production turn.

3) Levels of victory in the tactical game: an Overwhelming victory will give you 1 VP. A Legendary victory will give you 2 VPs.

4) Every enemy population level you exterminate costs you 1 VP, due to war crimes trials and similar backlashes. This does not apply to Hive governments; they do not lose VP for exterminating enemy population levels, nor does anyone lose VPs for exterminating their population levels.

First Contact Campaign

The standard campaign format assumes that everyone knows where everyone else is, and that there are intelligence services monitoring things.

To play a campaign where nobody knows what anyone else has, players should spend all but a pre-agreed amount of RDPs in a single round; we recommend 25 spent, and 10 held in reserve. Those reserve RDPs can be converted into new weapons and defensive improvements at the rate of one per production turn; these cost no cap points to implement. RDPs generated in the usual way do.

This allows the classic back and forth technological development of traditional "empire building" space opera, though it can result in some bloody tactical mismatches early on.

The Genocidal Hives Campaign

The simplest campaign game format assumes everyone has a Hive government, and that everyone is a genocidal maniac. It manages to bypass the economic phase of the game entirely, and is very simple to administer, though it tends to result in lots of slagged homeworlds without a lot of nuanced play and negotiation.

Still, if what you want is a game of "Genocidal Maniac Aliens Conquering The Galaxy", with the least amount of fuss, this is the way to go!

Ceasefire? Aaaargh!

The ceasefire cards make the campaign game fun. Most campaign games are abandoned not finished because one player (or more) sees no point in continuing. The ceasefire cards change this.

First, they clog your hand when you don't want to play them.

Second, they give the effect of being the CNO, who has to deal with orders from a government, and while you can guess when a war is going to end, you can't know entirely for certain. This will change what objectives you're going for as the ceasefire points rise.

War, Peace & Victory Decks

Squadron Strike uses Victory Decks to regulate a campaign, from objectives that get you VPs, to timing war and peace. A standard Victory Deck has 54 cards, and is generated from a player's choice of government (setting the distribution of the cards in the deck) and their map position (determining the relative point values of objectives on the map). Larger campaign games (more than 4 players) add a block of 9 cards per additional player, alternating between an A block and a B block of cards.

There are six types of cards in a victory deck:

Position Objective Cards: Position objective cards give the listed VPs, plus bonuses for population levels as described above, when a ceasefire ends the war.

Raid Objective Cards: A raid objective card gives 1 VP per 350 points of enemy infrastructure or ships destroyed during the current production phase. It must be played face up during the production phase for those points to be scored.

Ceasefire Cards: Every deck has a mixture of ceasefire cards of different point values. Whenever a party in a war plays a ceasefire card, that card is put into a separate stack (shared by all players). When the total number ceasefire points in that stack exceeds 10 x the number of players in the war, the war ends and VPs are tallied.

During times of war, ceasefire cards may not be discarded from your hand; if a ceasefire card is the only card in your hand, you must play it when called for.

War Cards: War cards are played to start hostilities with another player. You may not attack another nation unless a war has started. War cards may not be discarded during peacetime. Once a war card has been played, a second round of bidding to play Victory Deck cards begins, and any war cards in other player's hands must be played. This may start a separate war, or be used join an existing one.

A player may *voluntarily* join an existing conflict on one side or another without playing a war card. However for a war to start, someone must have played a war card.

During peacetime, war cards may not be discarded from your hand. Autocratic governments may play Tech cards as war cards at any time; this does not get them the chance at an RDP.

When a war starts, all participating powers shuffle their discard and unplayed card decks together, then discard two cards from the combined deck, face down. These pulled cards should be put into an envelope. The cards in this envelope will not be available until peace breaks out.

When played during an active conflict, war cards let you look through your discard pile after all cards have been played, and draw two cards into your hand (up to the maximum of your current hand limit).

Mission Cards: Missions cards are cards you can play on other nations; a few can be played on yourself; they represent your spy network and intelligence network, and are a series of "tricks" you can play. Mission cards may be played during peacetime without triggering a war.

Tech Advance Cards: Tech advance cards give you a chance to roll for an RDP on the next production turn. Autocratic governments can play a Tech advance card as a War card in times of peace.

Block A adds 9 cards, with 2 mission, 2 tech, 1 raid, 3 objectives, and 1 ceasefire-2

Block B adds 9 cards, with 1 mission, 1 war, 1 tech, 6 objectives

Mission Card List

The program that generates decks of cards for campaign games creates a subset of this list for each player position; for most cards, no more than two copies can reside in a deck; exceptions are noted by a number in parentheses after their text description.

- 1) Economic Disruption: The target of this card cannot have next year's economy roll exceed a 5 at any location; this cap is applied before negative modifiers.
- 2) Forcing The Enemy's Hand: Pick two cards at random from an opposing player's hand to be discarded immediately. This will allow discards of a ceasefire or war card.
- 3) Diplomatic Espionage: Pick two cards in the enemy's hand; they are revealed to you, but no other players.
- 4) Hostile Opposition Party: Due to internal faction difficulties, the target of this card's maximum hand size is set to 2 in peacetime, or 6 in wartime, for the next two campaign years.
- 5) Increased Commerce Raiding. You may make two attempts at commerce raiding per ship assigned to commerce raiding this production turn. Feudal governments may make three attempts per ship.
- 6) Whispering Campaign: Draw three publicly played ceasefire cards at random. Choose one and put it back in the discard pile belonging to the player it came from.
- 7) Predictive Genius: You may look at the next two cards in the enemy's draw pile, and at your discretion, put them on the bottom of the deck.
- 8) Laboratory Sabotage: You have caused delays in the enemy's R&D process. For the next two production turns, they may not assign cap to RDP projects; any currently extant projects are paused.
- 9) Minor Shipyard Sabotage. All ships currently under construction have three strategic turns added to their delivery dates.
- 10) Plague: Pick two enemy systems. The installations in them are considered nonfunctional for 3d10med strategic turns, minus 1 turn per population level in the system. (Thus, playing this on an enemy homeworld has no effect.)
- 11) Gifted Leader: Due to superior leadership, the recipient of this card can, for the next four production turns, draw one additional card per production phase. This card may be played on yourself. It does not alter your hand size limit.
- 12) Embezzlement. Any production cap allocated to units under construction, or RDP acquisition are reduced by 10% from a government procurement scandal.
- 13) Superior Planning: Your hand size has increased by 1 in peacetime, and 2 in wartime for three production turns, including the turn it was played.
- 14) Brinksmanship: Can only be played on a publicly revealed objective; its point value doubles—however, if the objective is not met at the time of the end of the war, the person who played this card on the objective gets the original VP count instead.
- 15) Order Delay: Any units starting their movement in systems other than the homeworld will have 3d10med strategic turns added to their arrival times if they leave this turn, due to delays in getting orders.
- 16) News Leak: Play this card on an enemy; the largest unplayed victory condition in their hand is revealed, and its victory point value is deducted from their totals, due to a vicious political campaign.

17) Peace At Any Price: Play this card on an enemy; they must play the highest value ceasefire card in their hand.

18) Insightful Cabinet: On the next production turn, you can draw eight cards, but may only keep the ones you'd normally be allowed to draw. The cards you do not keep are discarded immediately; this can be used to discard cards that are normally not discardable, but only if they're ones you just drew.

19) Defection: Play on another player; draw one card from their Raider or Escort pool (your choice). If it's an actual ship, that ship defects, and will arrive at your homeworld in two production turns.

20) Accident: Play this card against an opponent, Prior to a tactical battle on this production turn or the next, the largest ship will have taken damage equal to half its boxes; allocate 10 point volleys ignoring armor and shields until half of its hits have been destroyed. The person who plays this card chooses which battle this applies to.

21) Supply Mixup: During one tactical battle played on this production turn or the next one, an enemy force will be at Material Condition D in the battle of their choice.

22) Better Convoy Protection: After seeing all raider, target and escort cards drawn, you may pick one set and draw two more escort cards. While the same ship can't fight in the battle more than once, multiple ships will participate.

23) Major Shipyard Sabotage: All ships currently under construction have ten strategic turns added to their delivery dates.

24) Economic Boom: Next year's economic roll is at +1.

25) Forced Obsolescence: The nation that has this card played on it will retire a warship class with the fewest members in it after two production turns. If there are multiple classes with the same number of members, the one with the lowest SI is retired. Half of the RDPs spent on that class of ship are refunded; the ships being retired are removed from the roster, and their cap values can be used to pay for the recently acquired RDPs.

26) Staff College: For one Resource Development Point, you can buy a staff college for your naval forces; all Crew Rates for new construction or refitted ships improve by one. A ship may only gain this benefit once, no matter how many times it's refitted.

27) Budget windfall: You have 50 extra points of production cap on the next production turn. It can be played on you or on another player.

28) Major Laboratory Sabotage: You have caused delays in the enemy's R&D process. For the next four production turns, they may not assign cap to RDP projects; any currently extant projects are paused.

29) Commerce Raiding intelligence: On any commerce raiding mission played against the person who has this card played on them, the raiding player gets to draw three target or escort cards, and choose the one(s) used.

30) Strategic Reserve Wizardry: You may change the destination of one fleet in transit at any time this turn or next; the new travel time is computed from their original departure time and star. (3x)

31) Cannibalized Training Cadre: To meet personnel shortfalls, training cadre is used. Default crew quality on new ships is 8+ for the next four production turns.

32) Reserve Centers Cannibalized For Parts: No upgrades from Reserve status or Mothball status are allowed for the next two production turns.

33) Contractor Error: Due to shorting of production materials, any existing ships on Active or Reserve status will roll SI damage twice, taking the higher value. Ships may be repaired to solve this defect; new construction, and units pulled from mothballs have this defect fixed before they're released to service.

34) Brass Hat Syndrome: The officer cadre loses sight of operational realities and trains just for spic and span. All Crew Rates worsen by 1, to a maximum of 10+.

35) New Tactical Doctrine Failure: All ships with a Crew Rate better than 5+ have their Crew Rate worsen by one level.

