

STARSHIP SYSTEMS

A starship is a very complex piece of technology, composed of many component systems. Some of the most important of these systems are described here.

Maneuver Drives

Maneuver drives are devices used to propel spaceships through "normal" space from world to world. They are most often used to move between an inhabited world and a nearby point where the hyperdrive can be used. They are also used to move between worlds in a single star system; this is less common, since few star systems have more than one inhabited world. Finally, maneuver drives can be used for interstellar travel, but this is extremely rare since the distances are so long and the hyperdrive is a much more convenient method for crossing them.

Most civilizations (before 50,000 BBY) begin their exploration of space using reaction drives, "rockets" that eject mass backward in order to propel a vehicle forward. The main drawback of such drives is that they require vast quantities of reaction mass. This makes them expensive, and strictly limits the velocities they can reach.

Fortunately a better alternative is possible. At late TL9, new drives use power to generate forward thrust using cold fusion reactors (see Corbana Gas Turbines below) without ejecting reaction mass (except for a small amount of waste in the form of ion particles). Such near reactionless thrusters violate the laws of physics as understood in our society, but they make cheap, convenient space travel possible. These new drives drawback was its speed limitations and constant need for active propulsion. Reactionless thrusters are the standard maneuver drives used by all known spacefaring civilizations since 50,000 BBY. Some examples of these engines are the fission ion engine (better known in pairs called TIE) and fusial thrust engines (such as used on an x-wing).

The performance of a maneuver drive is most often expressed in terms of space acceleration and speed (Move). The speed is measured in MGLT. 1 MGLT equals 1 yard per second. Space acceleration is measured in yards per second² (sAccel or in Star Wars term MGLT/second). A drive that can deliver 11 yards/s² space acceleration can cause the ship to accelerate as if under standard Coruscant's gravity (33 feet per second per second).

Author's note: The exact meaning of MGLT is not clearly defined by LucasArts. ILM Artists introduced this term as a measurement of acceleration but soon it was used in computer games as a means of defining speed limits. MGLT might be an acronym for Modern Galactic Light Time or Micro-Gravity Linear Tolerance but the GL might as well stand for George Lucas. Charbel Tengroth and Makis Kalofolias have tested it by flying past large warships of known length at a fixed speed of 100 MGLT whilst making careful timing measurement and found that 100 MGLT = 100 m/s, and the relationship appears to be linear under all circumstance.

The Hyperdrive

The hyper jump drive, or simply hyperdrive, is the only known way to travel between star systems without spending years doing it (like with sub-light engines). Hyperspace is a parallel dimension to ours. In this dimension, the speed of light is not the ultimate limit. With the help of the hyperdrive motivator, spaceships "jump" through the barrier between worlds and enter this

alternate dimension. Traveling through hyperspace is tricky, and is subject to two major laws.

The first law is that ships must enter hyperspace through a jump point. With the help of navigational computers (navcom), the pilot can calculate the nearest jump point that will propel him in his desired direction of travel. There are some very rare individuals or races that have a natural knack for hyperspace navigation: Those are highly praised as navigator and usually worth a lot to starships captains. Force users also have the ability to indistinctively calculate hyperspace jumps by using their Force abilities.

The second law is gravity. For some unknown reason, gravity plays a major role in the direction of travel and the capacity of a ship to enter hyperspace. A hyperdrive motivator cannot jump into hyperspace if it is within a gravity field of a planet, star, or even an artificial gravity field. Any object more massive than a given starship has the potential to disrupt the ship's hyperdrives. If the hyperdrive is actuated within 100 times the diameter (but less with newer hyperdrive motivators up to a minimum distance of 1 planetary diameter) of such an object, it may malfunction disastrously. Thus, navcom must take account the gravitational field of stellar bodies before jumping the spaceship into hyperspace. Special spaceships have been designed with large gravity generators. Those ships disrupt the hyperspace dimension and can bring a traveling spaceship prematurely out of hyperspace, or block one from jumping into hyperspace. The results of an unwanted or premature sortie out of hyperspace usually result in damage to the hyperdrive system.

Traveling through the hyperspace is defined below (see Hyperspace Navigation).

Hyperdrive Actuation Diode

This small component of a starship's hyperdrive was instrumental in the acceleration from sub-light speeds to supra-light speeds.

Hyperdrive Compensator

This was part of a starship's hyperdrive unit, and was the key component in slowing the ship down safely enough to re-enter real-space.

Hyperdrive Field Guide

This was the name of the specialized metal poles used to channel the energy produced by a hyperdrive, allowing it to propel a starship into hyperspace.

Hyperdrive Motivator

This is the starship component which is responsible for building up the energies necessary to propel a ship into hyperspace. The hyperdrive motivator creates an electromagnetic field around a starship, and then projects that field into hyperspace. Once in hyperspace, the hyperdrive motivator employs trilitium crystals to propel the ship through the continuum. When the ship's destination is reached, the hyperdrive motivator projects the ship's field back into real-space and cuts the trilitium drive.

Hyperdrive Shunt

This device, which is part of a starship's hyperdrive, allows excess heat and power to be bled off before it can damage the hyperdrive itself.

Travel Speed, Time & Distance

The speed is given in parsecs per hour (1 pc/hr = 3.26 ly per hour). The fastest engines ever build had a maximum speed of 175pc/hr during the Yuuzhan Vong invasion. The Millennium Falcon had a maximum speed of 150pc/hr and was considered the fastest ship during that time (considering that the fastest capital ship of the Empire had a maximum speed of 80pc/hr).

The hyperdrive design is similar to the one found in GURPS 4th Edition Space. Each hyperdrive motivator's speeds are based on the number of tons are carried across hyperspace.

The next big limitation is the maximum distance the hyperdrive motivator can build up energy for, and the engines allow. This value is given in parsecs.

The final important part is the accuracy (or inaccuracy) of the hyperdrive motivator. This is given in clicks. In a Space Opera Star Wars setting a click represents 1 mile, in a hardcore SF Star Wars setting a click represents 1 AU. The visual effect is clearly seen in computer games and in the movies where ships drop out of hyperspace and continue to move in normal space a short while at very high speeds.

To give you something to hold on, a ship which travels at 175pc/hr should cross the entire Vordarian Beltway Galaxy in about 8.5 days (but has to make 75 separate jumps to do so).

LC (Legality Class)

The LC may vary from engine to engine and from era to era. During the reign of Palpatine, all engines faster than 30pc/hr were outlawed while in the New Republic era ships with engines going 100pc/hr were very common among the military and private companies. It depends much on how oppressive the current government is and the political situation in the galaxy.

Hyperspace Disadvantages

During a hyperspace travel the course, speed or destination cannot be changed. Once the ship enters hyperspace it is bound to execute it projected route. However, a ship can still be pulled out of hyperspace by external causes such as shadow gravity wells and artificial interdiction fields.

During hyperspace travel, the crew is isolated from the rest of the galaxy. No communications (incoming and outgoing) are possible.

Sensors don't work. The crew of a ship in hyperspace has no means of all to scan the area of arrival before they enter normal space again. Then again, they cannot be scanned by others as well.

Engine Class Availability Table

Date	Fastest (pc/hr)	Inaccuracy (miles or AU)	Maximum (pc)	Gravity (planetary diameter)
25,000 BBY	1	50	100	100
24,000 BBY	2	49	125	90
20,000 BBY	3	48	150	75
15,000 BBY	4	40	200	60
12,000 BBY	5	30	225	50
11,000 BBY	7	20	250	45
10,000 BBY	10	14	275	40
8,000 BBY	15	12	300	35
6,000 BBY	20	10	325	30
5,000 BBY	30	9	350	25
4,000 BBY	40	8	375	20
3,000 BBY	50	6	400	16
2,000 BBY	75	6	425	12
1,000 BBY	100	6	450	8
0 BBY	125	5	475	4
10 ABY	150	5	500	3
100 ABY	175	5	525	2
125 ABY	200	5	550	1

The availability in the table above reflects the standard engines built which might be commonly used (if not restricted by law). Engines that are better than the ones described in the table are always custom build engines, or prototypes.

Hyperspace Navigation

I'm going to use the program AstroSynthesis 2.01b in order to map all systems. This program let's you make real 3D stellar designs which can also be printed as 2D maps.

Hyperjump Operations

A successful jump requires four skill rolls on the part of a ship's crew. These four skill rolls must be made in a specific order. They can be performed by four different people, or (since they must be done one after another) by fewer than four people on a ship with a very small crew. Attempting a jump with unrefined Corbana fuel is -2 to all four rolls. Attempting a jump from within 51-100 diameters of a massive object is -4, within 11-50 diameters is -8, and within 10 diameters is -12.

In each case, success on the skill roll means that the operation was successful and the next stage in the process can be attempted; if all four rolls succeed, the jump takes place as planned. A simple failure on a skill roll means that the operation was unsuccessful; that task must be attempted again, at a -1 penalty per subsequent attempt, or the whole process must be started over from the beginning.

A critical failure on any of the four rolls means that a jump mishap may take place. Roll again. On a success, the task has experienced a simple failure, as above. On a failure, the jump mishap takes place. On a second critical failure, a jump disaster takes place, and the starship is completely destroyed (or simply experiences crippling damage, at the GM's option).

If the process of planning and executing a jump is performed under routine conditions (the ship is not under fire, the ship is well-maintained, point of departure and arrival are both traveled before, and there are no penalties to any of the rolls) then skill rolls may not be necessary. Under such circumstances, any crewman with at least 12 in one of the requisite skills can perform the associated task, assuming success without having to make the roll.

The four skill rolls, in the required order, are as follows:

- Navigation (Space) is used to locate the proper point at which the ship should enter hyperspace, and plot a course through normal space that will bring the starship to that point.
- Piloting is used to maneuver the ship to the proper jump point. The Piloting specialization that is necessary depends on the performance of the starship's maneuver drives; the most likely candidate is Piloting (High-Performance Spacecraft).
- Navigation (Hyperspace) is used to "plot a course" through hyperspace. The ship's navigator determines the proper setting for the hyperdrive controls that will bring the ship out at the desired point at the destination. If the I.T.A. placed hyperspace buoy at the origin, then this roll is at +1. If the I.T.A. placed a beacon at the destination, then this roll is at +2.
- Mechanic (Hyperdrive) is used when the ship reaches the jump point, to activate the hyperdrive and make sure that it operates within the parameters defined by the Navigation (Hyperspace) skill.

Jump Mishaps

Hyperdrives are very temperamental machines, and can malfunction spectacularly. Although they are quite reliable when used under ideal conditions, they become less so when used under stress. Many hyperdrive technicians are intensely superstitious...

Hyperdrives have several "failure modes", depending on exactly why a given jump failed to take place as planned.

- No Jump: If a Navigation (Space) or Piloting mishap takes place, the result is "no jump", the hyperdrive simply fails to operate. The process of planning and executing the jump must be resumed from the beginning.

- **Misexit:** If a Navigation (Hyperspace) mishap takes place, the ship's navigator has planned the wrong path through hyperspace and the ship fails to return to normal space at the desired location. Roll 1d. On a 1, the ship has exited near a solitary world, comet, or odd chunk of rock in the origin star system. On a 2-3, the ship exits near a world or gas giant in the destination star system, but not the right world or gas giant. On a 4-6, the ship exits at a random point on the destination star's 100-diameter limit. Misexit mishaps are usually not dangerous, but they can wreak havoc with the ship's schedule (and can be inconvenient when the ship is trying to make a rendezvous).
- **Misjump:** If a Mechanic (Hyperdrive) mishap takes place, the hyperdrive undergoes a serious malfunction. Roll 1d. On a 1-2, the ship undergoes no jump, as above. On a 3-4, the ship experiences a failed jump, it spends a week in hyperspace, and then emerges into normal space at the exact same point from which it departed. On a 5-6, the ship experiences a misdirected jump, and emerges from hyperspace at a point very distant from its intended destination.

Bridge Systems

A spaceship's control center is usually its bridge, a special compartment from which the rest of the ship's systems can be managed. Several major systems are actually centered on the bridge, notably the ship's communicators and computers.

Short-range craft can have a small cockpit, large cockpit, or huge cockpit. Starships will usually have a small bridge, a standard bridge, or a command bridge. The type of bridge installed determines the level of performance that can be expected from communications and computer systems.

Communications Systems

All ships have several different communications systems installed. These systems operate using the rules for the Telecommunication advantage (BS page 91).

Radio

Shipboard radios use the standard rules for that Telecommunication type, and may have the Video enhancement. A cockpit has one radio, a small bridge has two, a standard bridge has five, and a command bridge has 10. A cockpit radio's range is 186,000 miles. A bridge radio's range is 1 parsec.

Laser

Shipboard laser communicators use the standard Telecommunication rules, with the laser and Video enhancements. A cockpit or small bridge has one laser communicator, a standard bridge has two, and a command bridge has four. A laser's range is 50 miles and a line-of-sight is required.

HoloNet

Starships may be equipped with HoloNet Transceivers and emitters. A HoloNet can only be used freely during the Old Galactic Republic era (25,000 BBY) and The New Republic era (5 ABY) until the Yuuzhan Vong destroy the HoloNet grid in 25 ABY. After 30 ABY the HoloNet grid comes back online gradually using shuttles carrying HoloNet emitters and transceivers. During the Galactic Empire, only Imperial ships are able to use the HoloNet grid. A small bridge has one HoloNet transceiver and emitter, a standard bridge has 2, and a command bridge has four. A HoloNet emitter's range is 1 parsec and is relayed by the HoloNet grid (if within range) to its destination, and thus nearly limitless within the Republic's or Imperial's territory.

Hyperwave Transmitter

A Hyperwave transmitter was the radio device used aboard starships to send ultra-fast messages through hyperspace. This resulted in any message sent to be received in one second. For each radio emitter present on a starship, a separate hyperwave transmitter is needed.

SID-Transponder

Every ship is required by law to install an SID-transponder system. This system sends out an automatic identification code by radio communicator. On a civilian ship this system comes factory-sealed; it can be turned on or off, but the identification code can't be altered easily. Military systems can be reprogrammed to give false identities to enemy ships, or not to respond at all. Cockpits install one SID-transponder system. Bridges install two to give a backup.

Computer Systems

Every cockpit and bridge system includes three identical computers for redundancy. A small cockpit or bridge installs microcomputers, with Complexity equal to TL-5. A large cockpit, huge cockpit, or standard bridge installs microframes, with Complexity equal to TL-4. A command bridge installs mainframes, with Complexity equal to TL-3.

