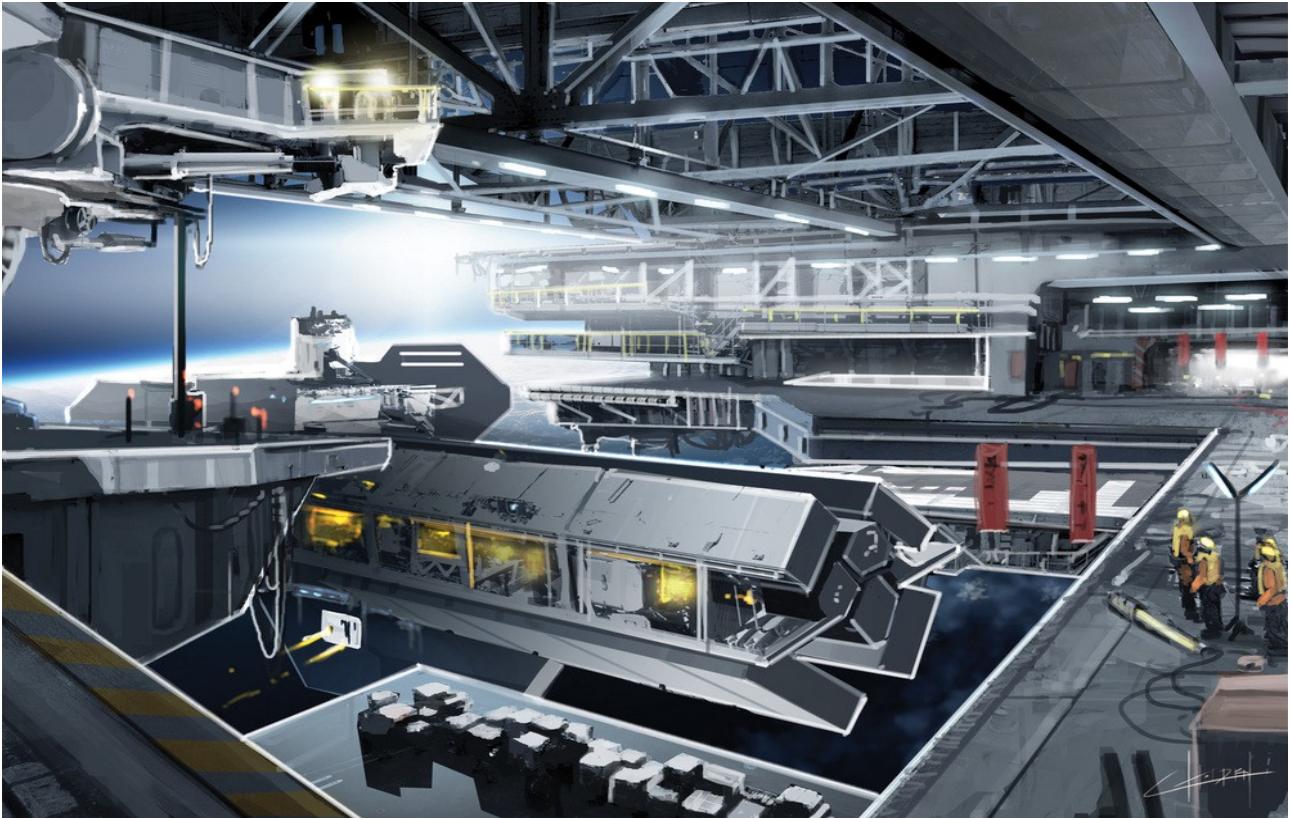




STARSHIP CONSTRUCTION GUIDE

Starship construction is a technical process, and is designed for those players who enjoy ducking into the nuts and bolts of the system and tinkering. Most captains simply purchase a ship, and perhaps have the engines upgraded; however, spending time on optimizing a starship design can be very rewarding to those so inclined. This section, therefore, is detailed and sometimes complex in nature, with many inter-relating figures and components.

When designing a starship, the engineer will need to consider a whole range of factors. Every single component has its own specifications, quality, size, type, and model number; the engineer will choose a hull, command and control systems (computers, sensors, etc.), engines and power sources for both sub-luminal and FTL propulsion, weaponry, shields and point defenses, armor, superstructure, plus scientific, medical and leisure facilities and crew accommodations. All of these things funnel down into a much more simple set of values for use in actual play.

For those GMs or players who wish to create deck plans for their vessels, one cargo unit is equal to four 5' squares (10' by 10').

Building and customizing starships is not required, of course. This rulebook contains plenty of standard starship designs that you can purchase and use.

There are various example ship components that you can select as you design your ship. At the end of this chapter is a detailed engineer's technical manual which engineers and GMS can use to design new ship components if required.

STARSHIP CONSTRUCTION GLOSSARY

The following terms are used throughout this guide.

AGILITY Agility is directly analogous to a player-character's AGILITY attribute and is used to determine a ship's DEFENSE value. A vessel's AGILITY is determined by its class (tonnage) and can also affect its turning circles in combat.

Class A vessel's class is an approximate guide to its overall size in terms of tonnage. Ship classes are designated with Roman numerals, starting at Class I; there is no maximum ship class, but large cruisers tend to be around class XI, and battleships and carriers can sometimes be up to Class XIV or XV.

Control Computer Every vessel needs a control computer of some kind. A control computer affects a wide variety of shipboard aspects, including maximum FTL speeds, reaction times in combat, even emergency damage control procedures which reduce incoming damage.

Cargo Units Every ship has a number of available cargo units, which may be taken up by actual cargo, or by equipment and ship customizations. The more equipment, in terms of weapons, shields, facilities, and so on, that a vessel has installed, the less cargo space it is likely to have available for use. A cargo unit represents a roughly 10'x10'x10' volume.

DEFENSE This is the same value that a player character has. It determines how difficult it is to hit a ship with weapon-fire and is derived from AGILITY in the same way that a player-character's DEFENSE is.

Firing Arc Ship-mounted weapons usually point on one of four firing arcs, forward, aft, port, and starboard (see the *Starship Combat* chapter for more information). Some weapons can be installed to cover multiple arcs by using turrets or arrays.

FTL Engines An FTL engine is the method by which vessels move at faster than light speeds. Common FTL systems include hyperdrives, antimatter engines, amongst others. Most vessels contain separate sub-luminal and FTL (faster-than-light) propulsion systems.

Fuel Capacity A ship's fuel capacity determines its overall range of operation. This range can be modified by the engines' fuel efficiency rating.

Fuel Efficiency A fuel efficiency rating is provided by every engine type and directly affects the operational range of a vessel.

Hex A hex is a unit of distance. It is a game term, and does not translate to in-character language; a vessel's weapon ranges are expressed in hexes, and one hex is equal to 1 kilometer.

Luxury Every ship has a Luxury Value, which is expressed as a percentage. It is a direct comparison of crew complement and shipboard facilities and quality. Ships with lower Luxury Values are less efficient than those with high values due to poor morale and sub-standard workmanship. Spartans are not affected by a ship's Luxury Value.

Megacredits A megacredit is a larger scale of currency used for purchasing and building ships. Despite its name, the value of a megacredit actually varies depending on the campaign setting's defaults, and provides an easy “dial” for GMs to use to adjust the value and expense of starships. A megacredit is either 1 million credits or 1 thousand credits, depending on the campaign model.

Power Engines and shield generators both provide power which is used to either propel the ship or to defend against incoming attacks. One unit of power is 10 megawatts. A ship's SPEED and SOAK are both derived from power divided by the ship's class.

Sensors A ship's sensors consist of an array of different detection and analytical devices. These can be used for a wide range of tasks and feed the ship's computer information about the space around the vessel. Accurate sensors are a boon for space combat and exploration.

SOAK Both armor and shields can reduce or totally negate the amount of damage taken by a ship which is hit by enemy weapon-fire. The damage received is reduced by the value of the ship's SOAK score. Control computers can also increase SOAK slightly with improved automated damage control procedures.

Space This refers to the number of cargo units taken up by the equipment or modification. This must be deducted from the ship's basic cargo capacity.

Sub-luminal Engine A sub-luminal engine is the method by which vessels move at sub-luminal (slower than light) speeds. These can include fusion reactors, ion engines, liquid fuel rockets, solar sails, and more. Most vessels contain separate sub-luminal and FTL (faster-than-light) propulsion systems.

Superstructure Superstructure is similar to a creature's HEALTH. It represents hull, pylons, bulkheads, infrastructure, conduits, and more, and is damaged and depleted by weapon-fire. A ship reduces to zero superstructure is destroyed and in danger of exploding.

Tonnage A vessel's tonnage is a measure of its mass. Different tonnage ranges are assigned classes (see "Class", above). A ship designer will calculate the vessel's final tonnage at the end of the design process.

VESSEL TYPES

There are as many different vessel types as there are stars in the sky. The following list is a summary of some common classifications listed in approximate size order.

Shuttlecraft A shuttlecraft is usually not FTL-capable, and is capable of atmospheric flight and landing. They can be used to transport small groups, or as lifeboats. Armament is rare, and defenses are usually limited to basic navigational shielding.

Patrol craft Patrol ships, often used by police and other security organizations, are designed for in-system use. These ships are lightly armed and often lack FTL capability.

Courier A courier is designed for rapid interstellar travel; not much larger than a shuttle, its main strength is travelling directly from one location to another. Couriers do not tend to be armed, and maintain only navigational deflector shields. Some couriers are very luxurious, and are used to transport diplomats and VIPs, while others are used as private yachts.

Research ship Scientific research usually needs specialized and sensitive equipment, and research ships are outfitted with the best sensors, computers, and laboratories money can buy. They do not tend to be armed or well-protected, and need to call for assistance in times of trouble.

Yacht Private yachts can run to the decadent, with extremely luxurious interiors. Usually private vessels, these pleasure vehicles have weak defensive capability; however some military yachts used to transport very important dignitaries may possess more capable defenses. Yachts tend to be fast, and are usually aesthetically pleasing.

Scout These ships are general-purpose exploration vessels of a small-to-medium size. They generally boast high FTL speeds and long-range sensors, with some moderate armament and defensive capability. Scout ships will be equipped for surveys, scans, mapping, and are often designed for long-range missions. Scouts operate as military reconnaissance vessels, long-range exploration vessels, and even first-contact missions.

Freighter A freighter is designed specifically to carry cargo. They vary in size, and tend towards being slow and cumbersome (although some smugglers and pirates are able to outfit some extremely agile freighters, especially if cargo quantity isn't a priority). Freighters are found equally as military and civilian vessels and tend to be weakly armed, if at all.

Escort Escorts accompany other, often unarmed, vessels and tend to operate in small groups at

close range, never moving far from the vessel they protect. They have medium combat capability, and sometimes have the ability to extend electronic protection to nearby vessels or provide emergency repairs. Escorts usually have sensitive sensor systems designed to detect enemy action as early as possible,

Destroyer Capital ships, destroyers are capable of extended military duty. Comparatively cheap compared to other warships, destroyers also operate as patrol craft and boast decent armament and shields. Destroyers, like other capital ships, are also capable of good FTL speeds.

Frigate A frigate can protect a number of smaller ships against enemy vessels and are often deployed in small groups or in sensitive areas. Frigates are known for boasting large amounts of firepower, and often large troop complements used for boarding or invasion missions.

Transport Transports run by a variety of names and fulfil a variety of purposes. Some are designed to transport cargo, while troop transports carry contingents of personnel. They have medium armor or shielding capability, but rarely boast any more than the minimum of firepower. Transports are often accompanied by escorts. Troop transports are sometimes called assault ships, while commercial or cargo transports are often known as tugs.

Cruiser Large capital ships, cruisers can be both military and explorative in nature. Cruisers tend to have non-combat primary missions, and as such are often equipped with research facilities, but can also be called into combat when needed – and when they are, they perform well as heavy capital combat vessels. Cruisers tend to have heavy armament and shielding and, depending on their species of origin, are often fairly luxurious compared to regular combat vessels. Long range exploration cruisers can operate for years at a time and are often a highly desired assignment.

Liner A liner is designed for luxurious commercial passenger travel – either on established transport runs or on cruises and sightseeing tours of exotic planets and nebulae. They are large vessels, and tend to be lightly shielded with a small security contingent on board, although some older liners can be drafted as troop transports by military organizations.