36) Bad Ammo: All ships that use ammunition cannot have a Material Condition level better than C for the next two production turns; only ships that reach a supply base can remove this penalty once the two production turn period is done. (3x)

37) Jeune Ecole Fad: Bad new doctrine on use of small (SI 13 and smaller) ships. Drop Crew Rate 2 levels on ships of SI 13 or smaller, can never drop below 10+.

38) Syndicalist Strikes In Shipyards: No production, mothball activations or repairs may be started for the next 3d10med production turns. Ships already under construction complete normally.

39) Teething Troubles: A routine upgrade proves to be anything but. For each Active ship the victim has, roll a d10. On a 3+, the ship is fine. On a 2, the ship fights as though it's at Reserve status for the next two production turns. On a 1, it must make its way back to the nearest Repair base, and undergo repair.

40) Resource Bottlenecks: No Repair bases may be used on the next production turn. Shipyards may still be used, as they're getting the highest priority for materials.

41) Successful Financial Engineering: You may re-roll three economic rolls; all rolls must be done for the same year.

42) Financial Engineering Disaster: The econ roll for the homeworld cannot exceed 3; if a natural 1 is rolled, this problem persists for a second year. The colonies lose 10 IP for each year this card is in effect; if a colony's IP ever drops below 20, it disbands.

43) Fleet Mutiny: For all ships sitting at a supply base, roll a d10. On a 1-2, the ship's Crew Rate worsens to 9, and the ship refuses to leave the base. On a 3-5, the crew rate worsens by 1. On a 10, exemplary bridge officers raise morale – crew quality up 1. Ships on patrol, assigned to commerce raiding or escort duty, or in systems that do NOT have Supply Bases are not affected by this. (1x)

44) Quality Control On Rations Subverted by Patronage: All ships not currently at a supply base have their remaining on-ship endurance halved; round fractional turns up. This also applies to ships receiving remote support from a supply base.

45) Diplomatic Coup: This card may only be used if there is someone else who is *not* at war; that player picks 10% of the fleet of the person you're facing; those ships may not be moved from the supply bases they're on; they're being held in reserve in case the person who picks them joins the war. They may be converted from Active to Reserve status, but not mothballed. Each subsequent production turn, roll a d10 per ship. On a 7+, that ship is freed from the restrictions of this card.

46) Patriotic Surge: You rouse the fury of your people. For the next two operational turns, all new ship construction has two strategic turns taken off of the delivery date; new installations are completed in eight round trips rather than ten, and seven turns for a Corporate government.

47) Revolution In Military Affairs: Because of new doctrine, all units currently at a supply base improve Crew Rate by one (but to no better than 3+). This Crew Rate only lasts for 3 production turns after the turn this card is played. Units may return to a supply base to get this Crew Rate upgrade during the turns it remains in effect.

48) Hail To The Chiefs: Choose the ship with the best Crew Rate in your Navy and reduce it to 6+; for every step in Crew Rate that it drops, you may raise 3 ships by one Crew Rate throughout the fleet on this production turn; no ship can gain more than one Crew Rate improvement from this. These Crew Rate changes do not expire.

49) "Spoken Only In Hell.": The subject of this card may not play any Ceasefire cards for three production turns; they still may not discard them; their hand limit does not change, unless by some chance it has nothing *but* ceasefire cards.

50) Diplomatic Backstab: Play this card on another player. If they have a publicly played objective that you also hold a card for, they must move all forces off of it; if you can get forces on it by the end of the next production phase, it's yours. They may not counterattack at this location for two production turns.

51) Zero Tolerance Policy: The Admiralty is concerned about ship losses; the subject of this card may not play Raid cards for the next two production turns.

52) Counterespionage: You may use this card to cancel the effects of any one card played on you this turn. (3x).

53) Defensive Pact: The subject of this card must take your side the next time a War card is played. During war, they must play at least one Ceasefire card per production turn if one is available.

54) Burning Bridges: Randomly add one of your Victory Deck cards to the envelope you put two cards in at the start of the war; you may pick two other players who each have to do this with two cards from their Victory Deck.

55) Legendary Officer: Randomly determine one ship in a fleet (yours, an ally's or an opponent's). That ship has a Legendary Officer. That ship immediately gets its crew rate set to 3+, or it improves by one step if already at 3+. In any battle this ship participates in that results in campaign VPs, the ship generates a "bounty point". At the end of the year, you gain one VP per bounty point accumulated. If this ship is ever destroyed, the enemy gains one VP per two bounty points accumulated.

56) Lost and Found: Recover one "hollowed out" ship from a failed mothball roll. The ship need not be one of yours. The ship is still mothballed and appears in one of your shipyards or Repair bases in 1d10 production turns. If two players use lost and found cards on the same lost ship, the new owner should be selected randomly.

58) Exodus: Play this card and establish one colony in the system of your choice this production turn, with no RDP expenditure.

59) Supernova: Take the largest star on the campaign map and publicly roll 4d10+. This is the number of production turns before it explodes, destroying any units in it. The star may not be used for strategic movement after it explodes. Any population centers within one strategic hex of the explosion are killed in seven production turns. Population centers within two strategic hexes are reduced by 10 in fifteen production turns. This card may not be fished out of the deck with a War card.(1x)

Sample RDP Allocations

To follow along on these examples, you'll need to look at the Campaign Tab on the ship design tool, but the process is to give you an example of how the decisions are made in setting up a campaign for four players. Our four players are Adam, Bill, Charles and Diane. They're playing on an 8 panel map, and are using the default settings of No to tactical fuel, FTL fuel and FTL 0, with an Op Speed boost of 0. The Fort Multiple is set to 1.1, Armor Reliability is left at 1+, arc span is set to 2 (default is 3, making arcs narrower), and Zoom, Boom, Damage, and Range are left at Medium.

With 4 players, and no bonus RDPs, they each have 40 RDPs to spend. They're using 54 card victory decks, and playing to a 90 VP campaign. The Campaign Data File is generated, and from it the campaign map and victory decks.

Adam's Round 1 RDP Allocation

Adam's inspiration for his fleet is the 19th Century Ottoman Empire; he chooses a Bureaucratic government. He chooses Mode 2 movement, and is in Map Sector 1A, with a homeworld in hex 0807 at altitude 9. He names his empire the Volokh Imperium. Looking through his objective cards, he's got a 12 VP card for the habitable world in hex 1A-1406-12, and a 10 VP card for a push 5 dominated system in 1A-1110-12.

Adam spends 1.5 RDPs to put a population 2, IP 50 colony on the habitable world, and 1 RDP to put a population 1 colony around the push 5 star; it will be strategically useful for sending fleets into enemy sectors, later on.

Adam doesn't quite know what he's going to be building yet, but he does know he wants options for large and small ships; he spends 3 RDP for an SI 23 shipyard, and buys a pair of 17 SI shipyards as well. He'll have to divert destroyers to them when he's building, but has the ability to pump out medium sized cruisers and capital ships as well. His running total for his infrastructure and starting colonies is 9.9 RDPs,

Moving down to the defensive options, he buys one level of ECM (0.5 RDPs), 18 shield bubbles (0.4 RDPs), two general regenerator (0.9 RDPs), and level 4 armor (2.2 RDPs), plus 3 levels of component armor (0.7 RDPs). His weapon priorities are beam 1, torpedoes 4, missile 4. For general technology, he buys a Prismatic Globe at level 6, radius 1, capacity of 50. This is 2.1 RDPs, and his running total is 16.8 RDPs.

Bill's Round 1 RDP Allocation

Bill is basing his faction on a fairly generic spacefaring Republic, with Mode 1 movement. His starting sector is 1-D, and is dominated by a Push 12 star, only three hexes away from his homeworld, which means it's close enough to be useful.

Bill puts a Population 2, IP 50 colony in the system of the push 6 star in hex 1D-1713-6 for 1.5 RDPs. Knowing that he'll have to put a premium on fast construction times due to the peacetime limitations of his government, he spends 3.2 RDPs for an SI 24 capital shipyard, and builds 3 SI 13 shipyards for building destroyers. He puts one of those shipyards in the system with his colony, and plans on putting a support base there. Bill has spent 1.5 on colonies, and 8.3 on shipyards.

His forces have a huge advantage in one-way interstellar mobility; Bill capitalizes on it with FTL radio technology (4 RDPs).

Bill's defense shopping is focused. He buys ECM 2 (1 RDP) and maximum armor level 6 (4 RDPs), forgoing shields entirely. He sets his weapon priorities as beam 2, torpedoes 3, missile 4. FTL radio costs 4 RDPs. His total is 18.8 RDPs spent so far.

Maps and Decks

The maps and victory deck cards for this campaign are available as a download for registered game owners; it may be handy to have them near by while reading through the next few pages.

All of the accounting bits (RDPs for technologies) come from the ship building spreadsheet, which is also available as a registered user download.

Registered users who maintain a subscription to the Squadron Strike services page have access to the programs that generated the Campaign Data File and the map and decks built off of it, and more.

Campaign Variables & Spreadsheets

All of the variables in the first paragraph in the main body text of this page are explained in the documentation for the ship design spreadsheet.

Zoom and Boom levels change parameters in the ship design equations to either emphasise movement or firepower. Range and Damage change variables in weapon designs. Fire arc span and armor reliability are 'feel enforcement' decisions. The former determines how wide a firing arc can go from the window the weapon is mounted in, the latter mandates the minimum armor reliability target number.

For this campaign, they want narrow firing arcs with the default levels for movement and firepower.

Charles' Round 1 RDP Allocation

Charles is basing his build on a television show he likes, with a twist. He's starting in sector 2B, with a Feudal government, the Kodalian League, using Mode 2 movement. His home sector doesn't have any habitable worlds. It does have a push 8 star on it, but one that isn't situated well for exploration or moving ships into other sectors, other than sector 1B.

His map does show a well positioned push 4 star, and he puts a Population 1, IP 40 colony in hex 2B-2209-14. He does make a note to put a supply base (which will always be on Reserve status due to a lack of metals) in the push 8 star in hex 2C-2906-17. He spends 3.7 RDPs to buy an SI 28 shipyard, and 1.3 RDPs to buy an SI 10 shipyard so he can build escorts without sacrificing his carrier construction.