Sensor Systems

Every ship needs sensor systems to ensure that the crew is aware of its surroundings and any potential threats. All ships have a mix of active and passive sensors.

An active sensor directs emissions, such as radar, at a target, then analyzes the energy that "bounces" back in order to learn about the distance, direction, size, composition, appearance, and other aspects of the target. Active sensors use the rules for Scanning Sense (BS page 81). The basic type is Radar, with the Multi-Mode and Targeting Enhancements.

The ship's passive sensors use a combination of telescopes, cameras, and similar devices to take whatever electromagnetic radiation is already present in the environment. Passive sensors use the rules for Hyperspectral Vision advantage (BS page 60) with the Extended High-Band and Extended Low-Band enhancements. They also have Telescopic Vision (BS page 92) and Protected Sense (BS page 78).

A ship's sensor systems are given a Scan rating which is a measure of their range and power of resolution. The scan rating is used during space combat or when a ship simply wishes to detect or track another object.

Life Support Systems

Manned ships always need elaborate systems to provide crew and passengers with clean air, potable water, food, and habitable temperatures, and to deal with biological wastes. These life-support systems are much more complex than most non-technicians realize; maintaining and repairing them is one of the most unpopular shipboard duties.

Star Wars starships don't have total-recycling life support systems. Breathable air and water are recycled with high efficiency, but biomass is not. Ships must bring on provisions on a regular basis. Meanwhile, waste matter accumulates in the ship's life support system, and must be dumped from time to time. Imperial ships tend to dump their waste prior to a hyper jump.

Capacity

A life support system is rated for its capacity, the number of people that can be supported by the system for long periods of time (assuming that enough provisions are on hand).

A life support system can be overloaded if necessary. Roll 3d after each day of overloading, at +1 per full 10% by which the number of people aboard exceeds system capacity. On an adjusted roll of 13 or more, the system begins to break down, losing 10% of its current capacity (rounded up to the nearest full person) for each point by which the roll was exceeded. A Mechanic – High Performance Spacecraft roll can be attempted one per day; if it succeeds, it will restore 10% of full capacity. Note that once the life support begins to fail, the effect snowballs. If the ship remains overloaded, life support will eventually reach 0% and fail. At that point, all oxygen in the air will be used up within 1d hours, and

everyone will die. Those in low berths are unaffected if life support fails...as long as the power stays on.

Short-Term Life Support

Some ship components carry short-term life support, and can keep a few crewmen or passengers alive for a matter of hours. Such systems are normally only used in emergencies or on board short-term ships (fighter craft, shuttles, and so on). Refer to the ship design rules in this chapter.

STARSHIP OPERATIONS

Operating a starship requires considerable advance planning. Some of the pertinent considerations are discussed below.

Travel Times

Many travelers, especially merchants, will want to know how long it takes to reach their destination.

Interplanetary Travel

Interplanetary distances are usually measured in miles or astronomical units. One astronomical unit is equal to 100 million miles, the average distance between the planet Coruscant and its sun Coruscant.

Spaceships usually follow a nearly straight-line course through space, accelerating to their cruising speed (or top speed when necessary), flying all the way at the same speed until arrival, then decelerating in order to match velocities with the destination upon arrival. This is the most efficient way to reach any destination in normal space, using maneuver drives as powerful as ion fission engines or fusial thrust engines.

Normal space travel will mostly only occur when entering or exiting hyperspace, flying between starships or starports. Flying from one planet to another planet would take too long using reactionless drives.

Interstellar Travel

Interstellar distances are measured in parsecs. One parsec is equal to 3.26 light-years or 19.234×10^{12} miles.

Although the exact duration of an interstellar using hyperdrives can be predicted, a ship and its crew can fail during its hyper jumps needed to reach the final destination. This may end in a disaster or simply extend the duration of the travel.

Starship Costs

Starships are expensive pieces of equipment, beyond the means of any but the wealthiest individuals. Most starships in the Star Wars universe are owned by large organizations, governments, corporations or even syndicates.

Financing

Most small-scale Republic starship owners purchase their ships with financial backing from larger corporations or the Galactic Republic government. Imperial merchant ships, held by individuals or small groups, are subsidized by the Empire. In either case, the ship's backers expect due diligence from their active partners in pursuing agreed-upon goals, and also expect significant returns on their investment. Owners who consistently fail to meet their objectives may find their ships repossessed or worse.

The details of such a subsidy scheme vary, but a typical honest arrangement is as follows.

The individual or corporation purchasing the ship must have a good reputation and a well-considered business plan. The financial backer will have goals in mind that the ship is intended to fulfill: maintaining regular contacts among colonies, developing new trade routes, discovering new commodities or markets, conducting astrographic surveys, collecting economic intelligence, performing as naval auxiliary in wartime, and so on. The future owners and backers negotiate until they reach an agreement on how the ship will be used and what kinds of returns are expected.

The purchaser is expected to put up a substantial fraction of his own money to demonstrate his commitment. The amount of this "down payment" varies, up to 20% of the ship's purchase price. The backers will then cover the rest of the cost. The owner's share of net profits (after expenses) is determined by multiplying their down payment by a factor (typically x4) to represent the active risks they run in operating the ship, and dividing the result by the ship's purchase price. The backers receive the remainder. After a specified period (generally 30 years), full title reverts to the owner, who then retains all of the profits for himself.

Maintenance

Starships require constant routine maintenance. Members of the engineering, maintenance, and life support crew sections spend most of their time performing this maintenance. The extent size of these crew sections indicates the amount of maintenance that must normally be performed. Each member of these crew sections is assumed to provide eight man-hours per day in maintenance work. At the GM's option, crewmen from races with the Less Sleep advantage or the Workaholic disadvantage may provide more man-hours per day, while crewmen with the Laziness, Short Attention Span, or Sleepy disadvantages may provide fewer.

If a ship is short-handed in the pertinent of crew sections, crew may be required to put in longer work shifts, members of other sections may have to chip in, or the ship may simply fall short on its required maintenance.

The rules for the Maintenance disadvantage (BS page 143) apply, as do the rules under Breakdown (BS page 485). Although maintenance work is performed on a continuous basis, the maintenance period is bi-weekly. If insufficient maintenance is performed during a maintenance period, the ship loses one point of HT and must make a HT roll. If the HT roll fails, the ship loses 1d dHP (D-scale hit points, used to measure damage to spacecraft).

See Damage Effect (Chapter 7: Combat) for the effects of damage to the ship; in particular, damage due to missed maintenance may lead to Major Damage results, indicating serious breakdown in ship's systems.

Along with routine maintenance, every starship requires a complete overhaul once a year to ensure that it remains in good working order. This annual maintenance restores any damage or HT loss due to missed routine maintenance, and removes any remaining faults not caused by battle damage. It costs 0.1% of the

basis price of the ship, and requires two full weeks at a Class B or better starport. The ship's operators should make provision for the payment of the maintenance fee when it comes due, and should prepare for the revenue lost while the ship is laid up.

Supplies

The primary expendable item used by any TL11 starship is the Corbana (a mixture of corfaize-tibanna gas) fuel used to feed the power unit which provides all the power for the ship's systems, maneuver drives and hyperdrives.. Refined fuel can only be purchased at a Class B or better starport, and normally costs 7350/dton. Unrefined fuel can be purchased at a Class D or better starport and costs 780/dton.

Meanwhile, starship crews must purchase provisions. Standard provisions cost 76 per man-day, and must be carried as cargo. One dton of provisions has a mass of 12 tons, contains 2,000 man-days of food and other supplies, and costs 712,000.

Crew Salaries

Crew salaries must be paid on a monthly basis. For merchant ships, a fair monthly salary for any given crewman is 7600 + (7900 x Merchant Rank) + (7300 x best job skill). If the exact mix of skills and Merchant Rank levels among the crew is undetermined, this can be approximated as 79,000 for the senior Captain commanding a large merchant ship (1,000+ dtons), 77,800 for the Captain commanding a smaller merchant ship, 76,600 for each officer, 75,700 for each petty officer, and 74,800 for each ordinary crewman.

If a ship makes a particularly profitable voyage, it is common for part of the profit to be distributed among the crew as bonus. Any such division is up to the ship's commanding officer or the policy of his corporate sponsors.

Service Fees

When a starship makes berth, it must usually pay a variety of service fees. For simplicity, the GM may assume that these amount to 7100 per dton of ship per week (or fraction of a week) in port. If the GM wishes to track the fees more closely, he may apply the following.

Berthing Fee

Berthing fees cover power, life support, and data hook-ups at the berth, access to facilities for maintenance, and often courtesy transportation to the main starport terminal. Once paid, berthing fees cover unlimited arrivals and departures for the entire duration, although crowded starports frown on berths that stand empty for too long. The standard berthing fee, at both Republic and Imperial starports, is 720 per dton of ship for the first six full days, plus 72 per dton of ship per day thereafter.

Customs Duties

These duties apply when any foreign party moves goods through a starport onto a world. As far as a merchant crew is concerned, customs duties never apply to freight (goods owned by someone else that the crew has been paid to transport), in such cases, any duties are paid by the owner of the freight. However, whenever a merchant sells cargo (speculative goods that he owns himself) on a world, he must pay any duties that apply. During the Old Republic (before the trade franchise began), the Republic didn't collect a duty. From 32 BBY, the Republic always collects a duty of 2% of the sale price of the cargo. During the Imperial reign, this was raised to 4%. In other regions, the duty depends on the starport and the type of cargo; the duty will be 1d%. Customs duties can be avoided through smuggling (see Covert Operations, IW page 176).

Freight Handling

Ships that don't have enough personnel to handle cargo or freight themselves can pay starport stevedores to do the loading or unloading. The necessary number of crewmen is one per 250 dtons of cargo or freight; the needed crewmen can come from the cargo services section, or can be diverted from other crew sections that aren't busy in port (gunners or ship's troops, for example). The standard cost of hired stevedores is 720 per dton of cargo or freight, with a minimum of 7500.

Lighterage Fees

Cargo, freight, and fuel can be delivered to or from a ship that's away from the starport. Cargo and freight lighterage costs 710/dton from surface to orbit, 715/dton to a ship at a planet's 100-diameter limit, or 740/dton to a ship at a star's 100-diameter limit. Fuel delivery is more expensive: 780/dton from surface to orbit (if the starport has no refueling facilities in orbit), 7100/dton o a ship at a planet's 100-diameter limit, or 7400/dton to a ship at a star's 100-diameter limit.

Shuttle Tickets

A one-way ticket from orbit to a planetary surface (or back) is 750 per person. Each person can bring up to 200 pounds of baggage; any extra is carried at lighterage rates.

Special Handling

Any cargo or freight that requires special handling adds 50% to all freight handling and lighterage fees.

Starport Administration Fee

This fee covers the cost of administration, maintenance, and operation of the port, as well as search and rescue services. The standard fee is 7500, paid on landing.

Waste Dumping Fee

Star Wars starships do not have total-recycling life support systems. Over time, s ship's life-support system accumulates wastes, which must be disposed of. These can be ejected into space for free (although this is usually illegal in crowded shipping lanes or in low orbit space). They can also be dumped at any starport, for 71/man-day since the ship last cleaned the life-support system.

Wharf Fees

If cargo or freight is to be stored on the berth, the wharf fee covers the use of port facilities, warehouse space, and transfer space on the berth itself. The owner of freight usually pays this fee, but merchant crews carrying speculative cargo must pay for their own space. The standard cost is 720/dton for up to 30 days, and 72/dton per day thereafter.

Fines

Fines are the personal responsibility of the ship's captain, unless the fine is the direct result of misconduct by a crewmember. Even then, the captain usually pays the fine out of the ship's cash reserve and collects it from the crew member later (perhaps by reducing his pay).

Failure to Vacate

If a ship is ordered to vacate its berth at a starport and fails to do so on time, the starport authority will levy a fine. The standard fine is 71,000/hour.

Violation of Regulations

Any other violation of local, Republic, or Imperial regulations will likely lead to a fine. The amount varies, but typical fines are 7500 or more per incident.

INTERSTELLAR TRADE

Trade in the Star Wars Universe

During the course of history, interstellar commerce is shaped by the Republic's liberal economic model. The Republic manages a vast economic system, based on a mature network of trade routes that has been stable for millennia. This has not always been so. In the beginning of the Galactic Republic, commerce was full of energy and very unstable due to its explosive growth and the vast regions of unexplored space. On the other hand, the Empire is an oppressive government, limiting free commerce. Adventuring merchants who wish to make profit in this environment need to understand how it works.

Trade Routes

Throughout the Old Republic era, commercial traffic tends to follow trade routes. A trade route is the sequence of hyperlanes and stopping places used for commercial transports. Trade routes contain navigation buoys and are frequently updated by the Interstellar Transit Authority. Using a trade route is the safest way of interstellar travel without colliding with a body in space, or some other phenomena such as a black hole.

Trade Route Types

There were about eight major trade routes in the Vordarian Beltway galaxy, with hundreds of secondary routes and thousands of minor ones. Scouting new hyperspace routes is an incredibly dangerous task for an explorer.

Major Routes

Major routes are the larger "mains", tying together important worlds that are located in clusters relatively close to each other. They carry tens or even hundreds of thousands of dtons of cargo per week. Any given world on a major route will usually see several super-freighters of 10,000+ dtons, and many freighters of 1,000+ dtons, each week. Free Traders and other small merchant ships will find little work along such routes, unless they can find small consignments of freight which have not been consolidated into large lots by the major shipping lines. The eight major trade routes are:

- Corellian Run
- Corellian Trade Spine
- Hydian Way
- Kessel Run
- Myto's Arrow
- Perlemian Trade Route
- Rimma Trade Route
- Sisar Run

Secondary Routes

Secondary routes are lesser "mains" making less profitable, but safe links. A minor route carries freight in the high thousands or low tens of thousands of dtons per week. A world on a secondary trade route will be visited by six to ten freighters of 1,000+ dtons, along with a dozen or more small ships of 100-400 dtons, each week.

Minor Routes

Minor routes are small tributaries connecting the most prosperous minor worlds into the trade network. A minor route carries freight in the high hundreds or low thousands of dtons per week. A world on a minor route will see up to about a dozen small

merchant ships per week, all of them well under 1,000 dtons in size.

Frontier Worlds

Frontier worlds are those inhabited worlds that are not on the established trade network at all. The most populous frontier worlds may be visited by one to two small merchant ships per week. Others are served only by infrequent "packet" transports and tramp merchant ships, sometimes going for months without an interstellar visit. Free Traders sometimes find the greatest opportunities (and the greatest risks) by visiting worlds off the established trade routes.