Battleship Battleships are the most heavily armed ship type. Somewhat cumbersome, they make up for that with massive firepower, strong armor, or heavy shielding. Battleships are often accompanied by destroyers and frigates, and can be equipped for planetary bombardment (especially when accompanied by frigates containing large troop contingents for immediate occupation). A battleship will often dominate an entire system with ease.

Carrier Carriers and supercarriers are designed to transport large numbers of immediately deployable fighters or shuttlecraft. They are not the most heavily armed ships around, and often rely on those fighters and on escorts to provide protection from enemy action. Carriers have among the best control computer systems, and are able to coordinate entire battlefields.

STARSHIP CLASS

Starships are categorized by class, which is a rough measure of tonnage. Here are some typical examples of ship types and their classes, although “ship type” is by no means a hard or fast rule.

Class	Tonnage	Crew	CU*	AGI**	Example
0-I	0-50	1	1	10 / 20	Starfighter
0-II	50-200	2	2	9 / 18	Space Shuttle
0-III	200-500	2	3	9 / 18	Cutter
0-IV	500-800	2	4	8 / 16	
0-V	800-1,000	3	5	8 / 16	
I	1,000-5,000	4	10	7 / 14	Courier, Light Freighter
II	5,000-15,000	5	40	6 / 13	Corvette
III	15,000-25,000	7	90	6 / 13	
IV	25,000-40,000	12	160	5 / 11	
V	40,000-60,000	20	250	5 / 11	Escort, Scout, Large Aircraft Carrier
VI	60,000-80,000	30	360	4 / 8	Escort, Scout, Transport, Heavy Freighter, Cruise Ship
VII	80,000-100,000	50	490	4 / 8	Destroyer, Transport, Scout, Heavy Freighter
VIII	100,000-120,000	100	640	3 / 7	Destroyer, Transport
IX	120,000-140,000	200	810	3 / 7	Destroyer, Frigate
X	140,000-160,000	300	1,000	3 / 7	Frigate
XI	160,000-180,000	400	1,210	2 / 6	Frigate, Cruiser
XII	180,000-210,000	500	1,440	2 / 6	
XIII	210,000-240,000	750	1,690	2 / 6	Battleship
XIV	240,000-300,000	1,000	1,960	1 / 4	Carrier
XV	300,000-350,000	2,000	2,250	1 / 4	
XVI	350,000-400,000	3,000	2,560	1 / 4	Supercarrier
XVII	400,000-450,000	4,000	2,890	1 / 4	
XVIII	450,000-500,000	5,000	3,240	1 / 4	
XIX	500,000-600,000	6,500	3,610	1 / 4	
XX	600,000-700,000	7,000	4,000	1 / 4	
XXI	700,000-850,000	8,000	4,410	1 / 4	
XXII	850,000-1,000,000	9,000	4,840	1 / 4	
XXIII	1,000,000-1,500,000	10,000	5,290	1 / 4	
XXIV	1,500,000-2,000,000	11,000	5,760	1 / 4	
XXV	2,000,000-3,000,000	12,000	6,250	1 / 4	Space Station
XXVI	3,000,000-5,000,000	13,000	6,760	1 / 4	
XXVII	5,000,000-7,500,000	14,000	7,290	1 / 4	
XXVIII	7,500,000-10,000,000	15,000	7,840	1 / 4	

*Cargo Units on military vessels are usually taken up by weapons, armor, and other military equipment.

**AGILITY / DEFENSE

Ship Construction Form

HULL CLASS	CLASS	CREW	AGILITY	CARGO	COST (MCr)
		CREW	AGILITY	CARGO	COST
QUALITY (LUX BONUS)	CONFIGURAION & FEATURES				
FUEL CAPACITY	FUEL UNITS		LANDING?	YES/NO	

CONTROL	FTL	Crew	DEF	SOAK	Wp Rng	Die Bonus	SPACE (CU)	COST (MCr)
Computer								
Sensors								

ENGINE	POWER	SPEED/FTL	FUEL EFF.	SPACE (CU)	COST (MCr)

SS, SHIELDS, ARMOR	AMNT/TYPE	DATA	SPACE (CU)	COST (MCr)
Additional SS (BASE: _____)		TOTAL SS		
Armor		SOAK		
Shields		POWER		

WEAPONS	NUMBER	RANGE	DAMAGE	ARCS	SPACE (CU)	COST (MCr)

**SHIP
TOTALS**

**CARRY TOTALS OVER TO
REAR OF SHEET**

SPACE (CU)	COST (MCr)

SS	DEFENCE	SPEED	FTL	SOAK	CARGO
TOTAL		PWR/CLASS	PWR/CLASS	SH&ARM/CLASS	AVAILABLE

Ship Construction Form

[illegible]

TONNAGE

STARTING CU	USED CU	LOAD (%)
		START/USED x 100
	TONNAGE	

FINAL VALUES

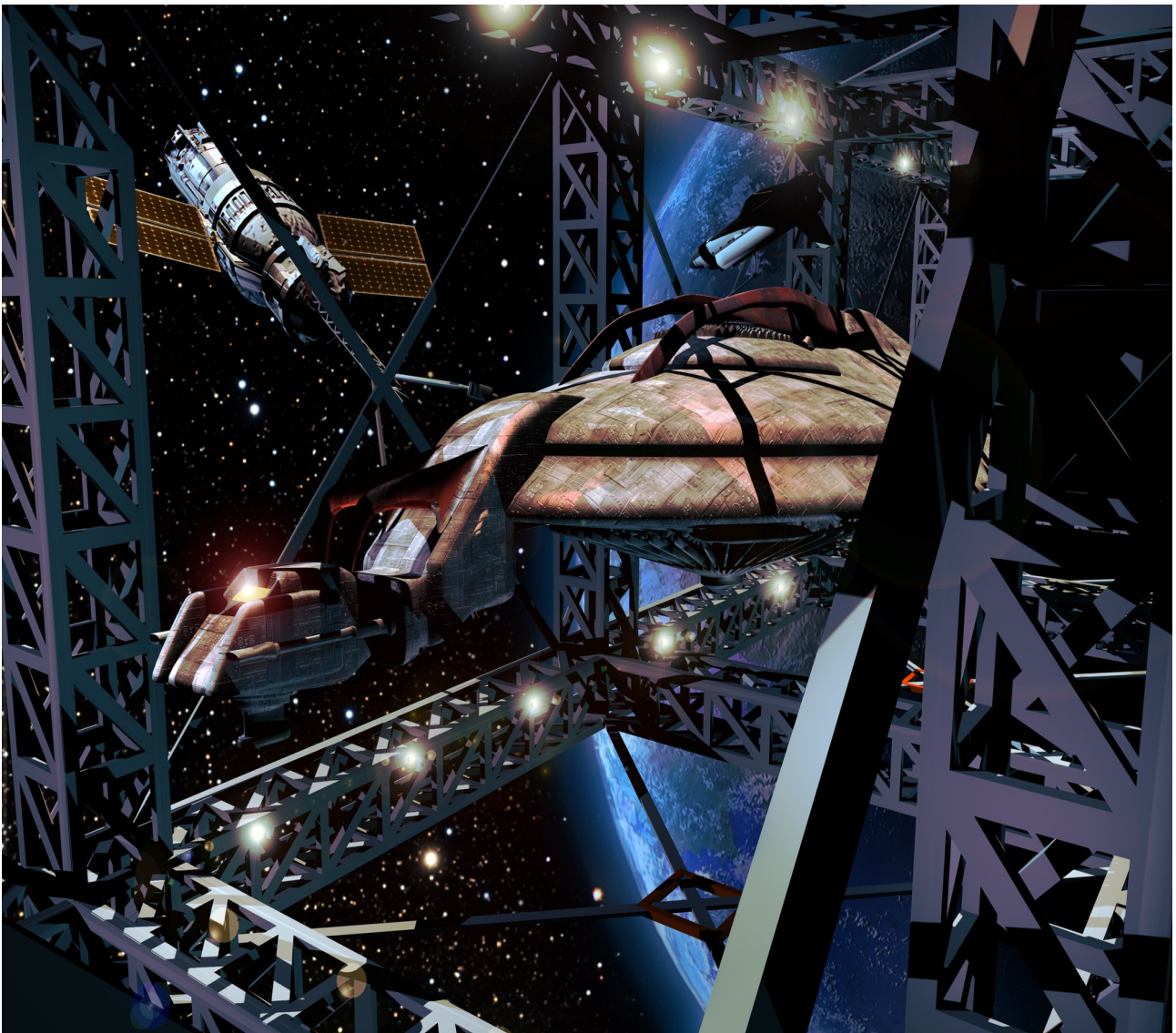
FUEL CAPACITY	FUEL RANGE	CREW / CREW COSTS
HULL + ALTERATIONS	CAPACITY x EFFICIENCY	/ CREW x 200
LUXURY	LUXURY %	MODIFIER
TOTAL	(LUX/CREW) x100%	SEE TABLE

DESIGNING A STARSHIP

The previous section introduced a number of concepts and guidelines. This section is where you actually design a starship. Use the Ship Construction Form on the preceding pages to design a starship as you follow the procedure below. The Ship Construction Form has been designed to help guide you through the process and record all relevant information at each point during the design process.

1. **Select a hull class.** This initial decision determines the size parameters of your ship design. It also determines your crew requirement, fuel capacity, cargo space, and AGILITY and DEFENSE values.
 1. Determine the initial LUXURY rating of the ship based on hull class and quality.
 2. Choose a basic hull configuration (scientific, exploration, combat, etc.) and note the adjustments granted by that configuration.
2. **Choose command and control systems.** These systems – the computer and the sensor systems – have important effects on various aspects of the ship, and can restrict or limit later choices.
 1. Record maximum FTL, adjust crew requirement, and note INITIATIVE, DEFENSE, and SOAK bonuses, if any, from the control computer system.
 2. Record maximum sensor range, weaponry range adjustments, DEFENSE bonuses, and scanning bonuses from the sensor systems.
3. **Choose sub-luminal engine(s).** These will determine the sub-luminal speed of the vessel.
 1. Note SPEED as total power from sub-luminal engines divided by the ship's hull class.
4. **Choose FTL engine(s).** These will determine the FTL capability of the vessel (although this is also limited by computer type, below).
 1. Note FTL speed as total power from FTL engines divided by the ship's hull class.
5. **Determine initial ship superstructure,** and then allocate additional SS and/or armor. Initial (base) SS is three times the vessel's class.
 1. Note armor SOAK as total armor divided by the ship's hull class.
6. **Select deflector shield(s) if required.**
 1. Note shield SOAK as total shield power divided by the ship's hull class.
7. **Allocate weaponry.** This includes all types of weapon systems, including lasers, disruptors, phasers, projectile cannons, torpedoes, warheads, blasters, ion beams, and more.
8. **Select additional ship equipment,** including cloaking devices, tractor beams, fuel scoops, fuel bay alterations, and more.
9. **Select shuttle/fighter bays (if any).** Not all ships will include shuttle or fighter bays.
10. **Choose ship facilities.** These include cabins, sick bays, labs, mess halls, bars, lounges, and more.
 1. Calculate the ship's LUXURY value from the total of all facilities, and add the initial LUXURY rating from the hull (above).
 2. The final LUXURY value is a percentage using the calculation $(\text{LUXURY}/\text{CREW}) \times 100\%$. Record this and determine the ship's overall die roll modifier.
11. **Determine final values.** These include fuel, cargo, crew, and other values.

1. Determine fuel capacity and range. Fuel capacity is based on hull size plus any fuel bay alterations (above). Range is one parsec per fuel unit, multiplied by the FTL engine's fuel efficiency rating.
 2. Calculate available cargo space based on the ship hull class' initial cargo designation minus the space of all components and items. Note that if the space requirement of the components exceeds the initial cargo space, some components will need to be removed.
 3. Calculate the ship's tonnage. This value is based on hull class and remaining cargo space. Divide the total cargo units used by the base cargo space for the hull class and multiply the result by 100%. This gives you the ship's LOAD as a percentage. Then, using the Ship Class Chart, locate the tonnage range of the ship's class. Deduct the lower range boundary from the higher to determine an overall tonnage range, and then add tonnage to the lower boundary as a percentage of the tonnage range as determined by the LOAD percentage.
 4. Calculate monthly crew costs (200 Cr. times the crew compliment per month).
12. **Record starship** You should now copy your starship specifications from your Ship Construction Form onto a Ship Recognition Readout. You will find a blank one at the end of this guide.