Charles decides he wants fighters, and good ones. Not knowing what anyone else bought for their defenses, he opts to take fighter armor 2 (0.4 RDPs), and Space Control 5 (0.4 RDPs) for his RDP allocations. He also buys a tech level increase from Standard to Advanced Interstellar (6 RDPs), as that will give his fighters some significant benefits, and will pervasively boost a lot of his capabilities.

For defenses, he buys Shields 12 (0.3 RDPs), but no regeneration capabilities (they get repaired at Repair bases; they're foamed ceramic armor) and a base Armor level of 5 (3 RDPs). He also buys 6 slots of component armor (1.4 RDPs). His running total is 17.7 RDPs. His weapon priorities are missiles 4, torpedoes 2, beams 3.

Diane's Round 1 RDP Allocation

Diane wants to play something where she can be aggressive, and picks an Autocratic government, calling it the Colevalken Empire, which is ruled under the iron fist of its genetically engineered Great Leader. She chooses Mode 0 movement, and gets 3 bonus RDPs because everyone else picked Mode 2 or Mode 1. She's in sector 2C.

She chooses to place a Population 2, IP 50 colony (1.5 RDPs) in hex 2C-1318-16, because it's a push 4 star in a good position to reach map panel 2D, where she's got an eye on a habitable world, and has a high installation cap, meaning it's a good candidate for being built up as a fleet base.

She buys an SI 22 shipyard, and a trio of SI 8 shipyards. She wants to focus on smaller ships. This costs 5.9 RDPs, and with her colony, her running total is 7.4 RDPs

She decides to go in for fighters as well, and buys Shielding level 2 for them (0.4 RDPs). For her shipborne defenses, she buys shields up to 42 (1.3 RDPs), and buys faced regenerators up to level 6 (for 2.6 RDPs), and three general regenerators (1.5 RDPs). Finally, she buys range 8 transporters (3.2 RDPs). Her final expenditure is 13.4 RDPs (including her bonus RDPs for Mode 0). Her weapon priorities are beams 3, torpedoes 3, missiles 3.

Name	Adam	Bill	Charles	Diane
Mode	2	1	2	0
Yards	23/17x2	24/13x3	28/10	22/8x3
ECM	1	2	0	0
Shields	18	0	12	42
Gen Reg	2	0	0	3
Faced Reg	0	0	0	6
Armor	4	6	5	0
Cmp Armor	3	0	6	0
Beam Pri	1	2	3	3
Torp Pri	4	3	2	3
Missile Pri	4	4	4	3
RDPs Left	23.3	21.2	22.3	26.8

After everyone's made their first round purchases, it's time for some quick comparisons. The table at left is one all the players made before they have to buy weapons traits and technologies.

Armor is the dominant defense in this campaign, and beams look like they'll be the dominant weapon; the relative low priority for missiles for Charles and Diane are somewhat misleading; fighter weapons are small, so the RDP surcharge won't be that noticeable. Charles looks geared to have gigantic carriers, and Diane looks geared to have fighters on nearly every ship.

Adam's Round 2 RDP Allocation

Adam now gets to try and make decisions based on what his opponents are likely to build. While it seems backwards, he starts by deciding what sizes of ships he wants to build; this will tell him what sizes of weapons his ships can mount. With a fair bit of thought into how long it would take to build replacements, and what roles he wants each ship to fill, he gets the following list.

The columns labeled 3w, 6w, etc, are the maximum sizes of his weapons for the ship in question, using a firing arc of that many windows. As a practical matter, with the universe variable of Span 2, he won't be seeing an arc of more than 23 windows.

RDP	Class	SI	Const	Spaces	Q	M	Build	3w	6w	9w	10w	12w	14w	15w	18w	21w	24w
1.3	Light Dread	23	Standard	21600		Y	34	1062	999	928	902	849	793	765	676	614	583
1.0	Raider Cruiser	17	Standard	6300		Y	19	447	421	391	380	357	334	322	285	259	245
0.6	Destroyer	10	Standard	1300	Y		6	147	139	129	125	118	110	106	94	85	81
0.6	Dest Escort	10	Standard	1300	Y		6	147	139	129	125	118	110	106	94	85	81
0.9	Light Cruiser	14	Standard	3600		Y	14	302	284	263	256	241	225	217	192	174	166
1.0	Line Cruiser	17	Standard	6300		Y	19	447	421	391	380	357	334	322	285	259	245
0.2	Scout	5	Fragile	300			4	52	49	46	44	42	39	38	33	30	29

His total fleet design set costs 5.6 RDPs. What these numbers tell him is that a weapon of 117-118 hull spaces will conveniently fit on most of his fleet and give 12 window firing arcs, with two to the row on the light cruiser, one per row on the destroyers, and three per row on the raider cruiser. While it could mount 7 per row (the tools only allow 6 weapons per row) on a light dreadnought, in all likelihood, there will be a larger weapon made for that class of ship.

He also sees a role for a 40 hull space beam (0.6 RDPs), a 118 space general purpose beam weapon (1.0 RDPs), a 355 space large beam for cruisers (1.6 RDPs), and a 928 space capital beam, which he makes related to the large beam for the discount (1.2 RDPs). He also chooses a 118 space torpedo design (1.5 RDPs) and a 40 hull space missile battery for his scout ship to use if they ever get tagged into a fleet action. His weapons have a net cost so far of 6.8 RDPs. His running total so far is 29.2 with 10.4 RDPs remaining.

Next comes shopping for weapon traits and limits. Knowing that he's going to be facing fighter squadrons, and possibly swarms of torpedoes, Adam takes Area Effect r0 (0.6 RDPs with his beams priority), and Interceptor r6 (2 RDPs). For his offensive weapons, he takes Enveloping, 5x and Halves Armor.

For torpedoes, Adam chooses the traits Ignores Shields 8+ (0.7 RDPs), specifically to deal with Diane and Carl; Diane's Mode 0 movement is going to make her somewhat vulnerable to torpedoes and Charles' Mode 2 movement makes him less capable at outmaneuvering them. He takes Disrupts Armor (2.4 RDPs) for the torpedoes as well, just to give Bill a reason to fear them.

After looking through the missile traits, and realizing that he's going to have a hard time fitting any of them onto a usable 40 space weapon, Adam decides not to buy any traits for missiles. Next, he buys 2 levels of ECCM for his ships, to have decent odds of countering Bill's ECM. He's got 2.3 RDPs left for buying weapon limits with, which are shown in the table at right.

The other three player positions are in their sample spreadsheets, along with their ship designs.

RDPs		Beam	Torp	Missile
0.3	RoF	5	1	5
0.6	Acc	2	3	4
0.5	Pen	9	3	5
0.8	Dam	7	10	3
0.1	Cap	3	3	0
0	Evasion		9	9
0	Torp Pivot		2	
0	Torp Harden		2	
2.3				

Designer's Note: Production Cap vs. Maintenance

During the first run of the campaign system, units had a purchase price and a maintenance cost as a percentage of the purchase price. This is a reasonable model, and has some justification in the real world; it tends to ignore training costs for personnel, though.

Game design is about rewarding behaviors. This model rewarded hoarding points from turn to turn until your maintenance budget kept you from building or researching anything new.

This gave a lot of accounting and very little blowing things up. It wasn't especially fun, and fun matters.

We made the limiting constraint on your fleet build capacity, not economics; choosing what to replace, what to keep on Reserve status, and what to put into Mothballs were interesting decisions.

Designer's Notes: Economic Growth

You may be wondering where the lever for "Make the economy grow as fast as possible" is. There isn't one.

Colonization and economic growth roughly match how industrial economies grow after inflation adjustment, and prevents the "accelerating growth curve snowball effect", where campaigns are won by compound interest. (And cease being fun long before they end.)

Economics

The *Squadron Strike* economic system is checked at the start of each campaign year. Each world's economy is the population level of the system times the system's industrialization potential (IP). Your economy is expressed in terms of *Production Cap*, and is a fixed amount. You may not accumulate production cap points from turn to turn. When buying military units, their base production cap cost is equal to their price on the SSD. Certain government types and unit status (Active, Reserve, Mothball) provide discounts on a unit's production cap cost.

Production cap cost is never altered for Crew Rate

Pop Level	Census	Pop Level	Census	Pop Level	Census
1	64 thousand	21	6.4 million	41	640 million
2	80 thousand	22	8 million	42	800 million
3	100 thousand	23	10 million	43	1 billion
4	125 thousand	24	12.5 million	44	1.25 billion
5	160 thousand	25	16 million	45	1.6 billion
6	200 thousand	26	20 million	46	2 billion
7	250 thousand	27	25 million	47	2.5 billion
8	320 thousand	28	32 million	48	3.2 billion
9	400 thousand	29	40 million	49	4.0 billion
10	500 thousand	30	50 million	50	5.0 billion
11	640 thousand	31	64 million	51	6.4 billion
12	800 thousand	32	80 million	52	8 billion
13	1 million	33	100 million	53	10 billion
14	1.25 million	34	125 million	54	12.5 billion
15	1.6 million	35	160 million	55	16 billion
16	2 million	36	200 million	56	20 billion
17	2.5 million	37	250 million	57	25 billion
18	3.2 million	38	320 million	58	32 billion
19	4 million	39	400 million	59	40 billion
20	5 million	40	500 million	60	50 billion

Most homeworlds start at Population Level 50 with an IP of 100, giving a cap of 5,000 points. Your peacetime cap is a percentage of this. Hive homeworlds start with a Population Level of 60 and an IP of 75 for 4500 points.

Colonization

Colonies have a starting IP of 40% of the IP of its founding world. Prior to the start of the campaign, colonies can be purchased for RDPs. Any installation (Supply, Repair or Shipyard base) may spontaneously generate a Population 1 colony on a 2d10- die roll of 9+. This is checked at the end of every campaign year divisible by 3; installations in systems with habitable worlds add +3 to this roll.

Colonies placed after the campaign begins are always Population 1 and cost 1 RDP. Spontaneously generated colonies never cost RDPs.

Population Growth

Population growth is checked prior to rolling for the economics table. For each colony, roll a die. On the number shown or higher, the colony has grown by 1 population. If a growth check fails, wait the listed number of turns before rolling again. Habitable worlds add +3 to growth rolls.