Speculative Trade

Cautious merchants will tend to stay on the save trade routes, earning money by carrying freight and passengers at fixed rates. This enables them to minimize risk, because it's easy to predict how much freight and how many passengers will be available. On the other hand, this approach is unlikely to yield great profit.

Ambitious merchants will accept greater risk for the chance of greater profit, by engaging in speculative trade. Rather than signing contracts to carry someone else's goods, a merchant captain will buy goods using his own money, and then try to sell the goods elsewhere for a profit. If everything works well, he can make a real killing, if they don't; he may have to sell at a loss simply to keep operating.

Speculative trade is a very common practice during the Republic era's, where free markets are common, local economies are booming, and merchant captain only needs credits to invest.

During the Imperial era, all major trade routes were controlled by the Empire and more traders were forced to pay high fees or find new customers on other worlds. This resulted in more speculative trade but also in more smuggling.

Basic Trade System

The following system helps the GM and players quickly determine how much a small merchant ship will make by carrying freight and passengers. It assumes that the ship is going to stay on established trade routes; it will not be able to find significant freight or passengers otherwise. So long as that condition is met, however, the basic trade system is ideal for campaigns that feature trade only as a backdrop for other adventures.

Bilateral Trade Number (BTN)

The total amount of trade that takes place along a given trade route is reflected in the route's "size" (major, secondary, or minor). When a merchant ship needs to find freight or passengers for a specific destination, the GM must determine how much trade is taking place specifically between the current and destination ports. This can be done by computing the Bilateral Trade Number (BTN) for the two worlds.

To determine the BTN, begin by adding the World Trade Numbers (WTNs) for the two worlds, as determined during the world-design sequence (IW page 101). This gives the amount of trade that can be expected between them, based solely on the size of the world economics.

Next, examine the trade classification of the two worlds as generated in the world-design sequence. If one world is Agricultural (Ag) and the other is Extreme (Ex) or Non-Agricultural (Na), then increase the BTN by 0.5. Likewise, if one

world is Industrial (In) and the other is Non-Industrial (Ni), then increase the BTN by 0.5. This adjustment accounts for the fact that worlds in this situation complement each other, they have more gain from trade than a more typical pair of worlds.

If the two worlds are under control of two different political entities, then decrease the BT by 1. Trade that must cross a political border is usually hindered. If the two political entities are at war with each other, then no legal trade is allowed.

Next, determine the distance between the two worlds along the trade route and refer to the Distance Modifier Table below. Decrease the BTN by the amount indicated for the distance between the two worlds. Worlds that are further apart undertake less direct trade. No Available Trade, indicates not that there will be no freight or passenger traffic between the two worlds, but there will be no such traffic available for small merchant ships to handle. Long-haul freight and passenger services almost entirely run by the greater corporations, merchant guilds and trade federations.

The distance is only important when the maximum range of a ship's hyperdrive is known.

Distance/Max Jump Modifier Table

Distance/Max Jump	Distance Modifier
0	0
1-2	-0.5
3-5	-1
6-9	-1.5
10-19	-2
20 or more	No Available Trade

Finally, if one world of the pair has a much smaller economy than its partner, the economic model behind the WTNs and BTN breaks down somewhat. To correct for this, the final BTN may not be greater than twice the smaller WTN+1.

Once the BTN has been computed, the GM and players can determine how much freight and how many passengers are available for transport to the declared destination.

Basic Procedure

Once a merchant ship reaches port, it may declare its destination and begin searching for freight and passengers to carry there. The current port and the declared destination must be connected along the established trade routes, but they do not need to be a single jump apart. The BTN between the current and destination worlds must be at least 6.0, otherwise any traffic that may be available will be controlled by large shipping lines.

Freight

Beginning on the first full day after the ship lands, it may try to find freight that is intended for the destination port. Once per day, refer to the Trade Volumes Table below and make the roll for freight volume that is indicated for the BTN of the current and destination worlds. Halve the result (rounded down) if the ship is Republic/Rebel registered and the port is under Imperial control, or vice versa (and risking to become arrested). The final result gives the number of dtons of freight that are available that day.

Each lot of freight must be delivered within one day, plus 1 hour for every parsec of distance along the trade network between departure and destination ports. Unloading at the destination starport is usually sufficient for delivery (but see Special Handling above). Late delivery incurs a 10% penalty per day late.

The standard rate for freight shipping is 7700 per dton per parsec along major or secondary routes, or 7800 per dton per parsec along minor routes.

Trade Volume Table

BTN	Freight Volume Roll	Passenger Volume Roll
6	2d-10	None
6.5	2d-7	None
7	2d-2	1d-4
7.5	(2d-2) x 5	1d-2
8	(2d-2) x 5	1d-1
8.5+	(2d-2) x 10	2d-2

Passengers

Beginning on the first full day after the ship lands, it may solicit passengers who wish to travel to the destination port. Once per day, refer to the Trade Volumes Table above and make the roll for passenger volume that is indicated for the BTN of the current and destination worlds. The final result gives the number of potential passengers who present themselves that day.

To determine what level of service each potential passenger wants, begin with by rolling 1d with a maximum of the total number of potential passengers. This indicates the number of low and standard tickets that the ship can sell that day. At an Imperial port, all of these tickets will be for standard passage. In a Republic port, half (rounded up) of these tickets will be for low passage and the rest will be for standard passage. If any potential passengers are left, roll 1d again with a maximum of the remaining number of potential passengers. This indicates the number of first-class tickets that the ship can sell that day. Any potential passengers that remain will want luxury tickets. If the ship can't provide the level of service that a given potential passenger wants he will go elsewhere rather than settle for a different kind of ticket.

A passenger is expected to pay for his ticket in advance, either when making his travel reservations or when boarding the ship. On the other hand, once a passenger has made reservations to travel on a given ship to depart for his destination within one week (7 days). He will also expect to arrive at his destination within one day, plus one hour for every parsec of distance along the trade routes between departure and destination ports.

A ship that fails to meet passengers' expectations about timelines and quality of service may be able to get away with it, at least for a while. At the GM's option, the ship's crew may acquire a negative Reputation, or angry passengers may lodge complaints with Republic or Imperial authorities.

The standard rates for passenger transport are 7400 for a low ticket, 72,500 for a standard ticket, 73,500 for a first-class ticket, and 76,000 for a luxury ticket. Ticket prices are per jump rather than per parsec traveled.

Speculative Trade System

The following system can be used when a small merchant ship is trying to turn a profit through speculative trade, the art of buying cargo at a low price, in the hopes for selling it later for a high price. This system can be used whether the ship stays on established trade routes or not, and it can be used in conjunction with the basic trade system. The speculative trade system is useful for campaigns in which the GM and players are interested in following trade in some detail.

In outline, the speculative trade system is very basic: buy low and sell high. Merchants seek goods for sale (possibly on The market, in Imperial Space) and buy them with whatever resources are available. They carry these goods in their holds to subsequent destinations, seeking interested buyers. A Free Trader normally carries a number of different speculative cargoes, never knowing which will sell first, and fills his hold with freight as necessary. When a given lot of speculative cargo seems to have found a profitable market, it is sold. Ideally, the merchants bring in enough to pay for landing expenses, operating costs, a new load of goods,

and a little profit. Unfortunately, they are sometimes forced to accept whatever they can to prevent a total loss.

A canny trader can maximize his profits by matching likely goods with receptive markets. This makes advance information about the region of space where he is trading a particularly valuable commodity.

Generally only one merchant or team of merchants per crew may search for goods or buyers, any more is counter-productive.

Finding Goods for Sale

Beginning on the first full day after the ship lands, a merchant crew may begin searching for speculative cargoes to buy. Each attempt takes five days, and is made using the best skills from among the merchant team. If an attempt fails, repeated attempts may be made at no penalty (unless a critical failure occurs; see below). Attempts to find goods to buy can be done at the same time as any attempts to find buyers for goods already in the hold.

Roll versus Merchant or Streetwise, whichever is lower. Any penalty for lacking an appropriate Cultural Familiarity advantage applies, as does any penalty for not being a native speaker of the local language. Any applicable Reputation (good or bad) also modifies the effective skill. Modifiers: +1 if anyone on the team has Area Knowledge for the local planet at 12+, or +2 at 20+; -1 if the world is on a minor route, or -3 if on a major or secondary route.

Speculative Goods Table

Dice Roll	Commodity	Price (¢ /dton)	Sale Price Modifiers	Lot Size (dtons)	Density (tons/dton)
11	Heavy Metals	20,000,000	Ex-3	1d	25
12	Industrial Crystals	2,000,000	In+3, Na-3	1d	10
13	Radio-actives	100,000	In+4, Na-3	1d	10
14	Petrochemical	15,000	In+3, Na-4	2dx5	7
15	Artwork, Handicrafts	10,000		2d	5
16	Wood, Wood Products	2,000	Ag-4, In+1, Ex+4	5dx10	5
21	Industrial Metals	75,000	Ex-2	2d	25
22	Ceramics, Glass	15,000		2d	10
23	Gemstones	10,000,000	In+4, Ni-2	1d	0.5
24	Spices	6,000	Ag-2, Ex+1, Na+2	1dx5	7
25	Alcoholic Beverages	7,500	Ag-3, In+1, Ni-1	2d	7
26	Fruits, Vegetables, Nuts	2,400	Ag-2, In+3, Ex+2, Na+2	4dx10	5
31	Special Minerals	750,000	In+1, Na-3	1d	10
32	Lanthanum	5,000,000	In+2, Na-3	1d	10
33	Polymers	12,000	In-2	3dx5	5
34	Light Metals	10,000		2dx5	25
35	Textiles	30,000	Ag-2, Ex+2, In-1	3dx5	4
36	Livestock	1,000	Ex+4, Ni-2	3dx5	1
41	Shelters	12,000	Ex+1, In-1, Na+2	3d	8
42	Computers	250,000	In-2	2d	5
43	Weapons, Ammunitions	120,000		1d	7
44	Pre-recorded Media	50,000	Ni+2	1d	2
45	Pharmaceuticals	120,000	Ag-1, In+3, Ni-3	1d	6
46	Grain, Flour, Baked Goods	5,000	Ag-2, Ex+2, Na+2	2dx51d	10
51	Protective Suits	400,000	Ag-4, ex+4, In-2, Ni+1	1d	2
52	Tools	20,000	In-1	1dx5	10
53	Manufactured Goods	50,000	In-1, Ni+1	3d	8
54	Toys, Games, Sporting Gear	50,000	Ni+3	2d	5
55	Entertainment Devices	50,000	Ni+3	1dx5	4
56	Meat, Fish	20,000	Ag-2, In+2, Ex+2, Na+2	1dx5	8
61	Precision Instruments	400,000	In-3, Ni+3	2d	7
62	Electronics, Electronic parts	50,000	In-1, Ni+1	1dx5	2
63	Ground Vehicles	40,000	In-2, Ni+2	3dx5	3
64	Grav Vehicles	250,000	In-2, Ni+2	1dx5	3
65	Grav Units, Gravitic parts	160,000	In-2, Ni+2	1dx5	4
66	Machinery, Mechanical Parts	50,000	In-1, Ni+1	4dx10	8

Determine Purchase Price

Once the nature of each lot of speculative goods is known, roll on the Actual Price Table to determine the actual purchase price. Subtract 2 if the world is Poor, add 4 if the world is Rich. Add or subtract the Sale Price Modifiers that apply to the world where the goods are being purchased as indicated for the specific commodity on the Speculative Goods Table. The result on the Actual Price Table gives the actual purchase price as given on the Speculative Goods Table.

One member of the merchant team may use Merchant skill to try to lower the actual purchase price, using a Quick Contest

A successful roll indicates that a lot of cargo has been located for purchase; critical success indicates one to three lots.

A critical failure results in the crew being shunned; no one from this ship will ever be able to contact the speculative cargo markets on this world again, until they make amends. On a Republic world, this means simply paying a fine for insider trading or other violations of local law. On an Imperial world, a critical failure means that the local leaders of The market have decided the crew cannot be trusted; such trust can probably be regained only through a difficult adventure...

Determine Available Goods

Once a lot of speculative cargo has been located, roll two dice, one at a time. Modifiers: on the first die, -1 if the world is Non-Industrial, and +1 if Industrial; on the second die, -1 if the world is Non-Agricultural, and +1 if Agricultural. Treat results less than 1 as 1, and greater than 6 as 6. Read the two numbers consecutively, as a two digit number from 11 to 66, and consult the Speculative Goods Table.

For each lot of cargo, roll the indicated number of dice to determine lot size in dtons. Multiply the lot size by the price per dton (¢ /dton) to determine base price. If needed multiply lot size by density (tons/dtons) to determine total mass; multiply again by local gravity to determine weight.



according to the rule on BS page 209. The result of the Quick Contest will add or subtract 10% from the base price of the goods. For example, if the initial roll on the Actual Price Table gives a result of 150%, a victory in the Quick Contest will lower the purchase price to 140% of base, while defeat raises it to 160% of base. Groups desiring more option may consult BS pages 560 to 562.

If the lot is larger than desired, breaking it up and buying only a portion requires a positive reaction roll from the seller. One member of the merchant team may attempt an Influence roll (BS page 359) instead; modifiers for Cultural Familiarity and language skill still apply.

Once goods are purchased, they are delivered at the ramp or docking bay outside the ship's cargo hatch. It is the crew's responsibility to load each lot into the hold, though at Class C or better starports they can hire stevedores. If desired, the crew may offer to come and pick up a cargo in return for a favorable Reaction modifier, but then they are responsible for paying (or evading) any outbound costumes and duties.

Actual Price Table

Roll	Actual Price (% of Base Price)
3 or less	30%
4	40%
5	50%
6	60%
7	70%
8	80%
9	90%
10	100%
11	100%
12	110%
13	120%
14	130%
15	140%
16	150%
17	160%
18 or more	170%

Finding Buyers

Beginning on the first full day after the ship lands, a merchant crew may begin searching for buyers for any speculative cargoes that are in the hold. Each attempt to find a buyer for any one lot takes five days, and is made using the best skills from among the merchant team. If an attempt fails, repeated attempts may usually be made at no penalty. If the ship has more than one lot of speculative cargo in the hold, the crew may search for buyers for

each of them at the same time, and can also search for a lot of goods to purchase.