HULL DESIGN

A basic starship hull is largely a shell with power routings, modular equipment couplings, and very basic engines and command/control systems. There are two components to a hull design – it's *class*, and its *configuration*. The class determines its overall size, while its configuration determines its type and purpose.

HULL CLASS

The ship's class determines most of the hull's basic characteristics – crew requirements, cargo space, and the vessel's basic agility. A basic hull cost in megacredits is five times the square of the ship class.

Ship Class	Hull Cost	Crew	Cargo	AGI/DEF	LUXURY	FUEL
I	5 MCr	4	10	7 / 14	1	1
II	20 MCr	5	40	6 / 13	2	8
III	45 MCr	7	90	6 / 13	3	27
IV	80 MCr	12	160	5 / 11	4	64
V	125 MCr	20	250	5 / 11	5	125
VI	180 MCr	30	360	4 / 8	6	216
VII	245 MCr	50	490	4 / 8	7	343
VIII	320 MCr	100	640	3 / 7	8	512
IX	405 MCr	200	810	3 / 7	9	729
X	500 MCr	300	1,000	3 / 7	10	1,000
XI	605 MCr	400	1,210	2 / 6	11	1,331
XII	620 MCr	500	1,440	2 / 6	12	1,728

A hull – on its own – is actually a working ship. Many basic cargo ships are hulls with no modifications needed, operating with the most basic of integrated systems. They're slow, however, with a SPEED of 2 and no FTL capability.

A ship's hull can also determine its appearance and the quality of the interior in terms of furnishings and crew comfort. A more comfortable ship increases the vessel's basic LUXURY rating, which in turn means a happier and better motivated crew. LUXURY can be increased further with the addition of specific facilities. Multiply the ship's class by its Luxury Modifier (below). A standard hull has a Luxury Modifier of 1.

Hull Quality	Cost	Luxury Modifier
Standard	x1	1
High Quality	x3 then +100	2
Superior Quality	x5 then +250	4
Mastercraft Quality	x10 then +500	6
Artisan Quality	x100 then +1,000	8
Unique	x1,000 then +2,500	10

HULL CONFIGURATION

Basic hull designs offer different benefits. The basic hull design, once set, cannot be changed. Select one of the following basic hull designs. This does not cost anything extra.

Hull Configuration	Features
Scientific	Science and research vessels gain +1 die bonus to sensor usage, and may install laboratories and medical facilities for half the cost.
Exploration	Exploration vessels gain +1 to their FTL speed, and +20% to their fuel range.
Combat	Military vessels designed for combat have double the regular SS OR +2 to their AGILITY.
Transport	Transport vessels gain a bonus 20% base cargo space.
Passenger	Passenger ships gain a 50% base LUXURY bonus.
Carrier	Carriers are designed to carry other, small vessels – fighters, shuttles, and so on. Space requirements for shuttle/fighter bays are reduced by half.
Atmosphere	Most ships suffer large penalties when operating within an atmosphere (half AGILITY and SPEED) but those designed specifically with atmospheric operation in mind do not suffer those penalties.

This is a basic set of hull configurations. Other configurations may exist, but are not dealt with in this rulebook.

LANDING CAPABILITY

Giving a starship landing capability doubles the base cost of the hull (before quality multipliers are applied) and reduces sub-luminal SPEED by 1 point.

COMMAND & CONTROL SYSTEMS

Nearly every function on a vessel interacts in some way with the computer. The computers, sensors, and engineering facilities on a starship make up a large part of its efficiency and effectiveness. Faster computers allow a ship to react more quickly in combat situations, while more sensitive sensor systems enable the crew to gather more information about their surroundings. A basic hull comes with a standard integrated computer and sensors, but more powerful systems are needed for effective combat calculations and FTL planning. The computing power aboard a starship can be underestimated in its importance.

Computer System A ship's computer system is able to perform faster-than-light calculations for FTL travel, and ties directly into the sensor array. Data storage in a ship's computer is so efficient that the concept of storage capacity does not factor into computer design any more. Some computer systems have a basic AI, while others do not.

Sensor Array A sensor array is a collection of sensors and sub processors designed to gather and collate information. They include navigational and combat sensors, as well as equipment which measures and records the environment capable of detecting a wide range of phenomena.

Max FTL This value indicates the maximum speed at which the complex FTL navigational calculations can be made. This is separate to the FTL capability provided by the engines themselves. The ship's actual maximum FTL is the lower of the two values.

Crew Adjustment Superior computers reduce the need for crew as many tasks can be automated. This adjustment is a percentage reduction from the base crew requirement determined by the hull class. There is always a minimum crew requirement of 1.

Sensor Range This indicates the range of the shipboard sensors, in miles. See the *Scanning* section of this rulebook for more information on shipboard scanning procedures.

Max Weaponry Range Inc This puts a limit on the maximum range increment of installed weaponry. Note that this is a range increment, not a maximum range. Both sensors and computers create maximum range increments; the ship uses the lower of the two.

Attributes This refers to initiative (AGI) checks (for computers) and scanning (INT) checks (for sensors).

DEFENSE Bonus Both computer and sensors can grant DEFENSE bonuses to a vessel. Sensors can identify early indications of incoming weapons-fire, while computers can automatically make minor evasive adjustments.

SOAK Bonus Some computers are able to automatically seal bulkheads, divert power, and otherwise take measures to reduce the damage received from incoming fire. These computers take up a lot of space with components in all parts of the ship.

SAMPLE COMMAND & CONTROL SYSTEMS

SMALL COMMAND & CONTROL SYSTEMS								
Control Computers	Cost	Space	Max FTL	Crew	Rng Inc	SOAK	DEFENSE	Checks
SM-1	3 MCr	1	2	-	5	-	-	+0 dice
SM-1H	109 MCr	1	4	-5%	7	+1	+1	+1 die
Sensor Systems	Cost	Space	Range					Checks
SS-1	4 MCr	1	200mi		5		-	+0 dice
SS-2	8 MCr	1	400mi		6		-	+0 dice
SS-2H	224 MCr	1	800mi		8		+1	+1 die
MEDIUM COMMAND & CONTROL SYSTEMS								
Control Computers	Cost	Space	Max FTL	Crew	Rng Inc	SOAK	DEFENSE	Checks
MM-1	15 MCr	3	2	-	10	-	-	+0 dice
MM-2	30 MCr	3	3	-1%	11	-	-	+0 dice
MM-3	45 MCr	3	4	-2%	11	-	+1	+0 dice
MM-3H	345 MCr	3	8	-7%	13	+1	+2	+1 die
Sensor Systems	Cost	Space	Range					Checks
MS-1	20 MCr	3	400mi		10		-	+0 dice
MS-1H	160 MCr	3	800mi		12		+1	+1 die
MS-2	40 MCr	3	600mi		11		-	+0 dice
LARGE COMMAND & CONTROL SYSTEMS								
Control Computers	Cost	Space	Max FTL	Crew	Rng Inc	SOAK	DEFENSE	Checks
LM-1	30 MCr	5	4	-	15	+1	-	+0 dice
LM-2	60 MCr	5	5	-1%	16	+1	-	+0 dice
LM-2H	380 MCr	5	10	-6%	18	+2	+1	+1 die
Sensor Systems	Cost	Space	Range					Checks
LS-1	40 MCr	5	600mi		15		-	+0 dice
LS-2	80 MCr	5	800mi		16		-	+0 dice
LS-2H	160 MCr	5	1,400mi		18		+1	+1 die
ENORMOUS COMMAND & CONTROL SYSTEMS								
Control Computers	Cost	Space	Max FTL	Crew	Rng Inc	SOAK	DEFENSE	Checks
EM-1	45 MCr	10	4	-5%	20	+2	-	+0 dice
EM-1H	235 MCr	10	8	-10%	22	+3	+1	+1 die
Sensor Systems	Cost	Space	Range					Checks
ES-1	60 MCr	10	800mi		20		-	+0 dice
ES-1H	280 MCr	10	1,600mi		22		+1	+1 die
ES-2	120 MCr	10	1,000mi		21		-	+0 dice
GIGANTIC COMMAND & CONTROL SYSTEMS								
Control Computers	Cost	Space	Max FTL	Crew	Rng Inc	SOAK	DEFENSE	Checks
GM-1	75 MCr	20	4	-10%	25	+3	-	+0 dice
GM-1H	325 MCr	20	8	-15%	27	+4	+1	+1 die
Sensor Systems	Cost	Space	Range					Checks
GS-1	100 MCr	20	1,000mi		25		-	+0 dice
GS-2	200 MCr	20	1,200mi		26		-	+0 dice
GS-2H	800 MCr	20	2,200mi		28		+1	+1 die

ENGINES & POWER

A ship's power comes from its engines. Basic engines come integrated in a ship's hull type, and provide minimal power. Upgrading the engines is often a new captain's first project. The existing engines cannot be sold or exchanged; they have an effective value of zero.

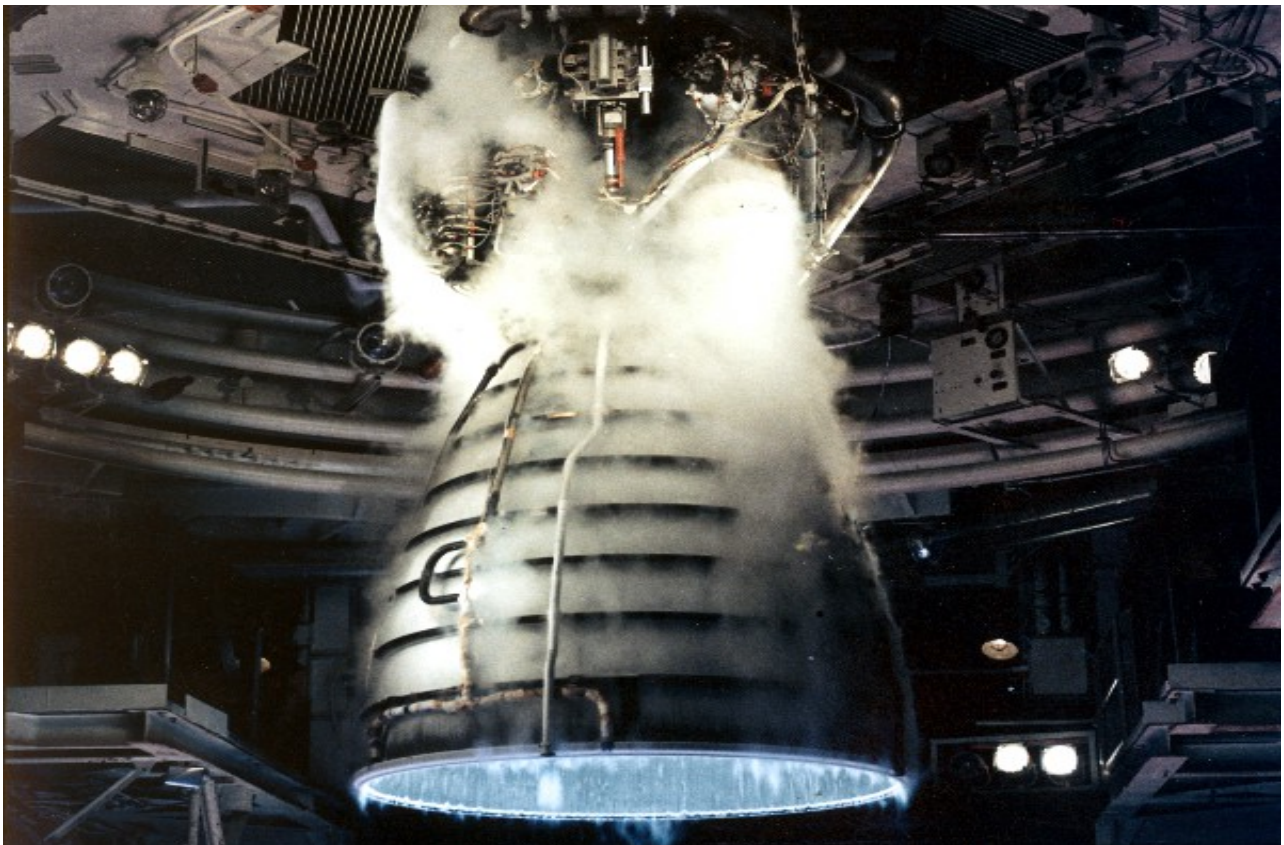
There are many types of starship propulsion and power systems. Listed below are some common civilian systems, from liquid fuel or fusion systems to more advanced antimatter or hyperdrive engines. Not all engines provide FTL capability; and FTL engines cannot be used at sub-luminal speeds. For this reason, a vessel may need more than one engine – perhaps a fusion reactor and a hyperdrive system. An engineer will need to balance ship class, space, power, FTL capability and fuel efficiency to obtain her desired outcome.