Pop Level	Growth Checks Every..	Growth Potential
1	1 year (4 production turns)	4+ on a d10
2-4	3 years (12 production turns))	5+ on a d10
5-7	5 years (20 production turns)	6+ on a d10
8-14	8 years (32 production turns)	7+ on a d10
15+	10 years (40 production turns)	8+ on a d10

The maximum population level a planet with a green ring on the strategic map is 60. All other colonies have a maximum population of 14.

If every population growth die roll is made, it will take almost 30 years for a colony to grow from population 1 to population 7. It will take another 60 years to reach population 14. Assuming it starts at an IP of 40, and gets typical rolls on the Economic Cycle tables, it will have an IP of roughly 60 at population 7, and roughly 100 when it hits population 14.

The Economic Cycle

Economies fluctuate in their output. This is shown by rolling on the table below for each population center, and adjusting the IP by the relevant percentage. IP changes will always round up; a 1% increase to an IP of 40 will give an IP of 41. A -1% change to an IP of 40 would give an IP of 39. Economic rolls are made at the start of each calendar year after the first. (All campaigns start their first year at 0% change.).

-2%	1-2	3-5	6-9	10	N/A	N/A
-1%	1	2-4	5-7	8-9	10	N/A
0%	1	2-3	4-6	7-9	10	N/A
+1%	1	2	3-4	5-7	8-9	10
+2%	1-2	3-4	5-6	7-8	9	10
+3%	1-4	5-7	8-9	10	N/A	N/A
Change >	-2%	-1%	0%	+1%	+2%	+3%

Start by finding the row with the rate of change you had last year and roll a d10. Read to the right until you find the column that has what you rolled in it, then cross reference down to find the current change in the current economic quarter.

For every four full economic turns you're at war, subtract 1 from the Economic Cycle die roll. Thus, at the start of the fifth economic turn of war, you're rolling at -1. At the start of the 9th, you're rolling at -2. Autocracies ignore the war penalty.

Production Cap & Readiness Levels

Your production cap limits how many points of military hardware you can have; in peace, your production cap is reduced to a percentage set by your government type.

Military hardware breaks down into ships & fighters, brigades, installations and fortresses. Each has a point cost, and collectively, they're called units. Constructing a unit takes time, and for ships, requires a Shipyard.

Surcharges and discounts for Crew Rate do not alter a unit's cost for production cap. Units rushed into production have a surcharge added to their cost against the cap, ships with reduced maintenance as part of their design get a discount on their costs against the cap; certain governments also get discounts.

The primary tool you have for keeping within the cap is unit readiness levels. Units have three readiness levels: Active, Reserve and Mothballed. Installations have only Active and Reserve levels, and Fortresses only have Active.

Active units count full cost against the cap. Active units fight at their full Crew Rate, they can be ordered to go anywhere. Feudal governments get a 10% discount on Active duty warships, fighters and brigades, but not installations or fortresses.

Reserve units count half cost against the production cap, and must be stationed with a valid Supply base. They cannot leave the system until converted to Active status. They have a Crew Rate two worse than normal and Material Condition one worse than normal. If their Supply base is destroyed, they MUST be made Active, or they're automatically scrapped.

Occupation & Assimilation

The ground combat rules on page 98-99 allow occupation of enemy Population centers. An occupied Population Center does not generate cap for the nation that founded it, and generates half of its cap for the occupying force.

Occupied Population centers do not roll for Population Growth.

For every year a Population Center is occupied, roll 2d10+, adding the Population level from the roll. If the result is ever less than half the number of years spent occupying, the Population level is converted over to the occupier's culture, and is treated as one of their Population levels for all purposes.

If the unmodified roll is ever less than the Population level, it goes down by 1.

Theocratic governments do not subtract the Population level from the roll, but a failed roll reduces the Population level by 2.

Shakedown Cruises

This is an optional rule, and is probably not worth the hassle and overhead.

When a ship is just constructed, its starting Crew Rate is 8+. After a production turn of Active service, the Crew Rate improves to 7+. After a second production turn of Active service, its Crew Rate improves to 6+

Quick Construction versus Rush Jobs

Quick construction means the ship was designed from the get go for ease of construction, rather than pack every possible thing in, it's designed to assemble in sensible chunks.

A rush job is just that: it's working the yard dogs in extra shifts to get that ship out now, and to hell with the consequences.

Shipyards, supply bases and Repair bases have assorted penalties to their core functions on Reserve status.

Mothballed units cannot move or fight. They count as 10% of their cost against the cap. There is a chance, based on government type, that a ship coming out of mothballs may have been "hollowed out" while mothballed due to corruption. Bureaucratic governments count mothballed units at 5%, rather than 10%.

Governments can change the readiness level of a unit during the Production Turn procedure. Converting Active units to Reserve status requires that the units be at a valid supply center, and takes no time. Converting Reserve units to Active duty takes one production turn, during which they fight as if on Reserve and cost as if Active.

Putting a unit into or out of Mothballs must be done with a Repair base or Shipyard. A Repair base can mothball three ships simultaneously, a shipyard can do one; this takes one production turn if the facility is Active, and two if it's in Reserve.

Ship Construction

Fighter construction is done at both shipyards and Repair bases. Either can build one fighter squadron per strategic turn, but not if it's doing anything else.

Ship construction times are shown on the ship design spreadsheet. You can spend extra RDPs on designs of SI 22 and smaller for Quick construction to make them build faster. Feudal, Theocratic and Bureaucratic governments take 15% longer to build ships, Autocracies take 5% longer; the spreadsheet factors this in already.

Ships appear at the Shipyard where they were built. Each shipyard can produce one ship at a time within its limits; if you have two ships that take 7 turns to complete, you can start one on a strategic turn 1 of production turn, complete it on strategic turn 7 of that production turn, and start the second one on strategic turn 8, to be completed on strategic turn 5 of the next production turn.

A ship in construction counts for its Reserve cost (including Feudalism discounts), even if it's not yet complete. When it comes off the production line, it is Active, and has a Crew Rate of 6+. See the sidebar for an optional rule.

Ships can have their construction rushed. This reduces the normal construction time for the class by one third (but cannot reduce it to less than 2 strategic turns). This puts a permanent surcharge of 25% on the cost of the ship, whether it's Active, Reserve or in Mothballs. Rushed construction means something is wearing out constantly. Most rushed ships get scrapped to free up production cap eventually.

At the start of the campaign, you can build up to your peacetime production cap. You may put units in Reserve or Mothballs as you see fit.

Installations

You may not have more installations in a system than the metals numbers in the left side of the system hex. Multiple star systems have metals numbers for each star in the system. You may always put one Supply base in a system metals of 0; that Supply base can never be put on a status higher than Reserve.

Installation Types

Supply Bases: These have fuel and ammunition stockpiles, and crews get R&R. Supply bases can be Active or Reserve. The italic number at the bottom of the system hex shows the cost of the Supply base. No number means no supply base is possible.

A ship spending a strategic turn at an Active Supply base gets ten turns of cruise

endurance regenerated; this drops to six turns for a Reserve Supply base. Turns of endurance regeneration cannot be banked for future use when no ship is at the base.

An Active Supply base can handle five ships simultaneously. A Reserve Supply base can handle two ships simultaneously.

An Active supply base can provide support to a remote force and location. Ships receiving remote support burn their endurance at one third the normal rate. Remote support will reload ammunition, but won't replace fighter squadrons. Bases providing remote support cannot regenerate the cruise endurance of another unit while performing this mission.

The round trip travel time from the base to where the support is going determines the number of ships each base can support, using the farthest distance the fleet will be from the base during this Production turn. Divide 50 by the round trip time to get the number of units that can be supported, to a maximum of 10 ships, and never less than one ship. Each ship supported generates one target card for commerce raiding, with a duplicate of the card for every three turns of round trip travel time needed. A light brigade's logistics pack counts as one "ship" for remote support; a heavy brigade's logistics pack counts as two.

A habitable world with a friendly Population of 1 or more counts as ten supply bases at no cost; all home worlds are habitable worlds. Additional supply bases can be purchased in the hexes of habitable world systems.

Repair bases: A Repair base has a maximum capacity in SI; this is the largest size ship it can repair; it can handle three ships at a time of that size or smaller. A repair takes two strategic turns, plus one turn per five boxes repaired, with a minimum repair time of three strategic turns for a repair. The first two strategic turns repair all Hull and Cargo boxes; the last boxes repaired are always Armor. The order of all other boxes repaired is chosen by the repairing player. Ships brought out from mothballs use a similar procedure, with two strategic turns, plus one strategic turn per twenty boxes reactivated. Ships come back from mothballing on Reserve readiness.

Repair bases can refit ships from one design to another; the refit process takes one production turn, plus 1 strategic turn per full 10% change in the final unit cost. If combined with a repair, count half of the shorter of the time frame (repair versus refit) and add it to the total time required. A refit cannot increase or decrease a ship's SI by more than 1. A ship under refit counts as Reserve status for cap purposes. A refit cannot remove the surcharge for rushed construction.

One Repair base can build one fighter squadron per strategic turn, but not if it's doing anything else.

While on Reserve status, all times listed above are doubled. The time to shift from Active to Reserve and vice versa is the same as for any other unit.

Shipyards: Shipyards build new ships and may only build or repair one at a time. They cost RDPs to establish; for every 0.1 RDP, they cost 100 cap points on Active status, and half on Reserve. A Shipyard can produce ships at their listed production rate. They may also function as a Repair base limited to one ship. Shipyards handle Active and Reserve status identically to Repair bases, and may not be mothballed.

Fortresses: Fortresses are installations designed to fight ships. Fortresses have larger weapons and more defenses for a given number of hull spaces. Some universes have fortresses to be physically larger per SI level. They may not be on Reserve status.

Optional Rule: Repair By Cannibalization

If you have two ships of the same class under repair in a Repair base, and are willing to sacrifice one to fix the other, you may "move" undamaged boxes from the one being cannibalized to the other; every three *system groups* of boxes moved takes one strategic turn to move, but all the boxes of that type are destroyed on the donor ship. If that group of boxes is SI, the donor ship is destroyed.