Attempts to find a buyer use the same skill roll as finding goods for sale; add an additional modifier equal to WTN-6 (round down). On a success, a buyer is found. On a critical failure, the crew will be shunned on that planet, with the same effects as a critical failure when searching for goods.

Determine Selling Price

Once a potential buyer has been found for a given lot of goods, the sale price must be determined. Use the same process as that used to determine purchase price. The Sale Price Modifiers that apply are the ones associated with the world where the goods are being sold. If a Quick Contest of Merchant skill is used to try to improve the same price, a victory will raise the price by 10%, while a defeat lowers it by 10%.

The sale price offered by a potential buyer doesn't have to be accepted, but refusal to sell counts as a failure to find a buyer. Another attempt must be made, taking five more days. Furthermore, the merchant team must make a Reaction Roll; on a Poor or worse reaction, the result is equivalent to a critical failure on the roll to find a buyer, and the crew is shunned.

The crew is responsible for unloading the goods, clearing them through inbound customs, and paying (or evading again) any duties owed on them. Goods are considered delivered when turned over to the buyer at his place of business or other specified destination.

INTERSTELLAR EXPLORATION

Before the Old Republic era, most of "known space" is not known to spacefaring beings, which are constantly visiting worlds and regions of space for the first time. At 25,000 BBY, the Rakata hyperdrive was adjusted by the Corellians. This allowed a faster means of travel and races could spread out and colonize other worlds. There are billions of systems that no being has ever seen, and worlds which can be colonized. Before that can happen, one must go out to explore and survey those worlds, breaking ground for the colonies to come.

Survey Operations

Survey operations involve a general evaluation and mapping of the worlds in a target star system. Many of the tasks involved in survey work require a shipboard survey module; standard ship's sensors will not do because they aren't properly configured for survey work.

Survey tasks normally involve using Electronics Operation (Sensors) skill, followed by a scientific skill to interpret the collected data. Make the Electronics Operation roll first. On a critical success, the follow-up scientific skill roll is made with a +3 bonus. On a success, the follow-up roll is made unmodified. On a failure, some of the collected data are incorrect, but a correct interpretation can be made with more difficulty; make the follow-up roll at a penalty equal to the amount by which the sensor roll was missed. On a critical failure, the data are obviously bad and the follow-up roll may not be made at all. The GM may wish to make either or both rolls for the players, to keep them in the dark as to whether they are succeeding or not.

System Direction

Survey operations in a new star system begin long before the survey ship first jumps into the system. The first step is to get an

impression of the contents of the target star system. This is normally done from one or two parsecs' distance.

First, the survey ship attempts to locate planets in the target star system. This takes a day of observation from a survey module. Roll against Electronics Operation (Sensors). Modifiers: +1 if at a one-parsec distance, -1 at two parsecs, -2 at three parsecs, -3 at four or five parsecs, or -4 at six parsecs.

If the sensors roll succeeds, any large gas giants (Saturn- or Jupiter-sized) will be detected. Success by two or more will detect small (Uranus- or Neptune-sized) gas giants. On a critical success, large terrestrial planets (6,000+ miles in diameter) will be detected. Even on a successful skill roll, some planets may be concealed at the GM's discretion; perhaps they are behind the primary star or are presenting an unlighted face to the observer.

If any planets were detected, roll against Astronomy to produce a rough system map, at +4 if more than one planet was detected (GM's discretion). On a success, the astronomer can locate the ecliptic plane of the target system (i.e., the plane most of the planets will orbit in). He will also have a rough estimate of the orbit for each planet sighted.

Another task that is undertaken at this stage is to "listen" for signs of intelligent life. Detecting a civilization will take one day of observation; this can be done at the same time as the search for planets, but a different scientist must do the work. At interstellar ranges, only civilizations at TL7 and above can be detected using shipboard instruments.

Roll against Electronics Operation (Sensors) to detect civilizations, using the same modifiers for range as for detecting planets. On a success, the scientist will detect any population of at least 10 billion living at TL7, one billion at TL8, 100 million at TL9-10, or 30 million at TL11+. If the sensor roll is made by a significant margin, the scientist may detect smaller populations, down to one-tenth the size on a critical success. Also on a critical success, the process

will gather 2d hours of language samples (see Linguistic Assessment below). Even if no detectable civilization is present, the GM should roll in case of a critical failure, in which case he may mislead the scientist into believing a civilization is present even if it isn't.

System Mapping

When the survey ship jumps into the target system, the crew may have only a rough idea of what planets are present and where they are. They must immediately make a map of the star system and establish their own location. Once that's done, a more detailed study of the system's world can be done.

First, the ship's exact location must be established. This task is usually undertaken by the ship's navigator, using the standard ship's sensors. Roll against Navigation (Space), with a +2 if a rough system map is already available (either from library data or from astronomical observations at interstellar range). On a success, the ship's position has been established with enough accuracy to allow further survey operations to proceed normally. On a failure, the navigator was inaccurate and all subsequent system-mapping skill rolls will be at -1. On a critical failure, the inaccuracy is greater (penalty is -3). Any penalty will last until the first success in a system-mapping task (the error was noticed and corrected).

Next, any planets in the system must be located precisely. This is actually more time-consuming once the ship is inside the target system; from a few parsecs away, it's easy to know which way to point the telescope. From inside the target system, the whole sky needs to be searched.

To produce a workable system map requires 10 days of observations. Up to four astronomers per system module can work together and reduce this time. Roll against Electronics Operation (Sensors) to locate system objects, at +2 if a rough system map is already available. This mapping process will automatically detect all the gas giants planets present in the system. On anything but a critical failure, all the terrestrial planets will also be detected. On a success, all of the larger moons in the system will appear. On a critical success, smaller moons and planetoids will also be detected.

Once planets and other bodies have been detected, a follow-up Astronomy roll will produce a working map of the star system. On a success, gas giants and terrestrial planets will be immediately identifiable, and the GM may reveal the main world's specific planet type. Any unusual features of planetary orbits will also be known at this point. Finally, success will permit the ship's navigator to prepare jump parameters for return visits to the star system. So long as jump masking is not a factor, future jumps into the star system can be made directly to the 100-diameter limit of any desired body.

Finally, the ship will again search for evidence of intelligent life. Civilizations at TL5 and up can be detected at interplanetary ranges. Detection again requires one day of observations by a scientist who is not involved with the search for planets. Roll against Electronics operation (Sensors). On a success, the scientist will detect any population of at least 10 billion living at TL5, one million at TL6, 100,000 at TL7, 10,000 at TL8, 1,000 at TL9-10, or 300 at TL11+. Again, if the sensor roll is made by a significant margin, the scientist may detect smaller populations, down to 1/10 the size on a critical success, the process will gather 2d hours of language samples. The GM should always make this roll, even if no detectable civilization is present or detection is automatic.

Planetary Survey

Explorers don't usually examine every world in a target system closely. Any nearly-habitable planet is likely to get considerable attention. Standard procedure is to do an initial evaluation of the planet while still at some distance (four to five million miles), then move into close orbit for a detailed survey and mapping sweeps.

It takes very little time to discover a planet's general parameters: diameter, atmosphere, hydrographic coverage, and climate. A rough idea of the planet's destiny and surface gravity will also be possible. An hour's observation with a survey module will suffice. Make a roll against Electronic Operations (Sensors) to gather data, then against Geography (Physical) with the appropriate specialty (BS page 180) to interpret the results.

To map the surface of a terrestrial world and determine its density and composition, a survey ship takes up a close orbit and begins using its planetary-survey instruments. Multiple telescopes and other instruments are used in concert, with each survey specialist supporting the work of other members of the team.

The best orbit for surface mapping is some variation of the "ball-of-yarn" orbit. The survey ship orbits at a very high inclination to the planet's equator, actually passing over the north and south polar regions on each circuit. As the planet rotates, the ship finds itself always passing over new terrain, eventually scanning every portion of the planet's surface. If the planet is too small or its rotation is too slow, the ship may alter its trajectory slightly on each pass to get the same effect. Taking up an effective ball-of-yarn orbit requires a successful Piloting roll. The entire mapping process takes a number of hours equal to the diameter of the planet in thousands of miles, squared (minimum 2 hours).

To gather data for the survey, each specialist (up to four per survey module) must make an Electronics Operation (Sensors) roll. If at least one surveyor succeeds, a Cartography roll is needed to assemble the survey data into a working planetary map. Modifier: +2 for each surveyor after the first who succeeded in his sensors roll.

The completed survey map will display visual and thermal features of the surface, resolving features down about 100 feet across. If there is no reason to avoid using active sensors, the survey will also yield a synthetic-aperture radar map of the planet, including nearly exact elevations. Densitometer scans will give some idea of what lies under any oceans, giving a rough map of the seafloor. The GM may wish to simply share any planetary map he has drawn with the players at this point.

The orbital mapping survey is the last chance the exploration team has to detect intelligent life, short of actually landing on the planet and looking for citizens. Once the mapping sensors results are in, make another Cartography roll, at +2 for every surveyor after the first who succeeded. Success in this roll will detect any population of at least 10 million at TL0, one million at TL1-4, or 100,000 at TL5. Again, if the sensors roll is made by a significant margin, smaller populations can be detected, down to 1/10 the size for a critical success. Any TL6+ civilization that has thus far eluded detection is automatically located once close-orbit mapping results are available.

If intelligent life has been detected now or at any earlier point, a successful Cartography roll will locate any major population centers. Even cultures that lack cities will have regions of unusually dense population (hunting ranges or good agricultural land), and these can be placed on the map.

Exploration Operations

Once the initial survey of a new world has been completed, explorers can get down to business. Real understanding of any new world requires that explorers go down and get their hands dirty. After all, every new planet is a world, the end product of billions of years of isolated evolution, full of traits unique to itself.

Geological Survey

General information about planetary geological formations will be available due to the orbital mapping pass. More detailed maps of local terrain can be generated by low-altitude mapping flights. During these, a ship's small craft or air speeder pass over the

terrain at a height of about one mile, using visible-light cameras, IR sensors, radar, and densitometer readings to build an extremely detailed map. Assume that one team (two to four explorers) can cover about 5,000 square miles in a day. The task requires a lot of routing Piloting and Electronic Operation (Sensors) use, but the GM may not want to bother with skill rolls unless unusual circumstances present themselves. To assemble the final detailed map of any given area, a Cartography roll is required.

The detailed terrain map will give some information about subsurface geological formations and ore deposits, but getting a complete picture will require on-site inspection. In a given region, a geologist will drill core samples in carefully chosen locations, and will also use seismometers and a portable densitometer. This process requires 1d days for an area of about 500 square miles. The geologist must succeed in skill rolls against Electronic Operation (Sensors) and Geology. On a success, the geologist will understand the broad outlines of local geological history, and will know whether there are any valuable mineral deposits in the area. Actually locating these deposits may take months or years of work, and may not be a task for the initial exploration team.

If the planet being explored has no significant local life, then geological survey may be sufficient to determine the planet's Resource Value Modifier. This will require the successful completion of 2d local area surveys (GM rolls).

Biological Survey

Meanwhile, if the planet is a Garden world, biologists will fan out to gather information about native life forms. Such a biological survey takes about 1d days per region and terrain type covered.

During the biological survey, the explorers will collect samples of plant life and soil for later analysis. They will also try to study at least 10-12 different animal species in each terrain type. Small animals can be captured for intensive study. Large creatures will be anesthetized or killed, so that gross anatomic studies can be done and tissue samples can be taken. The explorers will also try to make holographic records of as many species as possible, exhibiting normal behavior in their natural environment.

The biological survey will require a number of Biology rolls, possibly with various specialties (Botany to study plant samples, Zoology to study captured animals, Biochemistry or Microbiology to study soil samples, and so on). Photography skill will also be useful in taking holographs of creatures in their natural setting. Capturing or hunting animal specimens should be played out as a set of mini-adventurers, using as much detail as GM and players are comfortable with.

On a world with significant local life, both geological and biological surveys are needed to determine the planet's Resource Value Modifier. This will require the successful completion of 2d local geological survey and 2d local biological surveys.

Ecological Survey

The biological survey will yield enough information to get a broad view of a world's natural history. Major plant and animal orders will be understood, and the most prevalent large species will be identified. To get a real understanding of how local ecosystems work, however, a full ecological survey is necessary.

An ecological survey takes 2d years to complete, and is usually done after a full scientific colony is placed on the world. The surveyors must painstakingly identify local species down to the smallest animal and plant forms. Further, the team must observe how all of these species interact over several local years, to make sure that any seasonal changes are noticed and understood. The survey will involve many rolls against various Biology specialties.

Contact Procedures

Once explorers have determined that intelligent life is present, the question of contact arises. The Galactic Republic has developed contact protocols that all official expeditions are ready to implement. Unofficial expeditions may have developed their own procedures on the fly...

In general, explorers will avoid going into contact a new society "cold". If possible, the exploration team will study the natives for weeks or even months from hiding.

Linguistic Assessment

The most important pre-contact task is a study of the local languages. If the native society is at a low level of development (TL0-5), then samples of the language must be gathered via direct monitoring of conversations. This would most likely be done using stealth reconnaissance drones placed in inhabited areas. At TL6 and up, it becomes possible to gather samples by monitoring radio communications from orbit.

Probe droids are almost impossible for a low-tech society to detect in flight, but at higher tech levels the local sensor network begins to have a chance at detection. It can be difficult to deploy droids where they will have a good vantage point and yet will not be discovered accidentally. Use the appropriate Piloting skill to deliver a Probe droid undetected, at a -1 penalty for each native TL above 6. A failure indicates that the flight had to be aborted, while a critical failure indicates that the probe droid was lost or shot down. Once the droid has reached the target area, the pilot can use his Camouflage skill to find a good place from which it can eavesdrop.

Radio monitoring can be done without risk of detection. Use Electronics Operation (Communications) to tap into the local radio net using a ship's communicators. At higher tech levels the signals themselves may become difficult to interpret. As analog signals give way to digital (late TL7), the eavesdroppers must first break the protocols that encode voice, video, or text data. This requires several hours' worth of samples and a Cryptography roll, at -2 for each native TL above 8.

Each flight of a probe droid can gather 1d-2 hours of useful language samples (minimum 0). Ship's communicators can gather one hour of useful samples for every two hours of monitoring. The GM should determine how many hours of samples will be needed before a working model of the language can be derived. If the language is related to a known language (as for a lost colony of some kind) then 2dx10 hours may be enough to "break" the new dialect. If the language is completely unknown, then at least (2d+8)x10 hours of samples will be needed, possibly more if the language has unusual syntax or is communicated in an unusual manner.