Speed A ship's sub-FTL speed is equal to the subluminal engine power divided by the ship's class. Multiple subluminal engines can be mounted on a ship in order to increase the power available; the power is simply totaled.

FTL A ship's FTL speed is equal to the FTL engine power divided by the ship's class. Multiple FTL engines can be mounted on a ship in order to increase the power available; the power is simply totaled. Note that FTL is also limited by the ship computer's Max FTL rating.

FE refers to fuel efficiency. When calculating the fuel costs for a journey, the costs are multiplied by the engine's fuel efficiency rating. Fuel efficiency is calculated separately for FTL and subluminal propulsion systems. A vessel's fuel range is equal to its fuel capacity multiplied by its fuel efficiency rating.

Mixing Engines Generally, a vessel cannot support multiple types of FTL or multiple types of sub-luminal engine; they will not work together. When a vessel has more than one engine, both must be the same type. In theory you could physically mount additional types of engine, but you can't use them at the same time as each other.



SAMPLE SUB-LUMINAL ENGINES

SMALL SUB-LUMINAL ENGINES				
Sub-luminal Engine	Cost	Space	Power	Fuel Efficiency
Star Corporation SF-1 fusion reactor	7 MCr	11	12	1.2
Star Corporation SF-2 fusion reactor	11 MCr	12	19	1.2
Satellite Concepts SI-1 ion engine	5 MCr	4	7	1.4
Satellite Concepts SI-2 ion engine	8 MCr	4	11	1.4
Newline-Silverwide Systems SL-1 liquid fuel rocket	1 MCr	1	11	0.5
Newline-Silverwide Systems SL-2 liquid fuel rocket	3 MCr	1	13	0.5
Comet Lines SS-1 solar sail	1 MCr	5	3	-
MEDIUM SUB-LUMINAL ENGINES				
Sub-luminal Engine	Cost	Space	Power	Fuel Efficiency
WarpCo Alliance MF-1 fusion reactor	11 MCr	23	33	1.2
WarpCo Alliance MF-2 fusion reactor	25 MCr	21	37	1.3
Oshiro Shipping MI-1 ion engine	11 MCr	10	18	1.4
Oshiro Shipping MI-2 ion engine	25 MCr	9	21	1.6
Turner-Koga Inc ML-1 liquid fuel rocket	3 MCr	1	17	0.5
Turner-Koga Inc ML-2 liquid fuel rocket	7 MCr	1	25	0.6
Panlight Universal MS-1 solar sail	2 MCr	10	7	-
LARGE SUB-LUMINAL ENGINES				
Sub-luminal Engine	Cost	Space	Power	Fuel Efficiency
Narita-Guo Union LF-1 fusion reactor	26 MCr	40	53	1.2
Narita-Guo Union LF-2 fusion reactor	51 MCr	34	45	1.4
DeltaLight products LI-1 ion engine	22 MCr	22	26	1.4
DeltaLight products LI-2 ion engine	41 MCr	25	32	1.4
SunCo Livestock LL-1 liquid fuel rocket	6 MCr	4	35	0.5
SunCo Livestock LL-2 liquid fuel rocket	14 MCr	3	30	0.6
Stellar products LS-1 solar sail	3 MCr	22	12	-
ENORMOUS SUB-LUMINAL ENGINES				
Sub-luminal Engine	Cost	Space	Power	Fuel Efficiency
OmniDyne Lines EF-1 fusion reactor	55 MCr	84	82	1.2
OmniDyne Lines EF-1 fusion reactor	94 MCr	73	92	1.4
Sunbeam Technologies EI-1 ion engine	38 MCr	37	38	1.4
Sunbeam Technologies EI-2 ion engine	73 MCr	30	49	1.4
Carter Psitech EL-1 liquid fuel rocket	14 MCr	9	50	0.5
Carter Psitech EL-2 liquid fuel rocket	30 MCr	10	71	0.7
Du-Bobrikov Company ES-1 solar sail	7 MCr	47	19	-
GIGANTIC SUB-LUMINAL ENGINES				
Sub-luminal Engine	Cost	Space	Power	Fuel Efficiency
Sun Technologies GF-1 fusion reactor	134 MCr	131	105	1.2
Sun Technologies GF-2 fusion reactor	292 MCr	112	174	1.2
WayDyne Incorporated GI-1 ion engine	80 MCr	88	53	1.4
WayDyne Incorporated GI-2 ion engine	132 MCr	103	96	1.6
Highlight Robotics GL-1 liquid fuel rocket	30 MCr	16	69	0.5
Highlight Robotics GL-2 liquid fuel rocket	70 MCr	15	99	0.5
Panwatch Metallurgy GS-1 solar sail	19 MCr	92	35	-

SAMPLE FTL ENGINES

SMALL FTL ENGINES				
FTL Engine	Cost	Space	Power	Fuel Efficiency
Cui-Green Alliance SH-1 hyperdrive	12 MCr	2	4	0.8
Cui-Green Alliance SH-2 hyperdrive	26 MCr	3	5	1.0
Cui-Green Alliance SH-3 hyperdrive	53 MCr	2	8	1.0
Warpdyne Asteroid Mining SA-1 antimatter engine	17 MCr	5	6	1
Warpdyne Asteroid Mining SA-2 antimatter engine	35 MCr	4	8	1.1
TransCo NewStellar ST-1 tachyon sail	48 MCr	6	7	-
Highwatch SC-1 tachyon conduit system	64 MCr	4	15	1.6
MEDIUM FTL ENGINES				
FTL Engine	Cost	Space	Power	Fuel Efficiency
Outerdyne DayCorp MH-1 hyperdrive	33 MCr	4	9	0.8
Outerdyne DayCorp MH-2 hyperdrive	64 MCr	3	10	0.9
White AgriSpace MA-1 antimatter engine	34 MCr	11	15	1.0
White AgriSpace MA-2 antimatter engine	84 MCr	10	18	1.0
White AgriSpace MA-3 antimatter engine	114 MCr	9	28	1.3
Micro PrimeTech MT-1 tachyon sail	93 MCr	15	15	-
Arakaki-Cao Union MC-1 tachyon conduit system	119 MCr	9	28	1.6
LARGE FTL ENGINES				
FTL Engine	Cost	Space	Power	Fuel Efficiency
Kinjo Hardware LH-1 hyperdrive	49 MCr	7	16	0.8
Kinjo Hardware LH-2 hyperdrive	118 MCr	6	20	0.8
Kinjo Hardware LH-2H hyperdrive	231 MCr	5	19	1.0
Newdyne Concepts LA-1 antimatter engine	92 MCr	18	20	1.0
Newdyne Concepts LA-2 antimatter engine	180 MCr	19	25	0.9
Newdyne Concepts LA-3 antimatter engine	261 MCr	19	42	1.4
Shooting Star LT-1 tachyon sail	160 MCr	26	27	-
Transwide Products LC-1 tachyon conduit system	288 MCr	14	40	1.6
ENORMOUS FTL ENGINES				
FTL Engine	Cost	Space	Power	Fuel Efficiency
Stellar Group EH-1 hyperdrive	109 MCr	13	24	0.8
Stellar Group EH-2 hyperdrive	240 MCr	10	30	0.9
Panwatch-Microbeam EA-1 antimatter engine	140 MCr	33	32	1.0
Panwatch-Microbeam EA-2 antimatter engine	336 MCr	35	57	1.0
Panwatch-Microbeam EA-2H antimatter engine	589 MCr	51	73	1.1
Panwatch-Microbeam EA-2S antimatter engine	1,369 MCr	44	76	1.4
Frontier Yards ET-1 tachyon sail	259 MCr	47	44	-
Star Products EC-1 tachyon conduit system	515 MCr	30	75	1.6
GIGANTIC FTL ENGINES				
FTL Engine	Cost	Space	Power	Fuel Efficiency
Highfarer Enterprises GH-1 hyperdrive	256 MCr	38	44	0.8
Highfarer Enterprises GH-2 hyperdrive	481 MCr	30	60	0.9
Yang Astrotech GA-1 antimatter engine	374 MCr	87	72	1.0
Yang Astrotech GA-2 antimatter engine	721 MCr	79	79	1.1
Butler Grav Vehicles GT-1 tachyon sail	569 MCr	117	55	-
Long Transport GC-1 tachyon conduit system	1,254 MCr	68	125	1.6

Antimatter Engine (A) Antimatter is a potent power source. Antimatter is stored in special magnetic fields and annihilated by mixing it with regular matter in controlled explosions. This energy is then used to create an artificial bubble of space-time around the vessel known as a 'displacement field', enabling it to travel at FTL speeds. This system is sometimes referred to as a 'warp' drive. The engine core of such a system is highly radioactive and dangerous, and is usually designed so that it can be ejected easily should the matter/antimatter containment fields fail.

Fusion Reactor (F) A fusion reactor is an efficient solution for long-term use in space, and does not require a large fuel supply. Advanced fusion drives are often referred to as "impulse engines" and are considered clean and safe. The system works by generating electrical (ion) propulsion rather than providing direct thrust from the fusion reactions themselves.

Hyperdrive (H) A hyperdrive system enables a vessel to reach FTL speeds by travelling through hyperspace (sometimes referred to as subspace, zero-space, nullspace, slipspace, and more). There are different theories on why this works – the two most popular are that the distance in hyperspace is shorter than in real space, or that physical laws work differently there, with the speed of light not being a barrier. In hyperspace, ships cannot interact with the real universe. Hyperdrive calculations are complex and require heavy processing power and care.

Ion Engines (I) Ion engines (or ion drives) use electric fields to propel ions away from a spacecraft. They generate a fairly low yield, often requiring multiple drives on a larger ship. Ions are atoms with a charge (positive or negative), one of which get pushed out the back of the spacecraft to move it forward. Despite the low yield, ion engines are cheap and a common choice for sublight propulsion.

Liquid Fuel Propulsion System (L) These systems are the most primitive of spacefaring subluminal propulsion systems, consisting of a chemical rocket which fires explosive energy out of the back in order to propel the vehicle forward. Originally, these systems used carbon fuels but quickly moved on to liquid oxygen and liquid hydrogen combination systems. In later years, more exotic liquid propellants like duranium plasma mixtures were developed.

Solar Sail (S) Instead of using fuel, a solar sail works much like the sail on a sailboat – it is pushed along by light (either generated by a laser, or the natural light of a star). Solar sails are common on some leisure craft and space yachts, and are also a popular sporting technology used in races. A ship which uses a solar sail is often called a 'lightship'.

Tachyon Conduit (C) This is an advanced form of FTL travel. Artificially produced tachyons are emitted in bursts which forms a matter stream (or conduit) upon which the ship can effectively "ride". These systems are highly effective, although likely out of the range of most spacefaring civilizations and – in most settings, at least – would be a highly experimental system at best.

Tachyon Sail (T) A tachyon sail works the same way as a solar sail, with one primary difference: instead of light, the sail catches natural tachyon streams which enables the vessel to move at superluminal velocities. This method of propulsion is not common – it generates less power than other FTL systems, and requires expensive, exotic materials. Interestingly, it's a very ancient technology.

SUPERSTRUCTURE, SHIELDS & ARMOR

There are various ways in which a starship can protect itself from attack or from the hazards of interstellar space. The most common methods include deflector shields, armor, and point defenses.

SS & ARMOR

The hull of a ship is made up of its SUPERSTRUCTURE. SUPERSTRUCTURE, much like the HEALTH of a character, is a measure of how much damage a ship has taken. Every time the ship gets hit by a weapon, meteorite, or other hazard, damage reduces its SS. When the ship has 0 SS left, it is destroyed and forms a countdown pool prior to explosion.

A basic ship's SUPERSTRUCTURE is equal to three times its ship class. This typically isn't a lot, and many ships have additional superstructure added to the hull. Superstructure is cheaper and lighter than armor; but it does deplete, which armor does not tend to do.