At the end of the process, you'll have one functional ship, and one that's worse off than before. While this process is going on, the donor ship may not be repaired; it can be repaired by the normal method once the recipient ship is out of the Repair base.

Optional Rule: Support Points

One Active supply base, under this rule, generates 500 support points per strategic turn. A Reserve status base generates 120 support points per turn.

Each ship consumes one support point per SI that it has per turn of endurance regenerated; each fighter squadron takes 2 support points to be ready for one battle. Each salvo of missiles reloaded takes 0.1 support points.

No single ship can take on more than 10 turns of cruise endurance, plus its expendables, in a single turn at a base.

This optional rule increases the record keeping, but does put a logistical pressure on larger ships, and on missile armed ships.

Construction of Installations & Fortresses

Shipyards cost RDPs to build, with the amount determined by the maximum SI of the shipyard. Once the RDP cost is paid, the shipyard is Active, and counts against the production cap at the price specified in the campaign tool.

Supply bases, Repair bases and fortresses take ten round trips (from where the money is spent to where they're being constructed) to build (Corporate governments do it in eight). Take the total round distance time from the nearest population center to the installation or fortress. This can never be less than 1. Divide the travel time by 9 to get the production turns needed to make one round trip; for Feudal and Bureaucratic governments, this final tally is multiplied by 1.25, rounding up. After each round trip, 10% of the installation's active cost counts against your cap.

Rushed construction is possible for all installations and fortresses; this reduces the number of round trips to seven (six for Corporate governments), and adds a surcharge of 25% to the unit's cost and price.

Generating New RDPs

Additional RDPs are generated by a die roll, the target of which is set by your government type. You get one RDP roll per population 10 world in your empire at the start of every even numbered campaign year, plus an additional one per Tech advancement card played.

If it succeeds, the RDP needs 1,000 points of cap accrued to develop it; this is handled incrementally: you set aside X number of cap points each production turn towards paying off the RDP. The maximum cap you can put into paying off an RDP on a single production turn is equal to the square of the population level of the system assigned to developing it. You may pay for multiple RDPs at the same time.

Any time you retire a class of ships, you get half the RDPs needed to build that class back, minimum of 0.1 RDPs. If your campaign can handle the recordkeeping, RDPs can be accrued at 100 points of cap per 0.1 RDP acquired.

You may pause development of an RDP if you need the cap for something else. You may pay for multiple RDPs at the same time; you can keep one RDP running per 10 population levels in a system, with a minimum of 1 RDP per population center, and you may shift which population center is developing an RDP.

RDPs that have been implemented can be stockpiled; you may stockpile any number of RDPs.

Technology Transfers

If you have outside assistance with a technology (for example, another nation sells you a weapon system they've developed), implementing the RDPs used for the technology is less expensive. With direct cooperation, the cost of the RDP is 200 cap points. Working from captured samples, the cost of the RDP is 500 points. However, any fractional RDPs left over from this implementation are lost. If the weapon becomes formally shared, they will also get a partial refund (in RDPs) on the weapon; see the ship design spreadsheet for more on this.

Commerce Raiding

Commerce raiding is an important wartime naval mission. *Squadron Strike* use a card driven abstraction of commerce raiding, giving the result (Was a target found? What type of target? Was there an escort present?) without going into details. Cards can be generated by web applications, or mocked up by hand and written on. There are three decks of cards: a Raider deck, a Targets deck and an Escort deck. The convoy raiding player draws one card from each deck per ship assigned to convoy raiding. If there's a raider and no escort, the target is lost. If there's a target, escort and no raider, nothing happens. If there's a raider, target and escort, you have a scenario.

Each ship assigned to commerce raiding adds nine cards to the raider deck; the cards will either say "Raider: Ship name, Operational Speed N" or "No target found". Each escort assigned adds six cards to the escort deck, with cards that say "Escort: Ship Name" or "No escort present." A commerce raider must have at least nine turns of strategic endurance as part of the basic design. An escort must have at least six.

Of the nine cards per ship assigned to the raider deck, the first raider card is there for having the raider at all. Every four additional turns of strategic endurance the raider has replaces a "No target found" card with a "Raider" card, to a maximum of eight raider cards filled in a set. For escorts, the first card of the set of six is an "Escort" card. Every three turns of endurance above the minimum replaces a "No Escort" card with an Escort card, to a maximum of six cards filled.

There are three types of target cards: Economic Targets, Supply Targets and Construction and Transport Targets. Every three target cards also generates a "No Target" card. Every fourth "No Target" card is a "Escort trap" - draw from the Escort deck until two different ships are drawn.

Economic Target cards cost you 50 cap points on the next production turn if they're lost; this rises to 80 economic points for Expansionist & Corporate governments. One economic target card is generated per 10 IP (or fraction thereof) in your economy. An IP 102 homeworld and an IP 44 colony would generate 10.2 (rounded to 11) and 4.4 (rounded to 5) = 16 Economic target cards total.

Supply Target cards are generated at one card per ship (or ship equivalent) being supported or transported. A successful commerce raid on a supply target means that one unit in the hex (determined randomly) loses remote support. For every three strategic turns of round trip time between the base and the task force, an additional copy of that Supply target is added to the deck. Each brigade in hostile territory counts as one ship for this purpose.

Each heavy brigade in transit generates three Transport Target cards, and every light brigade in transit generates two. A heavy brigade logistics pack generates two Transport target cards, and a light brigade logistics pack generates one. Because brigade support tends to be a high priority mission, the defender may draw twice from the escort deck to see if it's covered. If the raider is successful, the transports get to roll 3d10med, trying to beat the raider's operational speed. If they succeed, the transport is merely delayed for 3d10med strategic turns. Otherwise, it's lost.

Each round trip for constructing a base generates one Construction Target card. Hitting a Construction card cancels two round trips for that facility.

All three decks are shuffled each production turn. Feudal governments may draw two cards for the first two commerce raiders assigned. A mission card can increase this further.

Brigade Composition

The standard heavy brigade has six armor, six mech infantry, four infantry, three artillery companies, one engineer company and one headquarters company.

The standard Light Brigade has two armor, two mech infantry, twelve infantry, three artillery companies, one engineer company and one headquarters company.

Four brigades make a division; divisions add two headquarters companies, two engineer companies, and six artillery companies. This adds 40 points to their combined cost, 200 hull spaces to their transport requirements, and the divisional HQ's logpak is 200 hull spaces.

Companies a la Carte

You may define custom brigade formations. The standard light and heavy brigades cost no RDPs. A custom brigade costs 0.5 RDPs.

No brigade can have more than twenty subordinate companies. No division can have more than six subordinate brigades.

Use the table below to calculate the cost and transportation needs of the unit. For HQ units, N is the number of subordinate units.

The ship equivalents for remote support are spaces/500, rounded up.

Unit Type	Cost	Unit Spaces	LogPak Spaces
Inf. Company	1	10	2.5
Mech Inf. Company	2	35	30
Armor Company	6	120	95
Artillery Company	2	25	20
Engineer Company	2	25	10
HQ Company	10+N	25+2N	5+2N
Heavy Brigade	90	1,135	875
Light Brigade	65	595	395
Div. HQ Bn	5+5N	40+15N	10+15N

Bare Bones Ground Combat

The basic unit of ground combat is the brigade; brigades are made up of companies. Light brigades costs 65 points, and take 8 production turns to raise. Heavy brigades costs 90 points and 12 production turns to raise. Custom brigades take 12 turns to raise. Brigades must be raised on habitable worlds, and can't be rushed to completion.

Brigade operations are defined by logistics packs (logpaks) A logpak has 30 logistics points. A brigade occupying a hostile facility, or garrisoning a friendly one with no Supply base consumes three logpaks per production turn. A brigade engaging in offensive combat consumes points more rapidly. Brigades in friendly Population centers don't consume log points, even in combat. A brigade without logistics points cannot move or attack. Occupation brigades that miss a logpak roll 2d10- each strategic turn; the number rolled is how many companies are destroyed.

Brigades and logpaks can be sent by dedicated warships in cargo bays; the cargo requirements are in the table on this page. Ships with brigades embarked burn cruise endurance at double the normal rate. Getting the brigade down to the planet requires an aerodynamic ship or transporters (which can just land the troops) or an assault shuttle. Each assault shuttle can move 50 spaces of brigade per Operational turn; this abstracts multiple shuttle trips.

Brigades and logpaks may be sent by the remote support mechanism on page 95. A brigade's arrival time is the round trip travel time from where they start (usually the homeworld) and where they're going, adding one strategic turn to the total for unloading. A heavy brigade is three ship equivalents for remote support, a light brigade is two, a light logpak is one, and a heavy logpak is two. Brigades sent this way return automatically if there's an enemy naval presence in the system when they arrive.

One Active brigade of any type can occupy a Population 1 colony. Every +3 population levels requires twice as many brigades; every +10 population levels needs a ten-fold increase in the number of brigades. Each tech level you have above the population subtracts 3 from the population levels for the occupation forces needed.

Map Setup

To win, the attacker must cross the map with enough brigades to occupy the enemy Population center, and enough logistics points to last out the rest of the production turn. Failing in this, the attacker retreats and waits for resupply.

Brigade combat starts with setting up a map, using a deck of playing cards. The attacker draws 19 cards, the defender 17, and they lay them out in a 6x6 grid. The attacker places two cards first, the defender places one, then both sides alternate, placing one card at a time. The value (and suit) determines who has advantages for combat on that card. The value determines how long it takes to move a company through it. Counting from the attacker's side, the grid rows are numbered 1 through 6.

For any units other than armor and mechanized infantry, the face value on the card determines how many days it will take you to leave that card once entered; for these unit types, any value of greater than 6 is treated as 6. Aces are treated as 1s, face cards are treated as 10s. Jokers may not be entered at all.

Armor and mechanized infantry need time equal to half face value of the card to leave it, round up. Face cards are impassable terrain for these units.

Attacking units entering rows 5 and 6 consume additional logistics points equal to the lowest unoccupied card between that row and the attacker's edge.