In any case, Linguistics rolls will be needed to analyze the samples properly, and to create a database for the new language. At this point, the database is still incomplete, and will not permit anyone to learn the language at a better than a Broken comprehension level.

Sociological Assessment

Once the local language has been "broken", explorers must make an initial estimate of local social, cultural, and political parameters. Again, this is based on information gathered through stealth reconnaissance and radio monitoring. However, even if the language is beginning to be known, it will take considerably more work to get insight into local culture. The rules below assume that at least 200 hours of language samples have been gathered. If less than this is available when the explorers try to make a sociological assessment, apply a -1 penalty to each skill roll for every 10 full hours of deficit. Extra samples give a +1 bonus for every 100 hours

of surplus. Video samples or probe droid photography count double if they show natives interacting socially.

Technology Level:

The easiest parameter to access from a distance is the level of technological development. The overall TL of a society should be obvious by the time the initial language database is complete, without any need for skill rolls.

Population:

The native population is also fairly easy to estimate by the time the initial language database has been completed. Make a roll against Geography (Political) to estimate the world's native population, and again to estimate the population of any specific area.

Political Structure:

During this phase, the team can determine the world's government type. Intercepted communications can give some idea as to who makes decisions, and how political power is implemented. Roll against Sociology to determine the local government type.

Specific Political Institutions:

The details of local politics and customs are not always as obvious as the overall structure. At this point, the explorers will be most interested in the specifics of local law. Soon they will be preparing for actual contact, and they will want to know what might get them arrested! Roll against Anthropology to make a rough assessment of local political structures and laws.

Instead of resolving the sociological assessment purely with skill rolls, the GM may wish to game out the process in more detail. In this case, once the initial language database has been built, or even before, the GM may begin to provide clues to social parameters by describing the exploration team's observations.

For example, rather than calling for an Anthropology skill roll and telling the player "the society accepts dissent", the GM may describe a crowded city square, observed by a probe droid. Dress and appearance are diverse. Some of the natives are apparently putting on a political demonstration, with signs and chanted slogans, but although there are angry expressions no one is moving to stop it. Indeed, some natives in uniform are apparently protecting rather than arresting the dissidents. Of course, some of the explorers' observations can be misleading...

This treatment can give the layers more latitude to direct the investigation, perhaps using other skills to ferret out bits of evidence. Once the layers have drawn and stated their conclusions, the GM can make skill rolls, granting bonuses of the players have been perspective, or penalties if not.

Covert Contact

Once the linguistic and sociological assessments are finished, the commander of the exploration team may authorize covert contact. This is not intended to open communications between the team's government and the new culture. Instead, the explorers will be sent to gather information without revealing themselves to the natives.

Of course, the whole concept of covert contact implies that the explorers can be covert when they move among the natives. Surgical alteration and disguise can only go so far when dealing with an alien civilization. The Imperial Navy will rely more on the extensive use of probe droids or commandos, while the Republic will rely more on scientists. Current protocols call for Republic explorers to move directly to an overt contact mode.

Members of the "Alpha Team" assembled for a covert contact mission must be as familiar as possible with the native language and customs. At this point, they will speak the native language at a Broken level, but their understanding of local culture will be too

incomplete to permit any level of Cultural Familiarity. This implies the expenditure of one character point and 200 hours of study per explorer.

If possible Alpha Team members are provided with clothing and personal equipment that will fit local styles. Money is often a problem, especially if the local technology can produce elaborate currency that is hard to counterfeit without close examination. Instead, the Alpha Team is provided with compact items that might be of value in trade. Precious metals are a common choice. High-technology goods may be carried, but only if they can be concealed very easily; covert-contact specialists often have high levels of the Holdout skill. The Alpha team may carry concealable weapons for self-defense.

An inhabited area is chosen for the mission, preferably a frontier or rural region that allows for an unobserved landing. Once the Alpha Team lands, it makes its way into contact with the local population. Naturally, the course of each covert contact mission should be played out as an adventure!

The goal of each covert-contact mission is to gather more detailed information about local language, culture, political structures, laws, and customs. The Alpha Team must decide what items or information later teams will need to better interact with the natives. They should obtain examples of local currency, identity documents, clothing, personal equipment, and so on. They can also obtain scrolls, books, newspapers, downloads from library computers, any kind of documentation that will improve the expedition's grasp of the local language and social situation. Naturally, all this will mean interacting with the local population, unless the team resorts to stealth and theft. Apply all penalties to social skills for lack of language skill or Cultural Familiarity!

The GM should decide in advance how many successful covert-contact missions will be required before this stage of the contact operation can be concluded. For a culture that isn't too alien to the explorer's experience, 1d+1 missions may suffice. For a complete alien culture, 2d or even 3d missions might be needed.

Once the requisite number of covert-contact missions has been completed, the exploration team may improve the language database so that members can buy up to an Accented comprehension level. Cultural Familiarity for the local culture may also be purchased at this time.

Overt Contact

Once covert contact is finished, or once the decision has been made to skip the covert contact step entirely, in the case of a truly alien culture, the exploration team can move to overt contact. The Galactic republic has no "non-interference" principle, and permits its explorers to make open contact even with low-technology societies. After all, the common wealth of the Galactic Republic is meant for all species, or in the case of the Empire, any alien can be oppressed and used as slaves, its planet mined and any opposition eliminated...

The "Beta Team" that engages in first overt contact is outfitted in a manner similar to the covert-contact Alpha Teams, although if higher levels of language skill and Cultural Familiarity are available, the Beta Team members must have invested in them. The exact procedure for overt contact is left up to the mission commander, since the circumstances are likely to vary widely.

Established protocols call for the first overt-contact mission to open communication with local political authorities. The existence of offworlders or Galactic Civilization is not to be revealed to the general populace until local authorities agree that this can be done. Even then, the announcement is left up to the local officials, with the contact team operating only in support.

The Beta Team should not discuss the details of advanced scientific or technological knowledge. High-technology items may

be demonstrated as part of the process of proving the team's claims, but how devices work should be left to later discussions.

Similarly, the team should not discuss intergalactic politics or institutions. Beta Teams may admit to being from a starfaring civilization that is interested in continuing contact with the local society, but the details should be left vague if possible. The Team may promise that more information will be made available once a good working relationship seems likely.

Once local authorities are coping well with the implications of contact, the Beta Team should conclude an agreement with them, laying out how further contacts may proceed. This may require considerable negotiation. The explorers should gain free access to

the local population, enough to complete in-depth linguistic and sociological surveys. This normally requires that the authorities cooperate and that the population be made aware of the explorers' presence. The relationship should be set up so that the existing social and political situation is left as intact as possible. In particular, the Beta Team must be careful not to become part of any local power struggle, withdrawing entirely if it appears necessary.

Once friendly overt contact has been made, other agencies will step in, especially from the Ministry of Trade and the Ministry of Culture. The exploration team's job is complete, and it will doubtless be assigned to other work...

STARSHIP DESIGN

The ship-design system presented here gives the GM and players all the tools necessary to create ships for the Star Wars setting. The system is modular, permitting ships to be assembled from standard-sized hulls and modules.

The design system involves a step-by-step procedure. Calculations are simple and can easily be done on scrap paper. A calculator is useful but not essential. Before beginning, refer to Units and Abbreviation for a list of terms and abbreviations used in this design system.

Step 1:

Determine the design concept.

Step 2:

Design the ship's hull.

Step 3:

Choose armor and surface features.

Step 4:

Evaluate hull design.

Step 5:

Install maneuver and hyperdrives.

Step 6:

Install bridge systems.

Step 7:

Install sensors.

Step 8:

Install offensive systems.

Step 9:

Install defensive systems

Step 10:

Select small craft.

Step 11:

Install power plant.

Step 12:

Install fuel tanks and fuel processing equipment.

Step 13:

Determine size and makeup of the crew.

Step 14:

Install quarters and miscellaneous systems.

Step 15:

Install special features and unique systems

Step 16:

Determine ship performance.

Step 17:

Finalize the design

As design choices are made, keep track of the number of internal spaces taken up by ship's systems, the ship's mass (in tons), its cost (in $M^{\#}$), and the power required by ship's systems (in MW).

Units and Abbreviations

The following units and abbreviations will be used throughout the starship design process.

dDR:

A measure of spaceship Damage Resistance. One point of dDR equals DR 10.

dHP:

A measure of hull hit points. One point of dHP equals 10 hit points.

dton:

A "displacement ton", a measure of hull volume. One dton is equal to 500 cubic feet.

Gravity (G):

A measure of acceleration equivalent to that produced by the surface gravity of Coruscant. One G is equal to 33 feet per second per second.

ksf:

A measure of hull or turret surface area, equal to 1,000 square feet.

$M^{\#}$:

A "megacredit" or one million Republic credits.

MW:

A megawatt, a unit of power production or consumption. Equal to 1,000 kilowatts (kW)

Space:

A unit of 500 cubic feet, a convenient measure of the internal volume of a hull, or of the size of a ship’s systems. Often used interchangeable with dton (see above).

Ton:

A measure of mass or weight, equal to 2,000 pounds.

Step 1: Determine Design Concept

First, decide on the general concept and mission for the ship. Who is building it and for what purpose? Is it a starship, or a craft intended only for in-system travel? Is it a merchantman or a warship? Does it have specialized functions that most ships do not have?

Next, decide at what era the ship is being designed and built. From 25,000 BBY all Republic and Imperial ships are always built at TL11, but many systems are of lower TL. The following eras are available:

The Pre-Republic era	(2 million years BBY – 25,000 BBY)
The Old Republic era	25,000 BBY – 1,000 BBY
Fall of the Republic era	1,000 BBY – 32 BBY
Rise of the Empire era	32 BBY – 0 BBY
The Rebellion era	0 ABY – 5 ABY
The New Republic era	5 ABY – 25 ABY
The New Jedi Order era	25 ABY – 40 ABY
The Legacy era	40 ABY – 137 ABY

Generic Modifiers and Multipliers

In the steps given below, the mass and the space used by systems and components must be modified. This is because in later stages of the TL11, technologies become better than in the beginning years of TL11. Because TL11 is spread over more than 25,000 years, there is only little improvement possible. The improvements which are easy to include in this ship design system is to alter the mass of the systems and reduce the space used. It will be noted whenever this modification should be applied.

Mass Multiplier:

Multiply the given mass by:

- 2.0tons during The Pre-Republic era
- 1.0tons during the Old Republic era
- 0.8tons during the Fall of the Republic era
- 0.6ton during the Rise of the Empire era
- 0.5tons during The Rebellion era
- 0.4tons during the New Republic era
- 0.3tons during The New Jedi Order era
- 0.2tons during The Legacy era

Space Multiplier:

Multiply the given space used by:

- 1 during The Pre-Republic era
- 0.5 during The Old Republic era
- 0.3 during the Fall of the Republic era
- 0.25 during the Rise of the Empire era
- 0.2 during The Rebellion era
- 0.15 during The New Republic era
- 0.1 during The New Jedi Order era
- 0.05 during The Legacy era

Step 2: Hull

A ship’s hull is its frame, and also provides its basic infrastructure (decks, cables, stress bracing, and so on). The size of a hull is measured in dtons. To design the ship’s hull, choose its size, shape, and degree of streamlining

Hull Size

Begin by selecting a hull size from those listed on the Hull Table. Note that the largest hulls are only available at higher TL/era. Based on the hull’s size, record the hull’s base surface area (in ksf), base cost (in M⁷), and Size Modifier (SM).

The base surface area of each hull is the area of a sphere with the appropriate volume (assuming 500 cubic feet per dton of hull volume). Areas have been rounded off to three significant figures. Hull shapes that vary from a sphere will have more surface area to cover the same volume; this is implemented in later steps.

The base cost of any hull is equal to 750,000 per dton. This covers not only the cost of the hull itself, but also the cost of internal bracing, partitions, airlocks, power transmission infrastructure, artificial gravity, and other systems not explicitly described in the rest of the ship-design rules.

The Size Modifier for each hull size is assumed to incorporate the modifiers for hull shape from BS page 550, regardless of the actual shape of the hull. A spherical hull has the same cross-section from every direction, but gets the full +2 bonus to Size Modifier. A long, narrow hull will be larger in its longest dimension, but will have no bonus to Size Modifier. In any case, the total SM will be the same.

For GMs who want to use any hull size, calculate base area as follows:

$$r^3 = (500 \times \text{dtons}) / (4/3 \times \pi)$$
$$\text{Ksf} = (4 \times \pi \times r^2) / 1000$$

Hull Table

Hull Size (dtons)	TL Required	Base Area (ksf)	Base Cost (M ⁷)	SM
9	-	1.32	0.45	+5
10	-	1.41	0.5	+6
11	-	1.51	0.55	+6
12	-	1.60	0.6	+6
13	-	1.68	0.65	+6
14	-	1.75	0.7	+6
15	-	1.85	0.75	+6
20	-	2.24	1.0	+6
25	-	2.60	1.25	+6
30	-	2.94	1.5	+7
35	-	3.26	1.75	+7
40	-	3.56	2.0	+7
45	-	3.85	2.25	+7
50	-	4.13	2.5	+7
60	-	4.67	3.0	+7
80	-	5.66	4.0	+7
100	9	6.56	5.0	+8
200	9	10.4	10	+8
300	9	13.7	15	+9
400	9	16.5	20	+9
500	9	19.2	25	+9
600	9	21.7	30	+9
700	9	24.0	35	+9
800	9	26.3	40	+10
900	9	28.4	45	+10
1,000	The Pre-Republic era	30.5	50	+10
2,000	The Pre-Republic era	48.4	100	+10
3,000	The Old Republic era	63.4	150	+10
4,000	The Old Republic era	76.8	200	+11
5,000	The Old Republic era	89.1	250	+11
6,000	Fall of the Republic era	101	300	+11
7,000	Fall of the Republic era	111	350	+11
8,000	Fall of the Republic era	122	400	+11
9,000	Fall of the Republic era	132	450	+11
10,000	Rise of the Empire era	141	500	+12
20,000	Rise of the Empire era	224	1,000	+12
30,000	Rise of the Empire era	294	1,500	+13
40,000	The Rebellion era	356	2,000	+13
50,000	The Rebellion era	413	2,500	+13
75,000	The Rebellion era	542	3,750	+13
100,000	The Rebellion era	656	5,000	+14

Suggested Hull Sizes

A ship’s classification depends on its function, not its size. Even so, naval experts usually classify spaceships according to hull size. Here are some suggested hull size ranges for various ship classes.