SS/Armor	Space (CU)	Cost	Notes
Additional SS	1 per SS	0.5 MCr per SS	Base (free) SS = ship class
Armor, reactive	10 per 1 armor point	10 MCr per armor point	1 SOAK per armor point/class vs. impact; 1.5 SOAK per armor point/class vs energy.
Armor, ablative	10 per 1 armor point	10 MCr per armor point	1 SOAK per armor point/class vs. energy; 1.5 SOAK per armor point/class vs impact.

SUPERSTRUCTURE Superstructure consists of duranium or tritanium plating, pylons, nacelles, and bulkheads. To a lesser extent, it also includes life support systems, engine mounts, and radiation shielding, and is a general measure of a ship's structural integrity. To add additional SS to a vessel, simply use the table above to calculate the cost and space required. This additional SS is added to the vessel's base SS value.

Armor Armor is heavier plating designed to absorb kinetic and energy damage from weapons. Armor is spread around the ship. As with shields (below), the larger an area each armor point needs to cover, the less protection it is able to offer. Smaller ships typically cannot afford the space and weight for armor. Armor cannot exceed a ship's SUPERSTRUCTURE. The SOAK value stacks with that of shields.

There are two basic types of armor – *reactive* and *ablative*. Reactive armor reacts to impacts to reduce damage and works best against impact damage from projectiles and the like; ablative armor prevents damage by vaporizing, and works best against energy damage. Heat shields were an early form of ablative armor, protecting early spacecraft from burning up during atmospheric reentry.

Armor can be mixed freely by simply adding together the SOAK values versus impact and energy damage. For example, 4 points of ablative plus 6 points of reactive armor combines to make 4 impact and 6 energy SOAK from the former plus 9 impact and 6 energy SOAK from the latter, making 13 impact and 12 energy SOAK total.

Other armor types can exist, some of which are designed for protection against specific damage types. Other advanced forms include regenerative ablative armor. Armor can be referred to in various ways – plating, reinforcement, and have various names like polarized hull plating.

DEFLECTOR SHIELDS

Deflector shields (also referred to as screens or force-fields) are a technology devised to protect ships, stations, and sometimes even planets from damage. A deflector shield is a (usually invisible) field projected around an object which disperses or deflects energy and projectiles. The shields may use various energy types to create the fields – magnetic fields, gravitons, and so on – but most have much the same effect.

Shields are not typically raised at all times (although navigational shields stay active permanently; larger shields have a lower navigational power level which is used during normal travel). Shield capacity is directly proportional to the power generated divided by the size of the area to be protected.

Earlier shields typically project an elliptical field around the object to be protected, while more advanced versions conform to the contours of the ship within a few feet or so.

Generators Deflector shields are created by shield generators or projector; ships will typically have multiple generators which combine to form one shield generation system. There is no limit to the number of shield generators allowed, space and cost permitting.

Power Shields grant the vessel a SOAK value. A shield generator outputs a specific amount of power; for a given generator, the larger the vessel the lower the protective value of the shields. A shield provides a SOAK value equal to the shield's power divided by the ship's class (round up). For example, a shield which provides 60 power gives a class VIII ship a SOAK value of 8; that same shield generator would give a smaller class V ship a SOAK value of 12. For multiple shield generators, simply add up the individual power values to create a total and then divide by the ship's class.

Configuration By default, shield generators protect the entire vessel equally. However, shield generators can be installed in directional configurations designed to give more protection to the forward, aft, port, or starboard sides of the ship. If a given shield generator covers only one direction, it offers twice the protection in that direction (and none in any other direction). Concentrating shield power in this manner can make a vessel very well protected from certain directions, but it can leave weak points if other directions are left unprotected. This shield configuration is a hardware set-up, and cannot be altered without major engineering effort (note that some starship combat tricks can allow characters to temporarily divert power to specific shields).

SAMPLE DEFLECTOR SHIELD SYSTEMS

SMALL DEFLECTOR SHIELD SYSTEMS			
Deflector Shields	Cost	Space	Power
DayCorp Systems SSN-1 navigational shield generator	2 MCr	2	1
DayCorp Systems SSN-2 navigational shield generator	4 MCr	1	1
Parsec Group SSC-1 civilian deflector screen	3 MCr	4	3
Parsec Group SSC-2 civilian deflector screen	7 MCr	2	4
Tyler Mechanics SSM-1 combat shield system	8 MCr	4	5
Tyler Mechanics SSM-2 combat shield system	16 MCr	3	7
MEDIUM DEFLECTOR SHIELD SYSTEMS			
Deflector Shields	Cost	Space	Power
Sato-Litvak Syndicate MSN-1 navigational deflector screen	3 MCr	6	7
Sato-Litvak Syndicate MSN-2 navigational deflector screen	6 MCr	4	9
Waybreak Exploration MSC-1 civilian shield generator	9 MCr	14	10
Waybreak Exploration MSC-2 civilian shield generator	14 MCr	15	15
Satellite Yards MSM-1 combat deflector shields	23 MCr	15	23
Satellite Yards MSM-2 combat deflector shields	31 MCr	12	33
LARGE DEFLECTOR SHIELD SYSTEMS			
Deflector Shields	Cost	Space	Power
Mekhdiev LSN-1 navigational deflector shields	7 MCr	11	16
Mekhdiev LSN-2 navigational deflector shields	13 MCr	8	20
Liu Maltech LSC-1 civilian deflector screens	18 MCr	28	27
Liu Maltech LSC-2 civilian deflector screens	33 MCr	28	35
Overcorp-Pan Prime LSM-1 combat sheld generator	30 MCr	42	34
Overcorp-Pan Prime LSM-2 combat sheld generator	66 MCr	45	37
ENORMOUS DEFLECTOR SHIELD SYSTEMS			
Deflector Shields	Cost	Space	Power
Westdyne Enterprises ESN-1 cruiser navishield solution	14 MCr	24	25
Westdyne Enterprises ESN-2 cruiser navishield solution	30 MCr	25	32
Yang-Chen Co ESC-1 civilian shield generator	30 MCr	56	32
Yang-Chen Co ESC-2 civilian shield generator	51 MCr	62	41
Cui-Cui Systems ESM-1 combat deflector screens	60 MCr	69	60
Cui-Cui Systems ESM-2 combat deflector screens	128 MCr	68	76
GIGANTIC DEFLECTOR SHIELD SYSTEMS			
Deflector Shields	Cost	Space	Power
Highgraphics-Warpwide GSN-1 navigation screens	33 MCr	45	34
Highgraphics-Warpwide GSN-2 navigation screens	71 MCr	49	34
Lunar Foundation GSC-1 civilian deflector shields	52 MCr	75	51
Lunar Foundation GSC-2 civilian deflector shields	117 MCr	59	60
Huang DEFENSE GSM-1 ultimate series combat shield	152 MCr	144	93
Huang DEFENSE GSM-2 ultimate series combat shield	266 MCr	115	116

Shields, navigational Navigational shields are sufficient to protect a vessel against most minor space hazards – cosmic radiation, micrometeorites, and more.

Shields, civilian The type of shield usually found on merchant or trader ships, as well as on pirate ships which cannot afford the better military shields, these will protect against smaller weaponry.

Shields, combat Combat shields are powerful and are able to soak up the damage from much more powerful attacks. The very best combat shields, found on cruiser-sized vessels and larger, can withstand attacks from torpedo salvos with ease.

Shields exist in a wide variety; those in this rulebook are some basic varieties. Others might include multiphasic shielding, covariant shielding, ray shields (best against energy attacks), particle shields (best against physical impact), shift shields, relativistic shields, and more.

Design Advice When assessing the effectiveness of a deflector shield system, take into account that the average damage dealt by standard basic-model weaponry is 4 for a small weapon, 8 for a medium weapon, 12 for a large weapon, 17 for an enormous weapon, and 21 from a gigantic weapon. This is what a vessel's shield SOAK (power divided by class) is compared directly against. Most military designers achieve near complete protection against ships 3-4 classes smaller, and 50% protection from comparable ships. When averaged out, this means that minimum desired power outputs for effective combat operations at various ship sizes are roughly as follows. It should also be noted that on average weapon output increases on average by about 3 every 5 years, assuming a development iteration of roughly 7 years. For this reason, my designs always targeted roughly 20% above the recommended minimums.

– Admiral Engineer Charles Romanoff

Class	Desirable Power	SOAK
I	5	5
II	10	5
III	18	6
IV	24	6
V	35	7
VI	48	8
VII	63	9
VIII	80	10
IX	99	11
X	120	12
XI	143	13
XII	168	14
XIII	195	15

WEAPONRY

Weaponry is a vital part of starship design. From lasers, phasers, blasters, and disruptors to torpedoes, warheads, and railguns, the number of ways the basic idea of “fire something at your target to damage it” is immeasurable. This chapter can only hope to skim a few examples, but entire libraries would be needed to catalog all the weapons and their variations available. For that reason, this section is only a very basic overview of a few common weapon types.

Generally speaking, the size category of a weapon determines its base damage, while its type determines its damage type, range, and other properties.

Range This is the weapon's basic range increment. In the void of space, there's nothing to actually stop a missile or energy attack except for other ships. The attacker takes a -1 die penalty per range increment (or part thereof) beyond the first. Note that a ship's computer and its sensors also put upper limits on the range increment, making the range increment the lowest of the three (weapon, computer, sensors).

Attack This represents the accuracy of a weapon, generally in the form of a die bonus to hit.

Damage This column indicates the damage and damage type that the weapon inflicts if it hits a target.



SAMPLE WEAPONS

SMALL WEAPON SYSTEMS

Weapon System	Cost	Space	Range	Attack	Damage
Tan-Korovin Enterprises SBP-1 <i>Hotbuster</i> pulse blaster	5 MCr	1	4	+0 dice	2 dice heat
Mekhdiev Construction SDB-1 <i>Thunderray</i> beam disruptor	9 MCr	1	5	+0 dice	1 die heat
Nakamura Robotics SIC-1 <i>Starbird</i> ion cannon	7 MCr	1	5	+0 dice	1 die ion
Narita Maltech SLP-1 <i>Blackbuster</i> pulse laser	5 MCr	1	3	+0 dice	2 dice heat
Thomas Foundation Spab-1 <i>Skybow</i> particle beam	12 MCr	1	5	+0 dice	1 die heat
Star Products SHB-1 <i>Deathsword</i> phaser system	13 MCr	1	6	+0 dice	1 die heat
Omnitech-Prime SPR-1 <i>Skyrain</i> magnetic railgun	3 MCr	1	2	+0 dice	2 dice impact
Terra Prime SCCI-1 <i>Starbuster</i> cluster concussion missile launcher	23 MCr	1	7	+0 dice	2 dice impact
Long-Summers Industries SPPx-1 <i>Stingstorm</i> photonic torpedo	20 MCr	1	7	+1 die	1 die heat
Cui-Cook Systems SNPx-1 <i>Starspear</i> nuclear warhead	5 MCr	1	5	+1 die	2 dice heat/radiation

MEDIUM WEAPON SYSTEMS

Weapon System	Cost	Space	Range	Attack	Damage
Translight Colonization MBB-1 <i>Bigflash</i> beam blaster	9 MCr	3	6	+0 dice	2 dice heat
WarpSun Incorporated MDB-1 <i>Flamefury</i> pulse disruptor	21 MCr	4	5	+0 dice	3 dice heat
Transbeam Art MIB-1 <i>Drainpipe</i> ion beam	12 MCr	3	10	+0 dice	2 dice ion
Galactic Company MLB-1 <i>Skysteel</i> beam laser	8 MCr	3	10	+0 dice	2 dice heat
Daybeam-Microsun MpaC-1 <i>Hellbolt</i> particle cannon	31 MCr	3	9	+0 dice	2 dice heat
Highbreak Liquids MHP-1 <i>Fireswarm</i> pulse phaser	35 MCr	3	8	+0 dice	3 dice heat
Overbeam Biotech MPC-1 <i>Sunbow</i> projectile cannon	6 MCr	3	9	+0 dice	2 dice impact
Waywatch Lines MCPx-1 <i>Redswarm</i> proximity concussion missile	45 MCr	4	13	+1 die	2 dice impact
Highwide Works MPPx-1 <i>Thunderbat</i> proximity photonic torpedo	50 MCr	3	14	+1 die	2 dice heat
Highstellar Ltd. MNPx-1 <i>Bigbow</i> nuclear warhead	11 MCr	4	12	+1 die	2 dice heat/radiation