Engineer units can raise or lower the point value of a card by one; this takes three days, and can be used to convert a face card to a 9, making it passable.

No more than five allied companies can be on the same card at a time.

Clubs and Spades subtract 1/3 of their value from the die rolls of any units attacking unit already in them. Hearts add 1/4 of their value to the defender's rolls. Diamonds add 1/4 of their value to the attacker's rolls. In all cases, drop fractions.

Unit Activation & Movement

Brigades are moved as companies. To move a company on the map, it needs to be activated. Your headquarters unit provides twelve activation points, plus or minus two per tech level away from standard.

Units in the same grid location as the headquarters cost zero to activate. Units one or two spaces away cost one to activate. Units three or four away cost two to activate, and units five or six away cost four to activate. This cost is per unit, not per group of units in a given card. At the start of the turn, both the attacker and defender record which units they're activating. The attacker must pre-allocate two thirds of their activation points, the defender must pre-allocate half. Each secretly bids a number between one and five; the sum of these numbers is how many days the turn takes up.

Once the initial units activations are revealed, the attacker moves one unit (and cannot move it farther than the number of days bid), then the defender moves one unit, and so on. On any turn, rather than move an activated unit, either player may activate and move a unit with one of their held activation points. Units may not move diagonally between cards. Mech and armor companies may not enter face cards. Units that are attacked may not leave the grid square other than by retreating.

A unit entering a card occupied by an enemy is in combat. If the defender's initial attack doesn't preclude it, the attacker may attack

Combat

Combat is first resolved against units entering a card; after they've entered the card, they may attack. As each unit enters the card, the player controlling units already there picks a unit and makes an attack. No unit may attack more than once per turn. A unit that enters (but is forced to retreat or is destroyed) does not get an attack on that turn. On subsequent turns, units attack in the order they entered the card. Each company that fights burns one logistics point. Ground units on Reserve status are at -1 to attack and -2 on defense. They count as 1/2 strength for occupation duty.

The attack roll is 2d10- with modifiers based on unit type and terrain; see the table on this page for unit type bonuses, and see above for the terrain type. An attack will have one of three effects: No effect, forced retreat (by beating the first number), or destroyed (by beating the second number). For each tech level of advantage one force has over the other, roll 2d10- roll twice more, and take the best result.

Attackers must retreat away from the objective, defenders must retreat to a card with no attacking units in them. Units that cannot retreat are destroyed.

Artillery may attack units in adjacent cards, with barrage fire or area support. In barrage fire, roll 2d10- and count that many attack factors against one target. In area support, roll 2d10-, halving the result, rounding up. This may be allocated among adjacent cards as a bonus to attacks, subtracted from enemy unit attack rolls, or divided between both effects.

Faster Ground Combat

The ground combat here is somewhat Victorian in outlook: commanders negotiate over where the fight will take place, and agree not to nuke one another from orbit, or fight in cities.

The simplest way is to never put defending troops on the ground; the attacker comes in and goes straight to occupation duty; if the former owners of a colony drive an occupation force out, they send a liberating force down, accept the parole of the former occupiers and ransom them back at the end of the war.

An intermediate step, for very ritualized combat is have the defender draw four cards, show two to the attacker, who picks one, then reveal what units they brought to fight with, resolving combat on that card.

Each player secretly bids for the intensity for each brigade. Intensity ranges from 0 to +5. This adds to the die roll the brigade makes for combat, which is identical to the roll used for the main rules.

The logistics points a brigade consumes is equal to 4x the intensity selected, plus half the intensity chosen for each unit that attacks it, summing fractions and rounding the final result up.

Any brigade that runs out of logistics points, or retreats, is out of the fight, any brigade that's destroyed is gone.

Unit Type	Attk	Def	Move
Marine Co.	+1	7+/8+	Full/5/Any
Inf Co.	+0	5+/10+	Full/5/Any
Armor Co.	+3	4+/9+	Half/Res.
Arty Btty	Spec.	2+/6+	Full/5/Res
Engineer Co.	Spec.	5+/7+	Full/5/Res
Mech Inf Co.	+1	4+/10+	Half/Res
HQ Com	-2	4+/8+	Full/5/Res
Heavy Brigade	+3	4+/9+	N/A
Light Brigade	+1	5+/10+	N/A

STRATEGIC Designer's Notes

Squadron Strike was a game I almost didn't write. I thought I'd written everything I wanted to about space combat with *Attack Vector: Tactical*. What changed was a series of web forum discussions where someone would leap into every single discussion on how to play a specific game, and talk about how Starmada did that aspect of space combat better/faster/more realistically.

I liked Starmada. It had some elements that were very good (its weapon design system has some pretty math, for example), and it had some elements that I felt could be improved upon (die rerolling, for the most part).

I was also getting requests from people wanting to make ships for *Attack Vector: Tactical*, and the ship design process for that game involves calculus. I was getting periodic submissions from people trying to stat out ships for *Saganami Island Tactical Simulator*. I had felt that the "build and bash" market was pretty full, between Full Thrust (which has been waiting for a third edition since at least 2001) and Starmada, and even people playing older games like Starfire and AeroTech. Before I'd enter it, I needed to offer something compelling.

When the forum evangelist made me cranky by jumping into a discussion where he claimed Starmada's 3-D system was better than Attack Vector's, I put some thought into what would make a compelling game. I had the high detail/high sim end of the market. What could I offer in a fleet game?

It needed to be a game where players could design their own ships, anything else was a non-starter.

It should, ideally, handle as many ships in a fight as Starmada or Full Thrust did. We don't, because 3-D movement does require more thinking than 2-D movement does, but we came close.

Segmented movement should be left out for a fleet level game; this left simultaneous pre-plotting as the mechanic of choice, and since I needed laminated play aid cards, this could be streamlined. When *SITS 2e* was rebuilt from the *Squadron Strike* engine, segmented movement (as midpoint markers) became an optional rule in *Squadron Strike*.

It should handle both Hollywood style cinematic movement and Newtonian vector movement; this is where naming movement modes after the number of Newton's Laws being obeyed came from. Adding optional fuel came later, but was a feature neither competing game had.

Weapon design should be rich, and we put a lot of thought into the value of range versus firing arcs in a 3-D environment with 30° angles. Fifty AVID windows involve more choices than six hex sides. Starmada's system of "take a basic weapon, change numbers, add traits" was one we looked at and expanded on. It quickly required a spreadsheet, and with that, automating as much of the ship design process within the spreadsheet as I could became a goal.

It should allow for both seeking type weapons (which encourage maneuver) and "roll to hit" type weapons. While it should have fighters, they needed to avoid the rock-paper-scissors dynamic of Full Thrust.

Action Points were a very early differentiation point between *Squadron Strike* and Full Thrust/Starmada; they're an element of individual unit resource allocation that's ignorable if you don't want to deal with them.

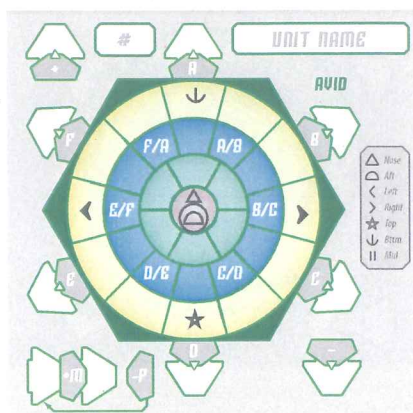
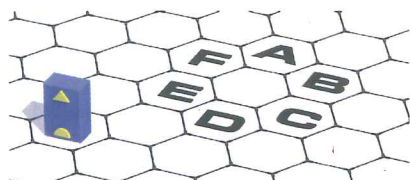
40% of the players surveyed wanted campaign support. Making the campaign and tactical game integrated was an important design goal post. I looked at the campaign games I'd played in (or moderated) and looked for the features that made them successful: Low accounting overhead was critical, as was a campaign end state short of conquering homeworlds. The "compound interest kills campaigns" insight came fairly early on. The card game mechanic I used to regulate campaign timing grew to what you see here.

Throughout playtesting, the common question was "How do we make this play faster?" We did simultaneous decision making to speed play; the die rolling was streamlined to minimize counting the number of dice, and re-rolling any of them. For large numbers of die rolls, a lookup table was given to reduce die rolling tendonitis. Fairly late in the process, Thomas Robertson had a suggestion that sped up damage allocation by a factor of four, and I spent 30 hours over two days before Origins 2008 rebuilding the spreadsheet to handle it.

Jarrold Lemire removed more features from the game than any other playtester, finding broken combinations of traits and unleashing them on Saturday playtests.

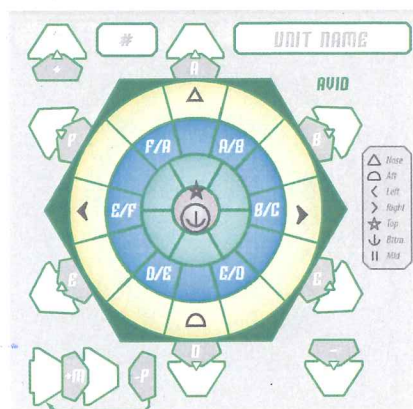
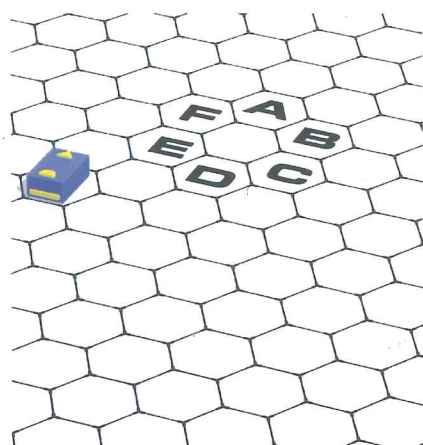
Andy Palmer and Ken Watanabe were excellent (and patient) blind testers, and did a thorough job of asking the "but why?" questions. I didn't always agree with what Andy was arguing about, but I always had to think about my answers, and that's a good thing.

Sylvester Wrzesinski said "You're nearly at a printable SSD in Excel anyway—why not take the last step?"