Ship Function

Ship Class	Hull Size Range (dtons)
Capital	
Light Carrier	500-2,000
Carrier	2,000-3,500
Heavy Carrier	3,500-5,000
Capital Carrier	5,000+
Corvette or Patrol Cruiser	400-1,000
Destroyer	1,000-2,000
Frigate	1,500-2,500
Light Cruiser	500-2,000
Cruiser	2,000-3,500
Attack Cruiser	3,500-5,000
Heavy Cruiser	5,000-10,000
Battle Cruiser	10,000-15,000
Dreadnought	15,000-30,000
Battle Ship	30,000+
Monitor	100,000+
Bomber	
Light Bomber	15-25
Bomber	25-35
Heavy Bomber	35-45
Fighter	
Fighter	10-15
Attack Fighter	15-25
Heavy Fighter	25-35
Civilian & Utility	
Escape Pod	5-10
Lifeboat	10-20
Launch, Gig, or Ship's Boat	20-30
Cutter	30-50
Shuttle	50-100
Scientific Scout	100-400
Courier, or Transport	100-400
Light Freighter	100-500
Freighter	500-5,000
Large Freighter	5,000-25,000
Super Freighter	25,000+

To help you determine what hull function to select, a brief description of each function is given below.

Capital Ships

Capital ships are the ships used by the military. These are armed, often with weapons not available to civilians.

- **Monitor:** Well, you can't talk about ships anymore with this size. Monitors are more like large space stations with engines. They are costly, slow and cumbersome but they can mount a lot of firepower not available even on the largest battleships.
- **Battleship:** These are the biggest starships in existence. They are well armed, armored and shielded. The only purpose is to punish other ships. They are slow and cumbersome and therefore not well suited for escort or intercept missions.
- **Dreadnought:** Packing heavy armor but lacking the firepower of a battleship and the maneuverability of the cruiser. These ships are often used as shields for more precious ships until they jump into hyperspace.
- **Cruiser:** Cruisers are large combat vessels with multiple target response capability. Cruisers are well armed and well equipped. The largest cruisers are as well armed as battleships but have less armor for protection.
- **Frigate:** Frigates are the most versatile starships. Though a frigate is armed its main function lies elsewhere. It is quite capable of supporting a fleet with its facilities like medical support and sensor scanning.
- **Destroyer:** These fast warships provide multi-mission offensive and defensive capabilities, and can operate independently or as part of a carrier battle group or interplanetary action groups. Destroyers are small, heavily armed, shielded combat orientated ships. Because of their small size and limited operations theater, destroyers require regular re-supply and maintenance at a starbase. Destroyers tend to be inexpensive to produce, but draining in maintenance.
- **Corvette:** Corvettes or blockade Runners as they are called are fast lightly armed ships. These ships are often used for diplomatic mission, specialized cargo transfers or as personal ships or whenever there is need for speed with a bit of protection.
- **Carrier:** Carriers only took their place in the Navy when the Empire had to build a lot of cheap ships, capable of

countering the Rebel threat of their hit-and-run attacks. Carriers lack proper armaments and tend to keep out of the fire zone. The Rebel Alliance already employed light carriers for several years with great success.

Bombers

Bombers are small crafts like fighters with the addition of an ordnance payload capability. It makes them slower and less maneuverable than fighters.

Fighters

Fighters are the superiority fighters. They are fast, light and maneuverable. Fighters armed with missiles are known as attack fighters.

Civilian & Utility Crafts

Many different types are known to be built by many different factories. Most civilian ships are unarmed and meant for work, pleasure, or research.

- **Escape Pod:** Small emergency pods to ensure safe evacuation. Escape pods have no hyperdrive and only limited food and oxygen supplies.
- **Lifeboat:** Larger than the escape pod. Some ship captains have their own lifeboat which has a hyperdrive.
- **Launch, Gig, or Ship's Boat:** A large, multi-person, but less luxurious lifeboat. Mostly used on commercial transports.
- **Cutter:** A utility craft used for many various engineering and space mining tasks.
- **Shuttle:** Shuttles are dedicated to deliver personnel. Shuttles come in all sizes, from small shuttles to deliver diplomatic personnel to large for carrying an invasion force.
- **Scientific Scout:** Deep space explorers will need specialized ships with the appropriate modules onboard (see Interstellar Exploration above).
- **Courier or Transport:** These are a hybrid between shuttles and light freighters. They are most commonly used as long range shuttles. The Empire converted harmless transports into assault transports which contained a small number of troops as a boarding party.

Configuration and Shape

Hulls come in different configurations as well as sizes. Each configuration defines the hull's shape and affects the layout of internal and external features. The available configurations are needle/wedge, flattened sphere, cylinder, close structure, sphere, and dispersed structure. Some configurations have more surface area than others, and some configurations are more likely to be sleek and streamlined.

Needle/Wedge:

A long, sleek shape with very clean lines. "Needle" hulls are very long and narrow, while "wedge" hulls are somewhat shorter and wider. Most Imperial warships are built on this shape.

Flattened Sphere:

A round, flat shape, reminiscent of the classic "flying saucer" configuration.

Cylinder

A long, rounded shape, suitable for ships that don't need the best atmospheric performance. Most Mon Calamari cruisers are built with this shape.

Close Structure:

A generic shape, generally cylindrical in structure but with various pods, nacelles, and other substructures attached. Many civilian and Old Republic ships are built with this shape (i.e., the Corellian Corvette).

Sphere:

A standardized spherical shape, with few or no attached substructures. The Yevethan Aramadia-class thrustships are built with this shape as are the command section of the Trade Federation’s battleships.

Dispersed Structure:

A generic classification for ships built as open frameworks rather than compact hulls. Very few ship classes are built with this shape, although aliens using this configuration may still be encountered.

Hull Configuration Table

Configuration	Area Modifier	Cost Modifier	Turrets Modifier	Best Streamlining
Needle/Wedge	2.5	2.0	0.3	Airframe
Flattened Sphere	2.0	1.6	0.25	Airframe
Cylinder	1.5	1.2	0.3	Streamlined
Close Structure	1.2	1.0	0.25	Streamlined
Sphere	1.0	1.0	0.2	Streamlined
Dispersed Structure	2.0	1.0	0.2	Unstreamlined

Streamlining

Every hull has one of three levels of streamlining: unstreamlined, streamlined, or airframe.

Unstreamlined vessels may have dispersed structures, or they may have more standard hull shapes but with no concessions to airflow. An unstreamlined vessel must remain below supersonic speeds in any atmosphere denser than Trace or it risks destruction. This makes atmospheric landings and takeoffs very difficult and dangerous for such vessels. Meanwhile, unstreamlined vessels typically have no landing gear or other facilities to relieve the stresses on the hull when set on the ground. Spaceports may have special docking clamps to support these ships. An unstreamlined ship may be able to land on a world once, but is likely to be unable to ever lift off again without repulsorlifts.

Streamlined vessels are generally cylindrical, spherical, or block-shaped. Sharp edges may have been rounded off, but the hull does not generate lift and there are no aerodynamic control surfaces. A streamlined ship may skim gas-giant atmosphere for hydrogen fuel (IW page 192), but they must exercise caution when landing on or taking off from worlds with substantial atmospheres. However, they normally have retractable landing gear and are unlikely to be damaged by simply landing on a planetary surface.

Airframe vessel are sleek, usually needle-, wedge-, or disk-shaped. An airframe ship is designed for atmospheric performance and smooth airflow over the hull. It has full atmospheric maneuverability, and generates lift in any substantial atmosphere. Airframe ships may skim for fuel and can safely re-enter any atmosphere. An airframe hull is assumed to include retractable landing gear. Nubian ships, for example, are airframe ships.

Select a streamlining level, and make a note of the Area Modifier and Cost Modifier from the following table. The best level of streamlining that is available depends on the hull configuration, as given on the Hull Configuration Table.

Hull Streamlining Table

Streamlining	Area Modifier	Cost Modifier
Unstreamlined	0.0	0.0
Streamlined	0.2	0.2
Airframe	0.3	0.4

Finalizing Hull Design

Once the hull size, configuration, and degree of streamlining are determined, several attributes of the hull can be computed in turn.

Surface Area:

To determine the total surface area of the hull (in ksf), multiply the base surface area from the Hull Table by the sum of the Area Modifiers from the Hull Configuration Table and the Hull Streamlining Table.

Mass:

The hull’s mass is computed by multiplying the total surface area (in ksf) by the generic mass multiplier.

Cost:

To determine the total cost of the hull (in M⁷), multiply the base cost from the Hull Table by the sum of the Cost Modifiers from the Hull Configuration Table and the Hull Streamlining Table.

Maximum Number of Turrets:

The maximum number of turrets that can be placed on the ship’s hull is based on the hull’s base surface area multiplied by the Turrets Modifier from the Hull Configuration Table. Round down the result to the nearest integer. The degree of streamlining does not affect the number of turrets that can be mounted on a hull.

Step 3: Armor and Surface Features

Ships are armored to protect against micrometeors, cosmic radiation, and enemy weapons. Adding armor will make a ship more massive and therefore slower, but it will also make the ship more durable. Other surface features may make the ship harder to spot using active or passive sensors. These features do not take up internal hull volume, but do add mass and cost.

The mass and cost of these surface features depends on the total surface area of the hull (in ksf), as derived in Step 2.

Choose Armor dDR

Spaceship armor is rated in dDR (multiples of DR 10). An airframe or streamlined ship must have at least dDR1. An unstreamlined ship with a configuration other than Dispersed Structure may have any dDR. A ship with a Dispersed Structure hull must have dDR0. Most civilian ships will have at least dDR 1, but ships likely to face enemy fire (warships, pirates, Republic Peacekeeper ships) are likely to be much better armored.

View ports have a standard dDR 1. View ports are made of transparisteel. View ports are not covered by the normal armor (count view ports as eyes or windows of a vehicle).

To determine how much armor a ship needs, review the weapon tables. Armor is considered Ablative and directional. The dDR is equal to all sides; Forward (F, or front), Aft (A, back), Starboard (S or left), Port (P or right), Dorsal (D or top), and Ventral (V or underside).

Armor Mass and Cost

Armor Mass:

Multiply the ship’s hull area (in ksf) by the chosen dDR. Multiply the result by the generic mass multiplier. Hardened armor adds +20% to the mass per level of Hardened.

Armor Cost:

Multiply the Ablative armor’s total mass (in tons) by M⁷0.001, or Semi-Ablative armor’s total mass (in tons by M⁷0.012) to get armor cost. Hardened armor adds +20% to the cost per level multiplied by the level of hardened (i.e., a level 3 Hardened armor would cost an extra 20% x 3 x 3 = 180%).

Step 4: Evaluate Hull Design

So far, the design process has focused on the hull. Now the hull has been completely described, and the process is about to move to the task of allocating ship's systems to take up space within the hull. At this point, the hull should be evaluated to set the parameters for later stages in the process.

Hull Spaces

Hull spaces are a measure of usable internal hull volume. A ship, no matter what its degree of streamlining, begins with hull spaces equal to its hull size in dtons.

Record the number of available hull spaces. Beginning with the next step in the design process, ship's systems will be installed inside the hull. Each system will take up some number of hull spaces, if the total number of hull space is occupied by systems is no greater than the number of available spaces, the design will be legal.

Hull Mass and Estimated Mass

Compute the mass of the empty hull, and use this figure to estimate the final loaded mass of the completed ship. This estimate is useful when choosing drives and other equipment for the ship.

Hull Mass:

Add together hull mass, armor mass, and stealth mass, as determined in earlier steps. Record the total as the Hull Mass.

Estimated Mass

Record a working approximation of the ship's final loaded mass, useful when deciding what components (especially what maneuver drives) are to be placed in the hull. Estimated Mass can be ignored once the ship design is completed. The density of internal components and payload can vary widely, but for most ships a reasonable estimate is: Hull Mass + (3 x hull spaces).

Step 5: Drives

Every mobile ship needs a maneuver drive, or "M-drive", to propel it through space. Every starship needs a hyperdrive, or "H-drive", to permit it to make hyperspace transitions from one star system to the next.

Maneuver Drive

A maneuver drive is a reactionless system that produces thrust using power and without needing to consume reaction mass. Maneuver drive systems are rated for thrust, measured in tons; the total thrust delivered by all M-drive systems on board is used later to determine the ship's maneuvering performance.

Maneuver drive systems are installed by the space. No matter what type of M-drive, one space of maneuver drive machinery has a mass of 4 tons, costs M⁷1.0, uses 20 MW power, and provides 10 tons of thrust per MW. Half-space maneuver drive systems can be installed, taking up half the mass, requiring half the cost and power, and delivering half the thrust of a single space.

M-drive Mass:

Multiply the mass by the generic mass multiplier.

M-drive Space:

Multiply the space used by the generic space multiplier.

Decide on how many separate engines the spaces are allocated. Many engines will provide a higher sAccel but a limited MGLT.

Hyperdrive

The hyperdrive enables faster-than-light interstellar travel. Any ship size may have a hyperdrive installed if it fits.

Hyperdrives systems are installed by the space. A standard hyperdrive in any time uses one space of hyperdrive machinery has a mass of 4 tons, costs M⁷4.0, and uses 20 MW per pc/hr of power. The hyperdrive's power requirement applies only when the ship is in hyperspace, jumps into hyperspace, and exits hyperspace. The designer may assume that the maneuver drives will be shut down while the hyperdrive is drawing power but most warships, pirate ships, smuggler ships, and the like will still draw power by the maneuver drives while engaging their hyperdrives.

Hyperdrive Mass:

Multiply the mass by the generic mass multiplier.

Hyperdrive Space:

To determine how many spaces of hyperdrive systems are required, refer to the Hyperdrives Table below. Add this number to the spaces needed for the H-drive chosen speed. Each available jump range has a specific requirement in spaces of hyperdrive systems, install exactly that many spaces per 100 dttons of ship hull size. A hyperdrive of a given range will only be available at a certain date (see Engine Class Availability Table above). Multiply to total space used by the generic space multiplier.

Some ships have external hyperdrives, like the Jedi Fighter in Episode II. These kinds of ships rely on a hyperdrive built into a separate hull. Treat this hull as another craft. Build a new ship using these rules but skip the unnecessary systems which are not needed.