LARGE WEAPON SYSTEMS

Weapon System	Cost	Space	Range	Attack	Damage
Microtech Alliance LBP-1 <i>Stingmaker</i> pulse blaster	21 MCr	9	6	+0 dice	4 dice heat
UltraCo-NewCo LDP-1 <i>Redfury</i> disruptor beam	58 MCr	12	10	+0 dice	3 dice heat
Southtech Heavy Weapons LIC-1 <i>Bigstreak</i> ion cannon	33 MCr	8	14	+0 dice	3 dice ion
Waywatch Lines LLP-1 <i>Firespear</i> pulse laser	21 MCr	8	7	+0 dice	4 dice heat
Weststellar Ltd. LPaB-1 <i>Hellseeker</i> particle beam	66 MCr	11	15	+0 dice	3 dice heat
North Prime Weapons LHB-1 <i>Redsword</i> phaser beam	68 MCr	11	15	+0 dice	3 dice heat
North Prime Weapons LHB-1H <i>Redsword</i> phaser beam	216 MCr	9	13	+1 die	5 dice heat
Hydyne Merccants LPR-1 <i>Darksword</i> railgun	15 MCr	11	8	+0 dice	4 dice impact
Galaxy Society LCCI-1 <i>Stingbird</i> cluster missiles	120 MCr	11	21	+0 dice	4 dice impact
Wayfarer Aeronautics LPPx-1 <i>Flamespear</i> photonic torpedo	117 MCr	8	19	+1 die	3 dice heat
MegaCorp-Panstellar Lines LNPx-1 <i>Blackfury</i> nuclear warhead	26 MCr	8	14	+1 die	3 dice heat/radiation

ENORMOUS WEAPON SYSTEMS

Weapon System	Cost	Space	Range	Attack	Damage
Outer Sun Products EBP-1 <i>Hellbuster</i> pulse blaster	42 MCr	10	8	+0 dice	5 dice heat
Cui Shipyards EDP-1 <i>Hotbuster</i> pulse disruptor	112 MCr	8	16	+0 dice	5 dice heat
Green-Huang Enterprises EIP-1 <i>Skyspear</i> ion pulse	73 MCr	11	19	+0 dice	5 dice ion
Brown Shipping ELS-1 <i>Sunbat</i> laser cannon	43 MCr	10	19	+0 dice	4 dice heat
Silverfarer Group EPaC-1 <i>Skybolt</i> particle cannon	148 MCr	8	20	+0 dice	4 dice heat
Outerwatch-Ultrabeam EHP-1 <i>Hotflash</i> pulse phaser	168 MCr	10	21	+0 dice	5 dice heat

Microwatch Hardware EPC-1 <i>Leadbolt</i> projectile cannon	31 MCr	9	17	+0 dice	4 dice impact
Bai-Nakamura Fndtn ECPx-1 <i>Blackflash</i> concussion torpedo	202 MCr	8	31	+1 die	4 dice impact
Saito Cybernetics EPCI-1 <i>Whiteswarm</i> photonic torpedo cluster	233 MCr	8	35	+0 dice	5 dice heat
Daywatch Art ENPx-1 <i>Hellstorm</i> nuclear warhead	63 MCr	8	30	+1 die	4 dice heat/radiation

GIGANTIC WEAPON SYSTEMS

Weapon System	Cost	Space	Range	Attack	Damage
Young Asteroid Co. GBB-1 <i>Flamebird</i> blaster beam	109 MCr	60	16	+0 dice	5 dice heat
Transco Inc. GDB-1 <i>Loudstream</i> disruptor beam	162 MCr	56	25	+0 dice	5 dice heat
Frontier partnership GIC-1 <i>Deathflash</i> ion cannon	161 MCr	47	29	+0 dice	5 dice ion
Imperial Syndicate GLP-1 <i>Redstorm</i> turbolaser	108 MCr	53	23	+0 dice	6 dice heat
Imperial Syndicate GLP-2 <i>Redstorm</i> turbolaser	236 MCr	43	28	+0 dice	6 dice heat
Imperial Syndicate GLP-3 <i>Redstorm</i> turbolaser	396 MCr	39	30	+0 dice	7 dice heat
WayCorp Holography GPaB-1 <i>Deathspear</i> particle beam	296 MCr	48	35	+0 dice	5 dice heat
Solar Industries GHB-1 <i>Excelsior</i> phaser beam emitter	276 MCr	57	29	+0 dice	5 dice heat
Ultrastellar Railguns GPR-1 <i>Ultimate Rain</i> magnetic railgun	70 MCr	41	27	+0 dice	6 dice impact
Barker Consortium GCCI-1 <i>Thundermaker</i> concussion cluster	344 MCr	50	51	+0 dice	6 dice impact
Meteor Concepts GPPx-1 <i>Hellbow</i> photonic torpedo	484 MCr	48	51	+0 dice	5 dice heat
Lunar Alliance GNPx-1 <i>Mushroom</i> nuclear warhead	140 MCr	43	37	+1 die	5 dice heat/radiation

Blaster A blaster fires bolts of high energy particles contained in a plasma field.

Disruptor Disruptor weapons are a common type of energy system designed to agitate the molecules of the target, resulting in intense heat energy and thermal shock.

Ion Ion-based weaponry is specially designed to attack electrical systems and shielding. The ion blast does not do physical or thermal damage; shields are vulnerable to ion damage and can be disabled if the ion damage exceeds the SOAK value.

Laser A laser is a coherent shaft of light; while one of the earliest energy weapons, a laser scales up in power very well, and can be focused in blasts capable of destroying entire planets.

Particle Particle weapons fire high-energy subatomic particles; technically, a phaser is a type of particle weapon, as is an ion gun. Particle beam and particle accelerator weapons disrupt the target's atomic structure.

Phaser A phaser is a directed energy weapon which fires nadions; technically, they are a type of particle weapon.

Projectile Projectile weapons fire bullets or other projectiles designed to cause damage via high-velocity impact. The exact mechanism varies, but electromagnetic projectile devices ("gauss") are common. These weapons are often referred to as kinetic energy weapons.

Torpedo A torpedo is a self-propelled missile with a warhead designed to explode on impact. Torpedoes come in a wide variety of types. Photonic torpedoes use an antimatter warhead, while a concussion torpedo or missile has an armor-piercing tip which penetrates the target hull before exploding the missile's energy pack. Other types of torpedo include proton torpedoes, plasma torpedoes, quantum torpedoes, gravimetric torpedoes, and more.

Warhead, nuclear A nuclear warhead is technically a type of torpedo, and is very destructive.

Weapons can also come in different configurations. Beams have greater range, while pulses pack more punch.

Beam weapons are thin, concentrated rays which can focus on a specific point or slice across a target.

Pulse weapons fire a sequence of rapid shots.

Cannons launch single high-velocity projectiles.

Rail weapons fire streams of projectiles at a rapid rate of fire.

Banked weapons Two or more weapons can be banked (or mounted in an array). The space is equal to the combined space of the weapons, and all must have the same firing arcs. The weapons can be operated by a single operator and require only one attack roll. The cost of banked weapons is equal to the total cost of the combined weapons plus 50%.

Turrets Weapons mounted in turrets have a 360-degree firing arc. A turreted weapon costs two times the regular price.

GENERAL EQUIPMENT

Starships also have a variety of individual pieces of equipment. These cover a wide range of purposes, including fuel scoops, tractor beams, fuel-bay alterations, cloaking devices, and more. This section describes a few of these things.

Item	Space (CU)	Cost	Notes
CLOAKING DEVICES			
Cloaking device, small	3	750 MCr	Ship classes I-III
Cloaking device, medium	10	2,000 MCr	Ship classes IV-VII
Cloaking device, large	40	10,000 MCr	Ship classes VIII-XI
Cloaking device, enormous	100	40,000 MCr	Ship classes XII-XVI
Cloaking device, gigantic	300	90,000 MCr	Ship classes XVII-XIX
TRACTOR BEAMS			
Tractor beam, small	5	10 MCr	STR 2, range 5
Tractor beam, medium	10	30 MCr	STR 4, range 7
Tractor beam, large	15	75 MCr	STR 6, range 10
Tractor beam, enormous	20	120 MCr	STR 8, range 12
Tractor beam, gigantic	25	300 MCr	STR 10, range 15
FUELING EQUIPMENT			
Fuel bay alteration	1 CU/10 fuel	0.5 MCr /fuel unit	This can increase or decrease fuel capacity
Fuel scoop, small	5	100 MCr	Gathers 1 fuel unit per hour
Fuel scoop, medium	40	250 MCr	Gathers 5 fuel units per hour
Fuel scoop, enormous	90	1,000 MCr	Gathers 20 fuel units per hour
HANGARS			
Shuttle/fighter bay, small	12	400 MCr	Room for 1 shuttle or fighter
Shuttle/fighter bay, medium	20	700 MCr	Room for 4 shuttles or fighters
Shuttle/fighter bay, large	38	1,000 MCr	Room for 16 shuttles or fighters
Shuttle/fighter bay, enormous	70	1,500 MCr	Room for 32 shuttles or fighters
Shuttle/fighter bay, gigantic	120	2,000 MCr	Room for 64 shuttles or fighters
ENGINEERING MODIFICATIONS			
Repair bay	10	200 MCr	Repairs 1 SS per turn
Remote repair bay	20	500 MCr	Repairs 1 SS per turn; range 4 hexes

Shuttlebay/Fighter Bay A small shuttlebay or fighter bay is able to accommodate one class 0-III vessel; the bay's size correlates to its shuttle capacity. Some larger ships have multiple shuttle bays if they need to carry more than 64 shuttles or fighters. A shuttlebay comes already stocked with fighters or shuttles as part of the price.

Fuel Scoop A fuel scoop is able to collect fuel units from a gas giant's atmosphere.

Fuel bay alteration A ship's standard fuel bay can be enlarged or decreased. Enlarging it increases a ship's range, while decreasing it creates more room for facilities. The cost to enlarge or decrease it is equal to 0.5 megacredits per fuel unit, and ten fuel units (or part thereof) constitute one cargo unit in space. The space required for the standard fuel bay for a ship (the cube of its class in fuel units) is included in its hull size.

Tractor beam A tractor beam works a little like a weapon in that it requires an attack roll against a target ship or object's DEFENSE. A tractor beam's STR determines the maximum ship class it can possibly hold. A ship attempting to escape a tractor beam makes a SPEED check vs. the beam's STR.

Repair bay A repair bay, often located near the engineering section of a starship, allows for automatic Superstructure repair at a rate of 1 SS per turn. Multiple repair bays can repair more SS. Repair bays require control computers to manage them and assign automated repair processes, and so the maximum number of repair bays is based on the computer's quality. A standard quality computer can operate one repair bay, a high quality computer can operate two, a superior quality computer three, artisan four, and unique five.

Remote repair bay A remote repair bay is similar to a regular repair bay except that it is used to repair nearby ships. The remote repair bay repairs 1 SS per turn to a ship within 4 hexes. In all other ways, it functions in the same manner as a normal repair bay, and counts towards the computer limit of simultaneous repair bays.

FACILITIES

A basic ship comes with a bridge, dormitory accommodations for crew and one cabin for the captain. Ships of smaller than class I do not include accommodations, and have a cockpit instead of a bridge.

Luxury Some facilities exist to increase the overall luxury of a vessel. This has a direct effect on crew morale and happiness, and it can be worth spending the money (this does not apply to player-characters; only to NPC crew). A facility's luxury value is noted in the table; each point of that value is equal to a crew member. If the luxury value of a ship is equal to the crew total, the ship will function normally. Lower and higher figures can have effects on morale.

Size Facilities are available in sizes (*small, medium, large, enormous, gigantic*). The size categories have the following modifiers on luxury, space, and cost. The default versions listed are small facilities. The advantage of larger facilities is that they are a cost effective way of scaling up accommodation for larger numbers of crew, although the size does not directly affect the quality of a facility.

Select the facility below, then choose the size and quality of that facility (the default is small, standard quality).