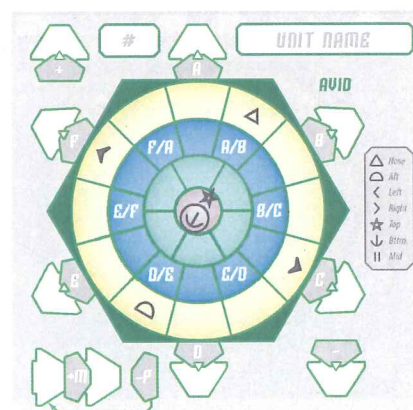
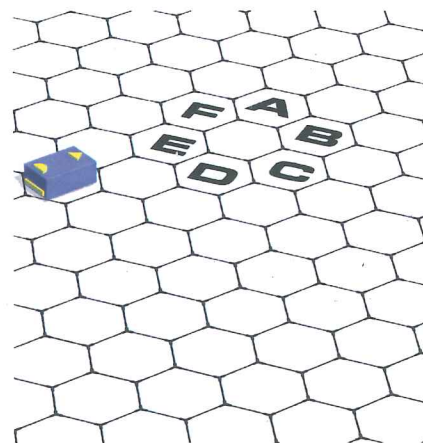
EXAMPLE: 90° STRAIGHT UP, TOP FACING DIRECTION D(YELLOW)

The AVID illustration has the Top of the ship in the yellow window facing direction D, and the Nose and Aft symbols are in the purple window of the AVID, with the Aft symbol circled.



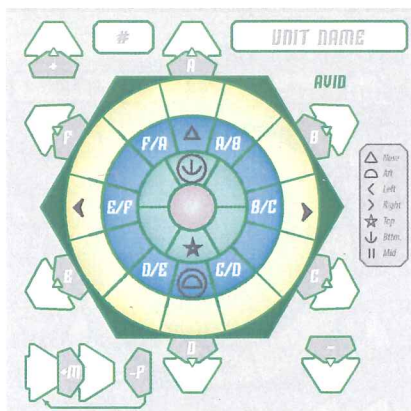
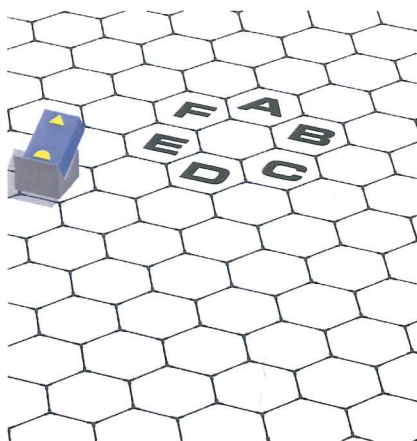
EXAMPLE: LEVEL WITH THE MAP, FACING DIRECTION A, TOP FACING DIRECTION +

The AVID has the Nose triangle in direction A(yellow), while the Top and Bottom symbols are in the purple window, with the Bottom symbol circled, showing that it's down.



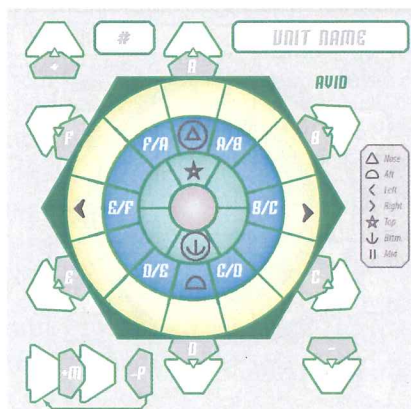
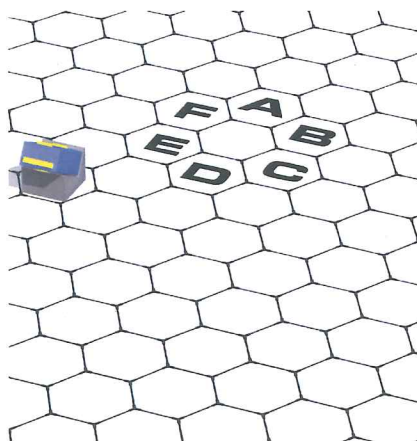
EXAMPLE: FACING A/B(YELLOW), WITH THE TOP IN DIRECTION +

The AVID illustration shows the ship facing a hex corner (A/B). It is otherwise identical to the example above.



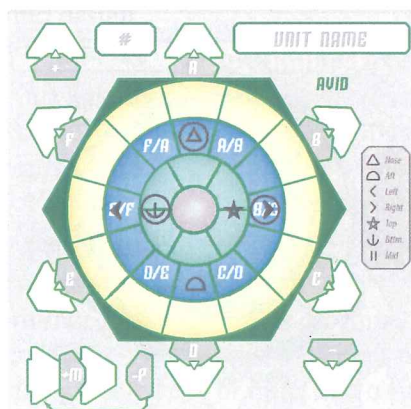
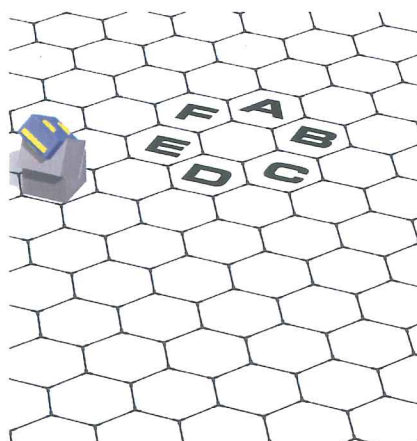
EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A, TOP FACING D(GREEN, UPPER)

The AVID illustration has the Nose triangle in direction A(blue), while the Aft marker is circled to show that it's angled down. The Top marker is facing through direction D(green, upper).



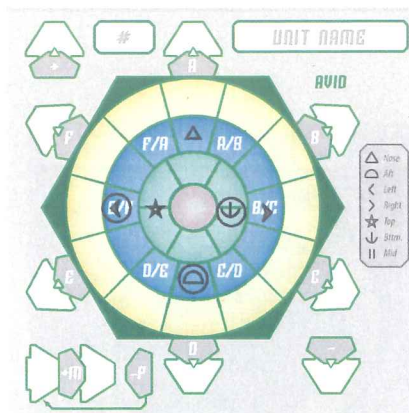
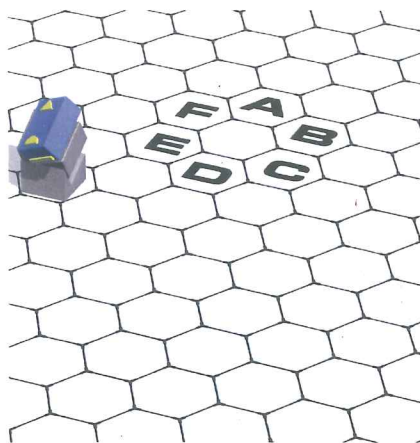
EXAMPLE: FRONT INCLINED DOWN BY 30°, FACING DIRECTION A(BLUE, LOWER), TOP FACING DIRECTION A(GREEN,UPPER)

The AVID illustration has the Nose triangle in direction A(blue), circled to show that it's pitched down, while the Top and Bottom symbols are in the green ring, with the Bottom symbol circled, showing that it's down.



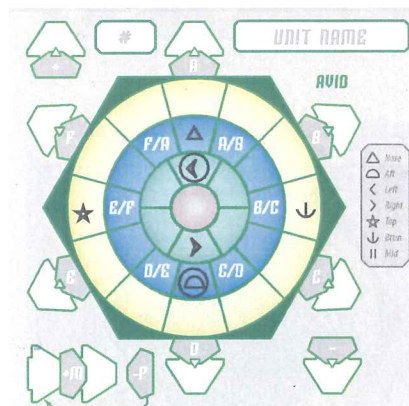
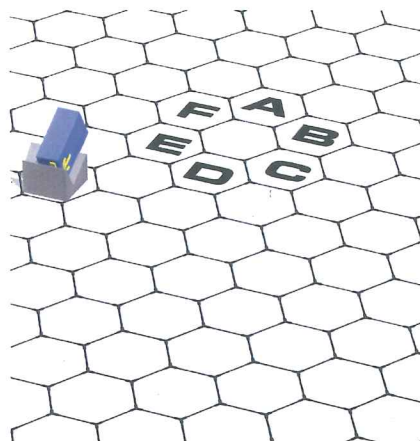
EXAMPLE: FRONT INCLINED DOWN BY 30°, FACING DIRECTION A, ROLLED TO STARBOARD BY 30°, TOP FACING DIRECTION B(GREEN, UPPER)

The AVID illustration has the Nose triangle in direction A(blue), circled to show that it's pitched down, while the Left marker has come up to E/F blue, the Right marker has gone down to B/C(blue), while the Top and Bottom symbols have shifted to the spines in the Green



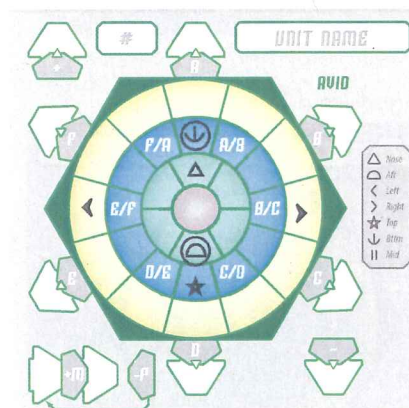
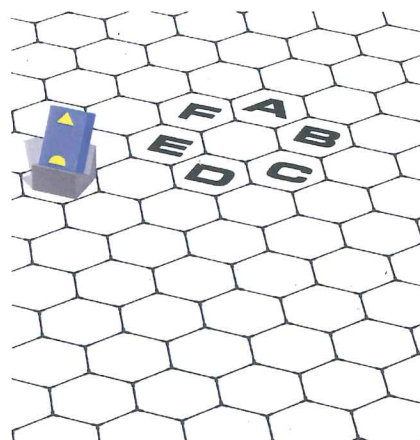
EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A, TOP ROLLED 30° PORT

The AVID illustration has the Forward triangle in direction A (blue), while the Aft marker is circled to show that it's angled down. The Top marker is facing through direction D (green, upper).