Hyperdrives Range Table

Range (pc)	Spaces	Cost Modifier
100	1	x0.25
125	1	x0.5
150	2	x0.5
200	3	x0.75
225	4	x0.75
250	4	x1
275	4	x1.25
300	5	x1.25
325	5	x1.5
350	5	x1.75
375	5	x2
400	5	x2.25
425	5	x2.5
450	5	x2.75
475	6	x2.75
500	6	x3
525	6	x3.25
550	6	x3.5

Repulsorlift

The repulsorlift provides cost-effective planetary travel. Repulsorlifts only worked within a gravity well, as the technology required mass to push against. For a typical habitable planet such as Coruscant, "antigrav range" was approximately 1 mile. Repulsorlifts used minimal power and were reliable enough to be left on continuously. The further away a repulsor lift is from the mass it is pushing against, the power requirements become drastically higher.

Repulsorlift systems are installed by the space. No matter what era, one-tenth space of repulsorlift machinery has a mass of 0.1 tons, costs M⁷1.0, uses 1 MW power, and provides 10 tons of upward thrust per MW times distance in yards. Half-space repulsorlift systems can be installed, taking up half the mass, requiring half the cost and power, and delivering half the thrust of a single space. The power requirement at heights below 1 yard is negligible.

Repulsorlifts could be assembled in arrays, clusters, or vanes studded with micro-coils of gravitic knots. These units were then mounted on a vehicle or spacecraft, usually on the underside. The many repulsorlifts needed for a large ship were typically powered by a dedicated "antigrav generator."

Ships as massive as the Clone Wars era Venator-class Star Destroyers and Lucrehulk-class Core Ships were only able to make planetfall with the aid of massive ventral repulsorlift suspensor units. In fact, the landing legs of a Core Ship could not long support the ship's immense weight without the aid of repulsorlifts.

Due to the high energy cost at high heights, many ships start their maneuver drives at the height in which the power requirement of the repulsor lift exceeds the power requirement of the maneuver drives (although for unstreamlined ships this may be risky).

Ships equipped with sufficient repulsor lifts do not stall within an atmosphere.

Repulsorlift Mass:

Multiply the mass by the generic mass multiplier.

Repulsorlift Space:

Multiply the space used by the generic space multiplier.

Step 6: Bridge

Every manned ship needs at least one bridge to serve as a command center for the ship. In this compartment, the ship's leading officers and crew work and manage ship's systems. Many ships have secondary control rooms as well. In particular, warships often have an emergency bridge in case the main bridge is damaged, or a "flag bridge" for the use of flag officers in command of whole squadrons.

Select at least one bridge system for the ship. A bridge is assumed to include the ship's main computers, workstations for the bridge crew, mechanical and electronic control for other ship's systems, communications equipment, image processing equipment for the ship's sensors, and so on.

Small Cockpit:

A small cockpit is a single-seat cockpit, typical of short-range, unarmed craft. It includes limited life support (three man-days at BBY dates, six man-days at ABY dates).

Large Cockpit:

A large cockpit is a twin-seat cockpit, typical of fighters and long-range small craft. It includes limited life support (six man-days at BBY dates, 12 man-days at ABY dates).

Huge Cockpit:

A huge cockpit is a tri-seat cockpit, typical of the larger fighters and bombers. A huge cockpit might also be a twin-seat cockpit with an extra bunk permitting one crewman to stretch out for rest periods. It includes limited life support (12 man-days at BBY dates, 24 man-days at ABY dates).

Small Bridge:

A small bridge is typical of small civilian starships like shuttles. It has three crew stations and enough room for the crew to get up and walk around. It includes limited life support (24 man-days at BBY dates, 48 man-days at ABY dates).

Standard Bridge:

A standard bridge is typical of small warships and most, larger civilian ships. It has five crew stations and plenty of walking-around room. It includes limited life support (40 man-days at BBY dates, 80 man-days at ABY dates).

Command Bridge:

A command bridge is usually found on large warships. It has 10 crew stations and plenty of walking-around room. It includes limited life support (80 man-days at BBY dates, 160 man-days at ABY dates).

For each bridge system type, the size of the ship's computer is given. Every ship is assumed to have three hardened computer systems of the same size, with two of them serving as backups. The complexity of the ship's computers is also noted.

Bridge Systems Table

System	Spaces	Mass (tons)	Cost (M ¹)	Computer	Complexity
Small Cockpit	0.5	3	0.25	Microcomputer	TL-5
Large Cockpit	0.75	4	0.75	Microframe	TL-4
Huge Cockpit	1	5	1	Microframe	TL-4
Small Bridge	1.5	8	0.5	Minicomputer	TL-5
Standard Bridge	2.5	12	1	Microframe	TL-4
Command Bridge	5	24	4	Mainframe	TL-3

Step 7: Sensors

Every ship needs sensor equipment in order to remain aware of its environment. Install at least one sensor system in each ship; multiple sensor systems can be installed as backups in case of battle damage. Most small civilian ships can get by with no more than a Model-1 sensor array; warships and freighters will have heavier sensor systems.

Sensor systems have a Scan rating, a general measurement of sophistication and power. The spaces, mass, and cost of a sensor system do not vary with TL. However, sensors built at a later date have greater power requirements and longer range. Apply the era level adjustment given in the table for each sensor system.

Sensor Systems Table

System	Spaces	Mass (tons)	Cost (M ¹)	Power (MW)	Scan
Model-0	0.5	6	2	1	12
Model-1	1	12	4	2	14
Model-2	1.5	18	6	3	15
Model-3	2	24	8	4	16
Model-4	3	36	12	6	17
Model-5	4	48	16	8	18
Model-6	6	72	24	12	19
Model-7	9	110	36	18	20
Model-8	14	170	56	28	21
Model-9	20	240	80	40	22
Era					
The Pre-Republic era	-	x2	-	-	-
The Old Republic era	x0.5	-	x1.5	x2	+1
Fall of the Republic era	x0.3	x0.8	x2	x3	+2
Rise of the Empire era	x0.25	x0.6	x3	x3	+3
The Rebellion era	x0.20	x0.5	x3.5	x4	+4
The New Republic era	x0.15	x0.4	x4	x4	+4
The New Jedi Order era	x0.1	x0.3	x4.5	x4	+4
The Legacy era	x0.05	x0.2	x5	x4	+4

Step 8: Offensive Systems

The Star wars universe is a dangerous place, and most ships mount some sort of armament.

Fixed Mounts

Any small craft (100 dtons or less) may install up to eight fixed mounts in the hull. Fixed mounts permit the installation of light weapons without the ability to rotate them to cover different field of fire. In order to aim a weapon in a fixed mount, the whole ship must be turned.

If the ship is not going to carry fixed mounts at first, stop after allocating hardpoints. Small craft may install only small energy weapons, repeater blaster cannons, or any type of projectile weapon launchers.

Weapons placed on a fixed mount take up no hull space beyond that used by the fixed mount. One weapon may be placed upon a fixed mount. Weapons placed on a fixed mount draw power and corbana-gas (in case of the blaster cannons) directly from the power plant.

Fixed Mount Table

System	Space	Mass (tons)	Cost (M ¹)	Power (MW)
Fixed Mount	0.25	0	0	0

Turrets

Turrets are rotating superstructures mounted on the hull, used to hold weapons. They have considerable flexibility in arc of fire, since they can rotate on the hull to aim in any direction. As long as the ship's hull or appendages aren't in the way, the turret can fire in any target, regardless of the ship's current attitude. Turret weapons are the universal tools of space combat which made its entry during the end of the Clone Wars. Even on large vessels, they fulfill valuable point-defense roles against missiles and small vessels.

The maximum number of turrets that can be installed depends on the area of the ship's hull, and is determined in Step 2. Turrets need not be installed when the ship is built. Instead, "hardpoints" up to the maximum number of allowed turrets can be designated as places for turrets to be installed later.

Turret armament need not be specified when a vessel is designed, as shipyards can leave turrets empty for the owner to customize. Warships built in peacetime may have empty turrets, or may mount only one or two rather than the full complement of weapons. Although empty or partially filled turrets cannot be used to store cargo, crews often find creative uses for the extra space, like illicit stills.

Weapons placed in turrets take up no hull space beyond that used by the turret.

Turret Mass:

Multiply the mass by 2.0 tons during The Pre-Republic era, 1.5 tons during the Old Republic era, 1.25 tons during the Fall of the Republic era, 1 ton during the Rise of the Empire era, 0.9 tons during The Rebellion era, 0.8 tons during the New Republic era, 0.7 tons during The New Jedi Order era, and 0.5 tons during The Legacy era.

Turrets Table

System	Space	Mass (tons)	Cost (M ¹)	Power (MW)
Small Turret	1	1	0.1	neg.
Medium Turret	2	1.5	0.2	neg.
Large Turret	3	2	0.4	neg.
Heavy Turret	6	4	1	1

Weapon Bays

Weapon bays are large spaces allocated for heavy weapons on the skin of the ship's hull. They are rarely found on even very large civilian craft, but they are quite common on medium and large warships until the Rise of The Empire. Bay weapons have limited arc of fire, requiring the ship to maneuver to face them toward the enemy. Bay weapons are larger versions of turret weapons systems but they are also weapons that can be loaded using shells or power packs and need not to be dependent on the ship's power and ammo.

As with turrets and fixed mounts, bay weapons need not be installed when the ship is built. Empty bays can be set aside at construction and filled later. Warships may use empty bays to store "deadfall ordnance" (i.e. missiles, bombs, and corbana shells). Empty bays can also be used to store cargo or small craft.

Empty weapon bays take up space in the hull (50 or 100 spaces, as appropriate) but have no mass, cost, or power requirement. Weapon bays take up hull area and displace turrets; a 50-dton bay displaces eight turrets, while a 100-dton bay displaces 10 turrets.

Spinal Mount

A spinal mount is a large weapon mount used only for massive beam weapons. In effect, the ship (or space station) is built around the weapon, which is fixed inside the ship's hull and is considered its main structural member. Spinal mounts have a limited arc of fire, so in order to aim a spinal mount weapon the whole ship must be turned.

Spinal mount weapons are almost never found in ships built at early TL11 or smaller than 30,000 dtons, and are never found in civilian ships. Most ship designs will not need to consider them. A ship may only include one spinal-mount weapon.

Only one spinal mount weapon can be installed in any ship. The weapon must be specified and installed at the design stage; a spinal mount forms an integral part of the ship's structure, and the ship cannot operate without the weapon in place. Like other weapon systems, spinal mounts take up hull area and displace turrets. Refer to the Spinal Mount Weapons Table, which gives turrets displaced for each weapon along with the other usual attributes.

The Empire used spinal mount weapons on the Prototype Death Star, Death Star I and II and later some axial super lasers (though less powerful) were built in the Eclipse-class Star Destroyers (Eclipse I and II), on Durga the Hutt's Darksaber battle station and on the ship of Booster Terrik.

Launcher

This is the basic launcher system for the popular proton torpedoes, concussion missiles, heavy missiles, and space bombs. It consists of a mechanical launch tube that ejects the projectile from the tube at the maximum speed available for the projectile. Once free of the tube, the torpedo operates on its own. The launchers itself a small compared to the storage room needed for the projectiles.

During the Galactic Civil War, the launcher were upgraded to an advanced version which was capable of ejecting advanced proton torpedoes and advanced concussion missiles while still being able to launch heavy missiles and space bombs.

Energy Weapons

Energy weapons are classified by its size and output. Size classifications are small, medium, large, and heavy. Output types are blaster, laser, ion, and turbolaser. A separate class super weapons is added to catch all other unorthodox energy weapons. In the Space Energy Weapons Table all stats are given. Weapons placed on fixed mounts or turrets do not occupy spaces.

Some abbreviations are used in this table: fm (fixed mount), st (small turret), mt (medium turret), lt (large turret), ht (heavy turret), b (bay), and sm (spinal mount).

Space based weapons differ from atmospheric based weapons in that they provide a larger output. The damage is given in D-scale dice. Multiply by 10 to get normal scale damage. Range is the half-damage and maximum range in space and atmospheres. If a space ship is equipped with atmospheric as well as space weapons than an "a" (atmospheric) or "s" (Space) may be added in front of the weapon abbreviation for your convenience.

Energy weapons can either use the ship's power or power packs. Blaster weapons can also either use the ship's corbana gas or shells. Weapons mounted on fixed mounts or light turrets always use the ship's resources.

Triple Blasters

The oldest and most venerable of blaster technology was the triple blaster. It worked by using three separate blasters connected to the same targeting system. By the Rise of the Empire, triple blasters had become exceedingly rare.

Small Blaster Cannon

The SBC is the smallest blaster available for starships. It provides low-yield firepower and is used mainly as a deterrent of defensive weapon or as the main weapon of small craft like fighters and bombers.

Medium Blaster Cannon

The MBC (by many simply called the BC) is a good compromise between firepower and cost. MBCs are most often used as small sized ships.

Large Blaster Cannon

This larger version of the BC provides added firepower through a larger energy output. It is mostly relegated to support or defensive fire.

Repeater Blaster Cannon

The RBC is a favored weapon by most vehicle crewmembers as it provides gatling strength firepower against targets. It is often found in a defensive role against infantry.

Gatling Blaster Cannon

The GBC is more expensive because it is multi-barreled. It provides an even faster ROF than the RBC with less chance of malfunction by overheating.

Small Laser Cannon

The SLC is the main weapon of choice for most small military crafts in space today. It provides a decent yield of damage, while remaining light and affordable enough.

Medium Laser Cannon

MLCs are the larger brothers of the SLC (found mostly in military vessels or on larger civilian ships) the MLC operates on a balanced design of good firepower and sensible energy consumption. Although it is a somewhat bulky weapon, its firepower compensates for its largish size.

Large Laser Cannon

The LLC are the top of the laser cannons family. They are considered heavy weapons and generate high amount of firepower. The LLC are found mostly on military ships as secondary weapons.

Gatling Laser Cannon

The GLC is better known by its more common name of “Quad Laser”. That name comes from the fact that the GLC is equipped with 4 barrels, each able to fire 2 shots per second, giving the weapon its overall ROF of 8. The “Quad” is favored weapon among civilian merchant ships, as it provides great firepower in both offensive and defensive roles, especially when used in anti-aircraft barrages.

Small Turbolaser Battery

The smallest of the three members of the turbolaser family, the STBL (often dubbed Killer Baby) provides great firepower (over twice that of the LLC) in both offensive and defensive roles. The STBL is the weapon of choice on many military patrol crafts such as Carrack Light Cruisers.