Customization	Luxury	Space (CU)	Cost	Notes
Sick bay	-	3	20 MCr	
Cabin, standard	1	1	0.5 MCr	
Cabin, double	1.5	1.5	1 MCr	
Cabin, luxury/suite	2	2	2 MCr	
Chapel	10	3	2 MCr	
Galley	10	3	4 MCr	
Gymnasium	10	3	4 MCr	
Laboratory	-	4	8 MCr	Labs can be of specific types (+2 dice) or general (+1 die)
Mess hall	10	4	2 MCr	
Bar	15	4	10 MCr	0.5 MCr/m income
Shop	12	3	8 MCr	0.6 MCr/m income; type should be specified
Observation lounge	6	3	2 MCr	
Arboretum	10	5	5 MCr	
Brig	0.5	1	3 MCr	Each brig unit can hold one prisoner
Escape pod	0.5	0	0.5 MCr	Each pod can carry 2 crewmembers
Transporter pad	-	1	20 MCr	A small transporter pad contains one transporter beam

Arboretum An arboretum contains plants and flowers, and is often used for relaxation as well as scientific study. Higher quality arboreums can even include landscaping, water features, and more.

Brig A brig enables security and discipline amongst the crew. Brigs are jail cells; depending on the quality they may be physical cells, or they may use force-field technology.

Cabins A basic hull comes equipped with dormitory accommodation for crew. Giving the crew cabins (either single, double, or luxury) can greatly improve their morale.

Chapel A chapel is fairly basic, and often multi-denominational, although some larger ships and stations maintain separate chapels for specific religions.

Escape pods Escape pods increase a crew's sense of security. Additionally, a ship with escape pods means that if the ship is destroyed, the PCs will automatically survive.

Galley While automated food processing is not unusual, an actual kitchen and chef really is appreciated.

Gymnasium Gyms can either be general fitness gyms, or more specific sport-focused gyms (a zero-G basketball court, for example).

Laboratory Science labs are an important part of many research or exploratory vessels. Some vessels may have just one general lab, while others have more focused specific labs including geological, astrophysics, biochemistry, chem, hydroponics, cybernetics, and more.

Mess Hall A mess hall is a communal eating and social area. Some ships maintain separate mess halls for officers and enlisted crewmen, while others choose to mix and match. An officer's mess is sometimes called a wardroom.

Observation lounge An observation lounge is often a cheap luxury increase, consisting mainly of an empty room with a large window. Observation lounges are often used as meeting areas, for special events, and gatherings.

Sick bay The size of a sick bay determines its capacity: a sickbay can accommodate one patient per CU (so a medium sickbay can accommodate 20 patients).

Shops & bars Some larger vessels or stations will have commercial facilities aboard. These are leased to shopkeepers and bar owners, who pay the ship owner a monthly tax. Commercial facilities cost capital to set up, but pay dividends in the form of income and crew morale.

Transporter Pad A small transporter pad has room for one person and a range of 4,000km. Larger pads have room for one person per CU. Transporters are only available if the advancement level allows for it.

FACILITY QUALITY & SIZE

Facility Size	Luxury	Space (CU)	Cost
Small	x1	x1	x1
Medium	x1.75	x2	x1.5
Large	x3.5	x4	x3
Enormous	x6	x8	x5
Gigantic	x14	x16	x12

Like all ship components, shipboard facilities have degrees of quality. Sometimes, in the case of a cabin or chapel, this only affects the furnishings and general amenities, creating a happier crew. In the case of functional facilities like sick bays and laboratories, the quality directly affects tasks performed using them. A Unique facility is probably renowned across the universe. Luxury value bonuses only apply to facilities with an existing luxury value.

It is possible to save on costs and build a poor quality version of a facility. This does not create any kind of task-based penalty (it's not worse to have a cheap facility than it is to have no facility), but it does reduce the luxury value of a facility.

Note that quality categories only apply to generic facilities, and not to specific weapons, computers, shields, and the like.

Quality	Price	Luxury	Attributes
Poor Quality	x0.5	x0.75	-
Standard Quality	x1	x1	-
High Quality	x3 then +100	x1.5	+1 die
Superior Quality	x5 then +250	x2	+1 die
Mastercraft Quality	x10 then +500	x4	+2 dice
Artisan Quality	x100 then +1,000	x6	+2 dice
Unique	x1,000 then +2,500	x8	+3 dice

LOAD & TONNAGE

Once everything has been accounted for, the vessel's tonnage needs to be calculated.

The Ship Hull Class table indicates the tonnage range of each ship class. For example, the tonnage range of a Class V ship is 40,000-60,000 tons. This gives it a spread of 20,000 tons (the difference between its maximum and minimum possible tonnages).

Add up all the cargo units used by components, facilities, and so on. Determine what percentage of the ship's total available cargo space (as given in the Ship Hull Class table) that is. For example, the Class V ship has an initial cargo allocation of 250 units. If 125 units have been used, then its current load is 50%.

This load percentage is then used to determine the ship's tonnage. Apply that same percentage to the spread (in this case, 50% of 20,000 tons, which comes to 10,000 tons) and add that to the minimum tonnage allowed for that ship class. The Class V ship, therefore, has a tonnage of 40,000+10,000 tons, or 50,000 tons.

CREW

A small group of player-characters will need a crew in order to fly anything but a small vessel. Crew requirements are based on the ship's size, and are noted in the ship class chart. Player-characters are deducted from this crew complement requirement, but passengers are not.

The crew complement is indicated in the Ship Hull Class table, and can be lowered by certain command and control systems.

Additionally, the vessel's LUXURY value needs to be tracked. Ideally, the LUXURY value needs to be equal to or greater than the crew complement (not including player-characters). If it is not, the ship functions poorly, while a well-motivated crew can perform better.

A ship's hull can grant a bonus to LUXURY based on its quality and furnishings (a standard hull has a bonus of 0). To this is added the total LUXURY values of every facility added.

In the below chart, LUXURY is compared to crew complement (LUX/CREW *100%).

LUXURY is...	Description	Ship Rolls
50% or less	Spartan	-2 dice
51%-90%	Poor	-1 die
91%-110%	Adequate	-
111%-150%	Comfortable	+1 die
151%+	Luxurious	+2 dice

Ship rolls include any check made using the vessel – whether that is an attack roll with a weapon, a navigation roll, use of the sickbay or a laboratory, using the sensors, and so on. This bonus or penalty reflects crew morale and performance, along with the care with which they maintain systems and equipment. As any starship captain can see, keeping the crew happy is a vital part of running a vessel.

APPENDIX I: FUNDING A STARSHIP

A starship is an incredibly expensive purchase – likely one of the most expensive a party will ever make. With prices measured in millions of credits, a starting group of characters is not able to afford a starship, and it may take a long time to raise the necessary capital for even a small civilian ship without a mortgage. Additionally, there are crew and fuel costs. This section contains a number of rules and options for funding starships.

CREW COSTS

Basic crew costs are lower than typical employee costs, because the ship itself provides accommodation and food. The crew cost is equal to 200 x the crew complement per month. Some private captains like to figure that into the cost of the ship, paying upfront for a year or more of crew so as not to worry about it month-by-month. Others are happy to track expenses on a monthly basis.

An unpaid crew is not a happy one. A crew won't simply up and desert at the first sign of financial trouble – typically they do not need cash on hand right now, given that they live on a space ship – but they will always know exactly what they're owed, and if that mounts up their morale will deteriorate.

Each month that the crew is not fully paid up inflicts a cumulative -1 die penalty to checks made using the ship in the same way that a ship lacking in luxury does. This penalty goes away the moment the accounts are settled.

Crew costs can be reduced by 10% in a given month by making a Strenuous [21] INT check. Characters who have taken accountancy as a skill will prove their worth when it comes to shipboard budgeting.

STARSHIP FUNDING OPTIONS

Starting characters will be unable to afford a starship – even a cheap shuttlecraft. In some campaigns, this may not matter; interstellar travel isn't a requirement for a sci-fi campaign. Entire story arcs can take place on one planet, or require little more than an occasional passenger ticket on a transport or liner. Saving up for that first starship can be a momentous event, and players who obtain their ship in this way are likely to form a strong attachment to the vessel. However, this is not the only option. Below are a few suggestions on how to deal with the issue of starships.

NO SHIP

The characters do not have access to a starship of their own. Much of their adventuring is planetbound, and if they need to travel offworld then they will need to pay for passage – either on a tradeship or merchant, a transport, or a commercial liner.

A FREE SHIP

Giving the party a free “starter” ship won't derail a campaign. The player-characters could begin play with a basic civilian ship, or acquire one very early in the campaign. The sample encounter at the end of this rulebook has the party obtaining a shuttle at the end of it. The only problem with this approach is that the party may choose to sell the ship, netting them millions of credits. This is something that should be avoided, and the mortgage option below can assist with that.

STATIONED ON A SHIP

Characters in the Navy (or any similar organization) might be stationed on a ship, whether that be a small scout or a vast starship. Depending on the campaign premise, they could be anything from members of a unit on a large ship with little control over its destination to the actual commanders of a great exploratory vessel. This approach means that the characters do not own the ship like they might in a civilian campaign, but it does grant them some of the resources of such a ship.

CHEAP SHIPS

This is a very popular and easy option. Ships in your campaign setting might be very cheap. Instead of a Megacredit being worth a million credits, you can make it worth only a thousand credits (despite the “Mega” prefix; it sounds better than “Kilocredit”). MCr. is only used for starship costs, and doing this will not affect other costs, rewards, or equipment values in the campaign. Ships are as common – and often as cheap – as cars are in the 21st century.

MORTGAGING A STARSHIP

The mortgage option is recommend only for a specific type of campaign – one in which the players really enjoy the detailed accountancy side of things. That campaign can be very rewarding, especially if it includes trade, fuel costs, and so on, but it is certainly a specific taste.

Using this option, it is possible to mortgage a starship. For many, this is the only way to afford one. Getting a mortgage is easy; getting a good deal, not so much. A character can make a Cr check to obtain a mortgage, with a difficulty value equal to the number of megacredits needed; multiple characters can do the same to try to create the desired total. Skills in accountancy and bureaucracy both help in this situation.

Mortgages must be paid back monthly. The characters never actually see the money themselves – the bank pays the ship vendor. A character may only have one active mortgage, and the ship is the collateral for that mortgage.

In situations where multiple characters have pooled their resources to obtain the funds via a mortgage, the mortgage company requires an agreement signed by all parties, and the ship as a whole is collateral for the whole repayment. Mortgage companies do not deal in “shares” between characters, although characters are welcome to make such agreements between themselves.

COST OF A MORTGAGE

As mentioned above, the amount raised via mortgage is equal to the difficulty roll of the Cr check. If four characters roll 12, 18, 9, and 13 respectively, they will have obtained a mortgage of 42 MCr – enough for a medium transport with some modifications.

The total repayment required on the mortgage is equal to the total mortgage plus 50%. A CHA check can alter this, if the characters wish to negotiate, but they are bound by the terms reached if they fail. A character should make a CHA check and increase or decrease the repayment total by 1% for every point above or below 10 that they roll – so if a character rolls 4 dice (say, CHA 5 plus skill in accountancy) and gets 16, the repayment total is reduced by 6% to 44%. The value cannot be reduced below 125%, no matter how well the characters roll.

The repayment period is divided into 5 years (60 months) and payment is required monthly. Mortgage companies allow lump sums to be paid off the total, and will recalculate the monthly payment required based on the new total and remaining time.

DEFAULT

Failure to pay a mortgage is a serious issue. Each month which is not settled in full adds 10% to the

outstanding debt (which cannot be spread over the total mortgage – it must be settled before the accounts are considered back up to date).

After six months, the agreement is cancelled, the full outstanding value become due, and mortgage companies start hiring bounty hunters and other nefarious individuals. Additionally, any random encounters with police or naval ships will result in the execution of an arrest warrant.

APPENDIX II: THE ENGINEER'S DESIGN CHARTS

The following technical charts are used by engineers to design ship components. Most ship purchasers will not need this information, but for engineers or GMs who wish to create new starship components, these charts describe how to arrive at a component's specifications.

COMPONENT SIZE

Components are available in different sizes. These sizes are designed for ship classes as follows:

Small	I-III	Couriers, light freighters
Medium	IV-VII	Escorts, scouts, transports, heavy freighters
Large	VIII-XI	Destroyers, frigates, cruisers, liners
Enormous	XII-XVI	Battleships, carriers
Gigantic	XVII+	Supercarriers, stations

A NOTE ON QUALITY

Component quality is referred to frequently in the section, and operates on a scale similar to that of personal equipment quality. Additionally, certain quality levels tend to be common for given usages as indicated below. This isn't a rule – it should be viewed as a guideline.