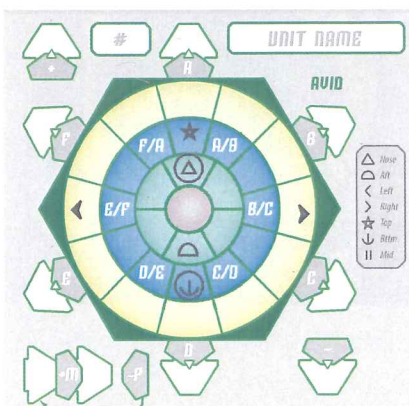
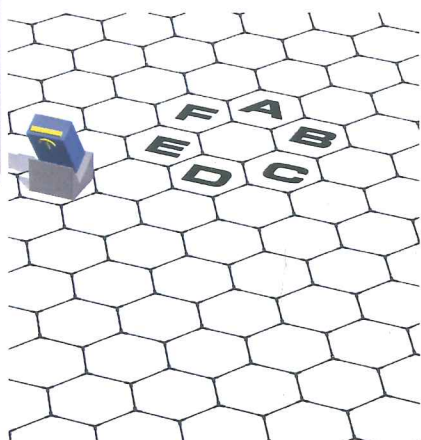
EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A, TOP FACING DIRECTION E/F (YELLOW)

The AVID illustration has the Forward triangle in direction A (blue), while the Top and Bottom symbols are in the yellow ring. Compare this to the example of a ship with its front up by 30°, with no roll. The position of the Port, Starboard, Top and Bottom symbols have just rotated around the sphere of the AVID.



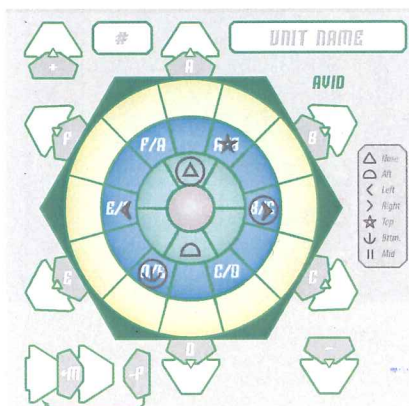
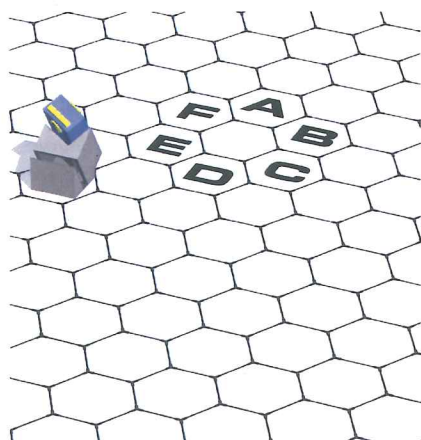
EXAMPLE: FRONT INCLINED UP BY 60°, FACING DIRECTION A, NO ROLL, TOP FACING DIRECTION D (BLUE, UPPER)

The AVID illustration is very similar to the 30° incline. Notice the Forward triangle in direction A (blue), circled to show that it's pitched down, while the Port marker has come up to E/F blue, the Starboard marker has gone down to B/C (blue), while the Top and Bottom symbols have shifted to the spines in the Green.



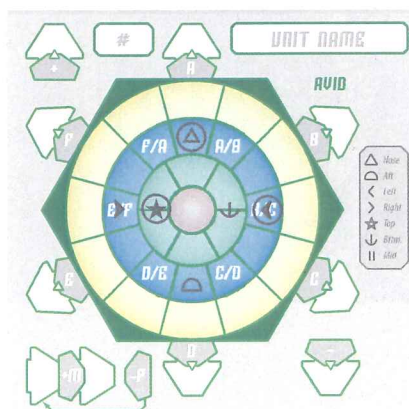
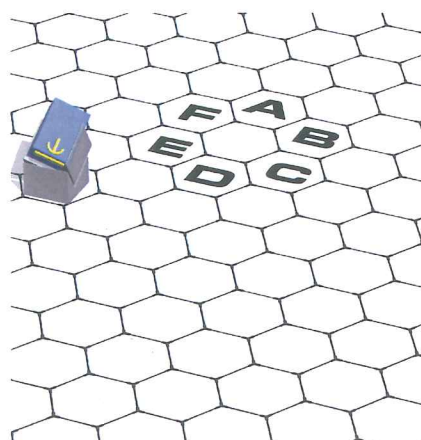
EXAMPLE: FRONT INCLINED DOWN BY 60°, FACING DIRECTION A, TOP FACING DIRECTION A (BLUE, LOWER)

The AVID illustration has the Nose triangle in direction A (green), circled for being underneath. The Top marker is facing through direction A (blue, upper).



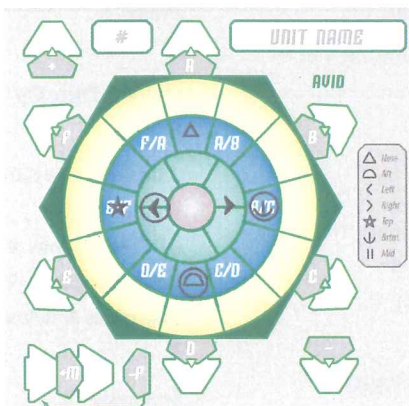
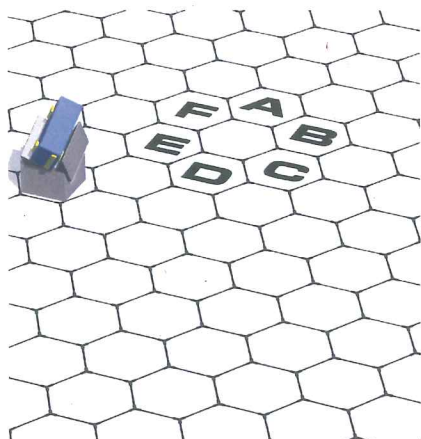
EXAMPLE: FRONT INCLINED DOWN BY 60°, FACING DIRECTION A (BLUE, LOWER), TOP FACING DIRECTION A/B (BLUE, UPPER)

The AVID illustration has the Nose triangle in direction A (green), circled to show that it's pitched down, while the Top and Bottom symbols are in the blue ring, rolled 30° off to A/B (blue, upper), with the Bottom in D/E (blue, lower), shown by the symbol being circled.



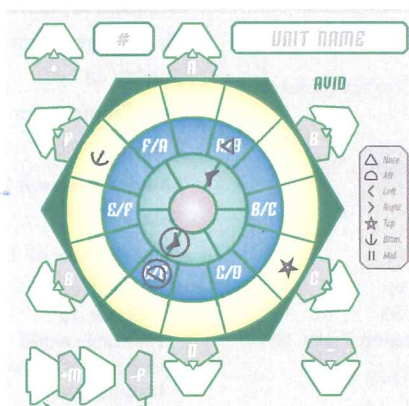
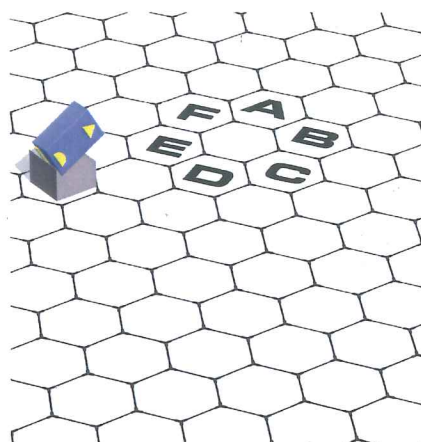
EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A, ROLLED TO STARBOARD BY 150°, TOP FACING DIRECTION F (GREEN, LOWER)

The AVID illustration has the Nose triangle in direction A (blue), circled to show that it's pitched down, while the Left marker has rolled all the way around to B/C blue, circled to show that it's underneath, with the Right marker has gone down to E/F (blue). The Top and Bottom symbols are in the green ring. Note that the Top is circled and the Left and Right symbols point "in"; this is a handy reminder that the ship is inverted relative to the map.



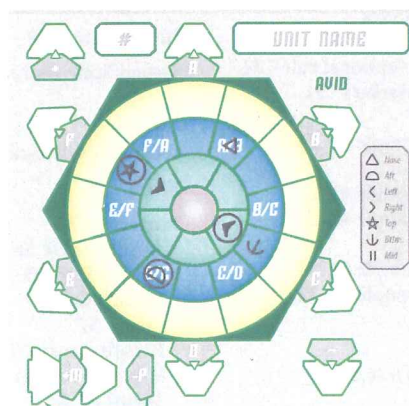
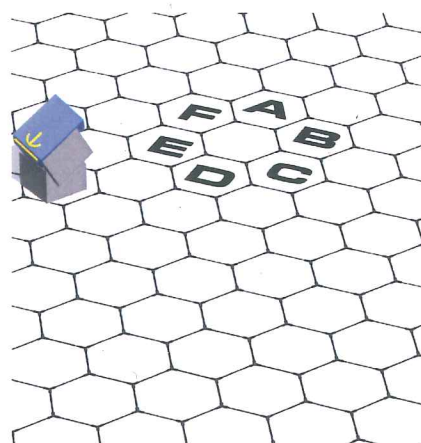
EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A, TOP ROLLED 60° TO LEFT

The AVID illustration has the Nose triangle in direction A (blue), while the Aft marker is circled to show that it's angled down. The Top marker is facing through direction E/F (blue, upper), with the Bottom symbol facing B/C (blue, lower). Note that the Left and Right markers are drawn on the spines between windows in the green ring.



EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A/B, TOP FACING DIRECTION C (YELLOW)

The AVID illustration has the Nose triangle in direction A/B (blue), while the Top and Bottom symbols are in the yellow ring. Compare this to the other example of the ship with 90° of no roll. The entire symbol set is just rotated 30° (one window) around the AVID. Note that the markers in the green ring are on the spine.



EXAMPLE: FRONT INCLINED UP BY 30°, FACING DIRECTION A/B, 120° ROLL, TOP FACING DIRECTION F (BLUE, LOWER)

The AVID illustration has the nose up at a 30° incline, facing A/B (blue). This is nearly identical to the example on the previous page, showing a 150° roll. The only difference is that the ship is facing direction A/B, and a roll of 120°.

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