Quality	Usage	Rarity
Standard	Civilian standard	Common (90% chance)
High Quality	Military standard or civilian speciality	Uncommon (25% chance)
Superior Quality	Military speciality	Rare (5% chance)
Mastercraft Quality	Prototypes/advanced ships	Very rare (1% chance)
Artisan Quality		Unique
Unique	Unique	Unique

Certain species have areas of speciality; as noted above, where a component falls into a species' area of speciality, it will tend to be of a higher quality level. Again, this isn't a rule.

Species	Specialties
Human	Shields
Ogron	Pulse blasters
Venetian	Computers, sensors, labs
Borian	FTL engines, recreational facilities
Spartan	Disruptor weapons
Felan	Sublight engines, beam weapons

In general, player-characters should not be able to purchase non-standard items. High quality items are military grade, while superior items are the leading edge of military technology.

Above superior quality Components of greater than superior quality should be extremely rare – a mastercraft quality warp drive might be the subject of an adventure, and viewed as an extremely valuable item. Perhaps it's the new system on a new breed of battleship. These items are not available for player-characters to purchase, but may be used by the GM to design plot-related vessels and components.

Artisan and unique These items should not be available for player-characters to purchase. An engineer might see one artisan or unique item in his lifetime.

MANUFACTURERS

It's not – generally – within an individual's ability to create starship components from scratch. Every component, from the smallest nut or bolt to the largest antimatter engine is created by a manufacturer – usually a large corporation, often one with military contracts. The corporation's name will form part of the component's name. To generate a quick corporation name for the manufacturer of a starship component, use the following tables, or use a corporation from your own setting.

3 dice			
3	Trans	graphics	Xenotech
4	Day	wide	Foundation
5	Way	watch	Merchandizing
6	High	prime	Works
7	Warp	dyne	Concepts
8	Outer	light	Technologies
9	Stellar	Co	Robotics
10	New	tech	Systems
11	Duo	stellar	Products
12	Omni	tron	Corporation
13	Over	beam	Shipping
14	Inter	sun	Engineering
15	Pan	break	Yards
16	Terra	line	Group
17	Posi	galactic	Plastics
18	Micro	star	Union

MODEL NUMBERS

The above system creates a basic model of a component – a Mk I. Over time, a given company will improve its line of products, creating iterative versions of the same components with small improvements each time. These are designated by an appended model number after the component designation: -1, -2, and so on.

Each successive model improves the basic design a little more. The cost of the basic component is

multiplied by the model number (so a Mk 3 of a weapon costs three times the price of a Mk 1). Model progressions for various component types are indicated in the relevant sections of this chapter.

Note: Not all model numbers will be used. Most product lines have missing model numbers; this is because some designs fail to test well, operate as expected, or make it to market. For example, the Shukenja Beam Company's popular MLH series of laser weapons has the MLH-1, MLH-2, and MLH-3, but the MLH-4 (designed to use their brand new targeting systems) proved to have less range and power than the MLH-3, and the team went back to the drawing board to produce the MLH-5.

Model numbers can theoretically be extended into the future indefinitely as technological improvements march relentlessly forward. The photonic torpedoes of the 23rd century might be firecrackers compared to those of the 25th century, with model numbers in the high double digits; indeed, the lower models numbers may cease to be available as anything other than antiques. Those in this rulebook tend to be placed at a 23rd century base, enabling the GM to extend as far forward technologically as desired.

Each model number can represent anything from a year to a decade or more of research and development; it's not standardized, but if needed they can be randomized by making each model 2d6 Years later than the previous iteration.

Model Variation: This system creates an even model progression that can look a bit artificial. Every entry should be varied a little (either up or down) from its default value. A variation of 80%-120% is appropriate. For example:

Komarov-Kikuchi Lines LSCS large superior quality civilian shield generator

Shield	Space	Cost	Power
LSCS-1	21	56 MCr	21
LSCS-2	21	138 MCr	28
LSCS-3	20	236 MCr	42
LSCS-4	20	324 MCr	58
LSCS-5	15	349 MCr	65
LSCS-6	13	446 MCr	73
LSCS-7	11	520 MCr	91
LSCS-8	10	496 MCr	90
LSCS-9	8	638 MCr	118

This variation means that some models can actually be worse than their predecessor in some respects. This is perfectly normal.

COMPONENT DESIGNATION

Component names are standardized in ship parts catalogs for easy reference. The format is usually as follows:

Manufacturer / Size / Type / (Configuration) / - Model # / Quality / description

Example: Stellarwide Foundation ELB-2S beam laser
(for an enormous superior quality beam laser mk 2)

COMMAND & CONTROL DESIGN CHARTS

C&C System	Cost	Space (CU)	Base Stats	Designation
Computer System	3 MCr	1	Max FTL 2	M
Sensor Array	4 MCr	1	Range 200 miles	S

Size	Cost	Space	Max FTL	Sensor Range	Crew	SOAK	DEFENSE	Weapon Range
Small	3 MCr	1	2	200	-	-	-	5
Medium	15 MCr	3	2	400	-	-	-	10
Large	30 MCr	5	4	600	-	+1	-	15
Enormous	45 MCr	10	4	800	-5%	+2	-	20
Gigantic	75 MCr	20	6	1,000	-10%	+3	-	25

Quality	Cost	Attributes	Max FTL	Sensor Range	Crew	SOAK	DEFENSE	Wpn Range
High Quality	x3 then +100	+1 die	x2	x2	-5%	+1	+1	+2
Superior Quality	x5 then +250	+1 die	x3	x3	-10%	+1	+2	+5
Mastercraft	x10 then +500	+2 dice	x4	x4	-15%	+2	+3	+8
Artisan	x100 then +1,000	+2 dice	x5	x5	-20%	+2	+4	+10
Unique	x1,000 then +2,500	+3 dice	x6	x6	-25%	+3	+5	+12

Model	Max FTL	Sensor Range	Crew	SOAK	DEFENSE	Wpn Range
1	+0	+0	-	-	-	-
2	+1	+200 miles	-1%	-	-	+1
3	+2	+400 miles	-2%	-	+1	+1
4	+3	+600 miles	-3%	+1	+1	+2
5	+4	+800 miles	-4%	+1	+2	+2
6	+5	+1,000 miles	-5%	+1	+2	+3
7	+6	+1,200 miles	-6%	+2	+3	+3

ENGINE DESIGN CHARTS

Subluminal Engine	Space (CU)	Cost	Power	FE	Designation
Fusion ('Impulse') Reactor	3	7 MCr	15	1.2	F
Ion Engine	2	5 MCr	8	1.4	I
Liquid Fuel Propulsion System	1	2 MCr	10	0.5	L
Solar Sail	5	1 MCr	4	-	S
FTL Engine	Space (CU)	Cost	Power	FE	Designation
Hyperdrive	2	15 MCr	5	0.8	H
Antimatter ('Warp') Engine	5	20 MCr	8	1.0	A
Tachyon Sail	7	40 MCr	8	-	T
Tachyon Conduit	4	70 MCr	14	1.6	C

Size	Space (CU)	Cost	Power
Small	x1	x1	x1
Medium	x4	x2	x2
Large	x8	x4	x3
Enormous	x16	x8	x5
Gigantic	x32	x16	x8

Size	Cost	Power	Fuel Eff.
High Quality	x3 then +100	x1.25	+0.1
Superior Quality	x5 then +250	x1.5	+0.2
Mastercraft Quality	x10 then +500	x2	+0.3
Artisan Quality	x100 then +1,000	x2.5	+0.4
Unique	x1,000 then +2,500	x3	+0.5

Model	Power	Fuel Eff.
1	-	-
2	x1.25	+0.1
3	x1.5	+0.2
4	x1.75	+0.3
5	x2	+0.4
6	x2.25	+0.5
7	x2.5	+0.6
8	x2.75	+0.7
9	x3	+0.8
10	x3.25	+0.9

Other types of propulsion Other forms of propulsion can include graviton catapults, graviton beams, plasma injection systems, folded-space transporters, spatial trajectors, quantum slipstream drives, and more. The following table can be used to quickly create a sci-fi propulsion system.

2d6	Propulsion System Generator	
2	Antimatter	Engine
3	Fusion	Drive
4	Hyper	Reactor
5	Ion	Sail
6	Solar	Conduit
7	Tachyon	Catapult
8	Graviton	Beam
9	Plasma	Slipstream
10	Spatial	Injection
11	Quantum	Displacement
12	Repulsor	Wave

DEFLECTOR SHIELD DESIGN CHARTS

Shields	Space (CU)	Cost	Power	Designation
Shields, navigational	1	2 MCr	2	SN
Shields, civilian	2	4 MCr	3	SC
Shields, combat	3	8 MCr	5	SM

Modify the shield by its size category.

Size	Space (CU)	Cost	Power
Small	x1	x1	x1
Medium	x3	x2	x4
Large	x9	x4	x8
Enormous	x27	x8	x12
Gigantic	x81	x16	x16

And by quality.

Quality	Cost	Power
High Quality	x3 then +100	x1.5
Superior Quality	x5 then +250	x2
Mastercraft	x10 then +500	x2.5
Artisan	x100 then +1,000	x3
Unique	x1,000 then +2,500	x3.5

And finally by model number.

Model	Power
1	-
2	x1.25
3	x1.5
4	x1.75
5	x2
6	x2.25
7	x2.5
8	x2.75
9	x3

WEAPONRY DESIGN CHARTS

Weapon Type	Damage Type	Base Range	Base Cost	Designation
Blaster	Heat	2	5	B
Disruptor	Heat	3	10	D
Ion	Ion	4	7	I
Laser	Heat	3	5	L
Particle	Heat	4	13	Pa
Phaser	Heat	4	15	H
Projectile	Impact	3	3	P
Torpedo, concussion	Impact	6	20	C
Torpedo, photonic	Heat	7	22	P
Warhead, nuclear	Heat/Radiation	5	6	N

Weapon Configuration	Type	Notes	Designation
Beam	Energy	+3 range	B
Pulse	Energy	+1 die damage	P
Cannon	Projectile	+2 range	C
Rail	Projectile	+1 die damage	R

Weapon Size	Space (CU)	Damage	Range	Cost	Designation
Small	1	1 die	x1	x1	S
Medium	4	2 dice	x2	x2	M
Large	10	3 dice	x3	x5	L
Enormous	20	4 dice	x5	x10	E
Gigantic	50	5 dice	x8	x20	G

Quality	Price	Damage & Attacks	Range	Designation
High Quality	x3 then +100	+1 die	+1	H
Superior Quality	x5 then +250	+1 die	+2	S
Mastercraft Quality	x10 then +500	+2 dice	+5	M
Artisan Quality	x100 then +1,000	+2 dice	+10	A
Unique	x1,000 then +2,500	+3 dice	+15	L

Model #	Range	Accuracy	Damage
1	-	-	-
2	+1	-	-
3	+2	-	+1 die
4	+3	+1 die	+1 die
5	+4	+1 die	+1 die
6	+5	+1 die	+1 die
7	+6	+2 dice	+2 dice
8	+7	+2 dice	+2 dice
9	+8	+2 dice	+2 dice
10	+9	+3 dice	+2 dice
11	+10	+3 dice	+3 dice

Weapons are almost always given a more descriptive name than their simple designation. From *starstreak* cluster missiles to *thundersteel torpedoes*, arms manufacturers are well versed in the art of making their products sound exciting and deadly.

3 dice	Weapon Name	
3	Flame	seeker
4	Hell	fury
5	Red	flash
6	Fire	streak
7	Sky	bolt
8	Sting	storm
9	Hot	steel
10	Sun	ray
11	Star	maker
12	Black	buster
13	Wind	bat
14	Thunder	bow
15	Death	sword
16	Big	spear
17	Dark	bird
18	White	swarm

CLASS		
ACTIONS		
SUPERSTUCTURE ARMOR (soak) AGILITY DEFENSE SHIELDS (soak) SPEED		
CREW (cost Cr/m) COMPUTER (initiative ; max FTL) SENSORS (miles) FACILITIES LUXURY % ()		
HULL CLASS (tons) LENGTH WIDTH HEIGHT CARGO UNITS (base) LANDING CAPABILITY SHUTTLES/FIGHTERS		
SUB ENGINE TYPE POWER (fuel efficiency) FTL ENGINE TYPE POWER (fuel efficiency) FTL FUEL CAPACITY (range) FUEL SCOOP		
MARKET VALUE MCr		