Medium Turbolaser Battery

The most common heavy weapon in space, the MTBL equips most military vessels as the main gun type. The MTBL is a powerful weapon, able to shoot down and destroy most types of aerospace fighters with a single salvo. Its heavier firepower also makes it the weapon of choice in such roles as naval warfare (heavy ship against heavy ship) and siege warfare.

Large Turbolaser Battery

The largest weapon available for naval ships, the LTBL is feared by most ship captains and pilots. Able to destroy many small ships with a single shot of its powerful barrels, the LTBL is found mostly on capital warships such as Mon Calamari cruisers and Imperial Star Destroyers.

Heavy Turbolaser Battery

This is the largest turbolaser available, the HTBL and can be found only on Starbases, and as planetary defenses. The HTBL is able to destroy medium sized capital ships with a single shot from its massive barrels. Because of their heavy weight, they perform poor as anti-aircraft guns.

Super Laser Mark I

The SL Mk 1 is the first super laser and could be found on the first Death Star. The SL Mk 1 is the only one which had the chance to destroy an entire planet. The SL Mk 1 can only be used as a spinal mount weapon.

Super Laser Mark II

The SL Mk 2 could be found on the next two Death Stars of which one was destroyed during the battle of Endor. It has the same destructive power as the mark I but its firing rate is a little higher and the construction is lighter. Because of the reduced weight the weapon can be mounted on slight maneuverable mounts. The mounts can be directed against its opponents instead of turning the entire station.

Super Laser Mark III

A newer version of a weapon is normally more powerful, has greater range, or penetrates armor more quickly. None of these is true with the new SL Mk III, better known as the axial laser. This weapon can be found, mounted on the Eclipse-Class Star Destroyers.

Small Ion Cannon

The smallest EMP gun available on the ship’s market, the SIC provides a good protection-to-cost ratio to its owner. Easy to maintain and not requiring any gunner (can be fired by a dedicated computer), it is a perfect buy for small operators or single-crew ships like the T-38s or the BTL-S3 Y-wing.

Medium Ion Cannon

A common design, the ion cannon is just a larger version of the LIC. It provides greater disabling power, but at a greater cost. It is mostly used aboard medium-sized ships or planetary patrol boats.

Large Ion Cannon

The LIC is a standard design for large capital ships. It is often used to disable other large capital ships, or even space stations.

Heavy Ion Cannon

The largest pulse weapon available on ships, the HIC is mostly used on space stations as a capture system, in conjuncture with tractor beams.

Space Weapons Table I: Placement

System	Spaces	Mass (tons)	Cost (M [⚡])	Power (MW)	Corbana Gas (tons/shot)	Placement	Turrets Displacement
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Blasters							
Triple Blasters	1	2	0.25	10	0.006	fm	-
Small Blaster Cannon	1	3	0.5	20	0.012	fm, st	-
Medium Blaster Cannon	2	6	1	40	0.018	fm, mt	-
Large Blaster Cannon	3	9	1.5	60	0.03	fm, lt, b	-
Repeater Blaster Cannon	1	4	0.75	20	0.012	fm, lt	-
Gatling Blaster Cannon	2	6	1	20	0.012	fm, mt	-
Lasers							
Small Laser Cannon	1	2	1	5	-	fm, st	-
Medium Laser Cannon	2	4	2	10	-	fm, mt	-
Large Laser Cannon	3	6	4	20	-	fm, lt, b	-
Gatling Laser Cannon	2	4	3	15	-	fm, mt	-
Turbolasers							
Small Turbolaser Battery	6	24	3	40	-	fm, st, b	-
Medium Turbolaser Battery	12	42	6	80	-	fm, mt, b	-
Large Turbolaser Battery	18	60	9	120	-	fm, lt, b	-
Heavy Turbolaser Battery	24	78	12	160	-	fm, ht, b	-
Ion							
Small Ion Cannon	1	2	3	20	-	fm, st	-
Medium Ion Cannon	2	4	6	40	-	fm, mt	-
Large Ion Cannon	3	6	9	60	-	fm, lt	-
Super Weapons							
Super Laser Mark I	4,000	20,000	80,000	8,000	-	sm	40
Super Laser Mark II	4,000	15,000	125,000	8,500	-	sm	40
Super Laser Mark III	1,000	5,000	6,000	5,000	-	sm	10
Launchers							
Basic Projectile Launcher	1	1	0.75	neg.	-	fm, st, mt, lt, b	-

Space Weapons Table II: Energy Weapons

TL	Weapon	Damage	Acc	Range	RoF	Shots	Rcl	LC	Notes
11	Triple Blasters	6d(3) burn, cr	10	500/1,500	3	-		4	[4, 5]
11	Small Blaster Cannon	6dx2(5) burn, cr	10	900/2,700	4		11	4	[4, 5]
11	Medium Blaster Cannon	6dx3(5) burn, cr	8	1,300/3,900	3	20(5)	1	4	[4, 5]
11	Large Blaster Cannon	6dx5(5) burn, cr	6	1,300/3,900	1	20(5)	1	3	[4, 5]
11	Repeater Blaster Cannon	6dx2(3) burn, cr	8	900/2,700	8	-	1	4	[4, 5]
11	Gatling Blaster Cannon	6dx2(3) burn, cr	7	900/2,700	10	100(5)	1	3	[4, 5]
9	Small Laser Cannon	6dx2(2) burn, imp	6	1,500/4,500	5	-	1	4	[3, 6]
10	Medium Laser Cannon	6dx3(2) burn, imp	5	1,800/5,400	4	20(2)	1	4	[3, 6]
11	Large Laser Cannon	6dx4(2) burn, imp	4	2,100/6,300	3	20(2)	1	3	[3, 6]
10	Gatling Laser Cannon	6dx2 burn, imp	4	1,500/4,500	12	100(2)	1	3	[3, 6]
11	Small Turbolaser Battery	8dx2(10) burn, imp	3	2,400/7,200	1	10(5)	2	2	[4, 6, 8]
11	Medium Turbolaser Battery	8dx3(10) burn, imp	2	2,700/8,100	1	10(5)	2	2	[4, 6, 8]
11	Large Turbolaser Battery	8dx4(10) burn, imp	1	3,000/9,000	1	10(5)	2	2	[4, 6, 8]
11	Heavy Turbolaser Battery SL	8dx5(10) burn, imp	0	3,300/9,900	1	10(5)	2	2	[4, 6, 8]
^	Super Laser Mark I	8dx1000(100) burn, imp	-5	360,000	1	1(25)	1	1	[4, 8]
^	Super Laser Mark II	8dx1000(100) burn, imp	0	360,000	1	1(20)	1	1	[4, 8]
^	Super Laser Mark III	8dx100(10) burn, imp	0	180,000	1	1(5)	1	1	[4, 8]
11	Small Ion Cannon	HT-5 aff	5	600/1,800	4	-	1	4	[2]
11	Medium Ion Cannon	HT-6 aff	4	900/2,700	3	25(2)	1	3	[2]
11	Large Ion Cannon	HT-7 aff	3	1,200/3,600	2	25(2)	1	2	[2]

Space Weapons Table III: Projectile Weapons

TL	Weapon	Damage	Mass	Acc	Range	Speed	Shots	Rcl	LC	Notes
9	Heavy Rocket	6dx6(10) cr, ex	1	3	1,800	12	1	1	1	
9	Space Bomb	8dx8(10) cr, ex	1.5	3	500	6	1	1	1	
10	Concussion Missile	6dx2(2) cr, ex	0.25	3	2,400	80	1	1	3	
11	Adv. Concussion Missile	6dx3(2) cr, ex	0.5	3	2,700	100	1	1	2	
11	Proton Torpedo	6dx2(5) cr, ex	0.25	3	3,000	144	1	1	2	
11	Adv. Proton Torpedo	6dx3(5) cr, ex	0.5	3	3,300	156	1	1	2	

Notes:

All Mounted weapons are powered by a power generator, either from the vehicle or ship, or from an independent power generator. See Heavy Weapons section for detailed rules.

- [1] Weapons requires atmosphere to function. No effect in trace atmosphere or vacuum!
- [2] The damage has the Surge modifier (BS page 105). As well, whether or not any damage penetrates, the target must make a HT roll at -4, plus half the DR on the location struck (due to armor divisor). On a failure, the electrical shock suns him. He may roll against HT every turn at the same penalty (but without DR bonus) to recover.
- [3] Smoke, for, rain, cloud, etc. give the target additional DR equal to the visibility penalty. For instance, if rain gives a penalty of -1 per 100 yards, a laser firing through 2,000 yards of rain must penetrate an extra DR 20.
- [4] Burn damage has the Surge damage modifier (BS page 105).
- [5] If the weapon is used within an atmosphere, ignore the number of Shots. In space the weapon must be supplied by shells containing plasma in addition to power or taking plasma directly from the ship's fuel tanks.
- [6] If the weapon is used in space, ignore the half-damage range.

- [7] Planetary guns can only hit objects in space and have no half-damage range.
- [8] Cannot aim at targets closer than a quarter of the maximum range.

Tractor Beam

A tractor beam is an invisible force beam that drags objects from place to place. Tractor beams are used for cargo handling, starport traffic control, and for capturing starships. Also known informally as grappling rays or magnetic beams, tractor beams are common armaments aboard military vessels.

A tractor beam itself usually cannot disable a ship, but it can reduce target maneuverability, increasing the likelihood of gunnery attacks connecting with vital systems. A ship attempting to break free of a tractor beam lock may suffer crippling engine damage due to system strain.

Imperial vessels such as Star Destroyers and the Death Star were equipped with powerful tractor beam projectors used to capture and reel in craft suspected of subversive affiliation.

Tractor beams use large amounts of power and are more common on larger ships than on smaller ones, though not unknown.

1 space has a mass of 1 ton multiplied by the generic mass multiplier, uses 10 ME of power, and costs M71. One space of tractor beam can reduce the maneuverability by 1 per 100 tons. A two space tractor beam can reduce the maneuverability of a 100ton starship by 2 or a 200ton starship by 1 and uses 20MW.

Effectively, by decreasing the maneuverability in this way, the acceleration is also decreased. As long as the ship remains at least more than half its acceleration, it has a chance to escape. The ones controlling the tractor beam may set dictate what to do with the acceleration “stolen” from its target.

Step 9: Defensive Systems

Shields

Some weapons might be used as defensive fire against small craft and missiles and armor protects the ship at any incoming attacks. Armor is sufficient in most cases as the primary defensive measure, it can be bulky and heavy which makes the ship slower and less maneuverable. Another option became available during the Great Hyperspace War. The first deflector shields only offered limited protection at a high cost of power but gradually the power usage dropped and shield became more resistant.

No matter what era or shield type, a deflector shield generator will use 1 MW per 1dDR per ksf. The total number of dDR is equal over the six sides of the hull (Forward (F, or front), Aft (A, back), Starboard (S or left), Port (P or right), Dorsal (D or top), and Ventral (V or underside).

Ships may have several shield settings. These settings allow the crew to fortify a certain part of the ship with the shield dDR taken from another part of the ship. The most common are:

- 1 setting: the ship has one shield covering the entire hull and equally dividing the dDR over all sides.
- 2 settings: the ship shield can be set to cover the entire hull or just the forward half or the aft half of the ship.
- 6 settings: the ship's shield can be set to cover the entire hull or just one out of six sides.

The recharge time is equal to 1dDR x ksf in seconds. Doubling this rate will result in doubling the mass of the shield generator and quadrupling the cost. The recharge rate limits to 1/10 of the total dDR thus it will take a minimum of 10 seconds for a depleted shield to fully recharge.

Particle Shield:

This type of shield was used to deflect space debris or physical object such as bombs, torpedoes and missiles. Particle shields have Limited Defenses against Physical attacks only, are Ablative and have the Force Field enhancement

Ray Shield:

Ray shields or energy shields was a type of deflector shield specifically designed o deflect energy weapons such as blasters, lasers and ion weapons. Ray shields have Limited Defenses against Energy attacks only, are Ablative and have the Force Field enhancement.

Shield Generator Spaces:

Multiply the ship's hull area (in ksf) by the chosen dDR by the generic space multiplier, multiplied by the chosen setting. Divide the result with 6.

Shield Generator Mass:

Multiply the ship's hull area (in ksf) by the chosen dDR (excluding the +20% for the Force Field enhancement). Multiply the result by the generic mass multiplier.

Shield Generator Cost:

Multiply the Ablative shield generator's total mass (in tons) by M70.01 multiplied by the available settings to get the deflector shield generator cost.

Countermeasures

Step 10: Small Craft

Ships often carry various vehicles and small craft, air/speeders, shuttles for the crew's use, light freighters to permit cargo offloading from unstreamlined ships, fighter squadrons, and so on. Any such vehicles or small craft should be selected at this point.

Small craft can be carried in several different ways.

Vehicles Bays

A vehicles bay is a small space recessed into the larger ship's hull, custom-designed to snugly hold a single, specific small craft. It cannot be used for any other type of vehicle. To access the small craft, crewmen use a hatch that directly connects the larger and smaller vehicles. Any maintenance to be performed on the small craft must be done from inside unless the two vehicles are in spacedock.

The total size of all small craft carried in vehicles bays cannot exceed 20% of the larger ship's hull size. For example, a 100-dton scout ship could carry two 10-dton lifeboats or a single 20-dton gig in vehicle bays, but no more.

Regardless of the size of the small craft, the equipment for a vehicle bay takes up one space, has a mass of 0.5 tons, has negligible cost, and uses no power. The vehicle bay must also be allocated one space for every dton of the small craft's size; this extra space has no mass, cost, or power requirement.

Hangar Bay

A hangar bay is a large space inside the ship in which a variety of smaller craft can be stored for use. Unlike a vehicle bay, a hangar bay is not specific to one class of small craft. Any small craft that does not exceed a specified size may use it, indeed, large hangar bays may provide sufficient space to store many small craft. Such large hangar bays have bay doors, and may include elevators or ramps to move the small craft into launch position.

There is no limit to the size of hangar bays within a large ship. When hangar bays are being designed, the capacity (in dtons) of the bay must be specified; the exact nature of small craft to be carried need not be. Decide whether the systems form one large hangar bay or several smaller ones.

Regardless of the size of any small craft to be stored within a hangar bay, the necessary equipment takes up 1.5 spaces, has a mass of one ton, has negligible cost, and uses negligible power. The hangar bay must then be allocated two spaces for every dton of capacity; this extra space has no mass, cost, or power requirement.

Hangar bays are normally sealed against vacuum, and can be provided with air pressure and life support while the ship is not engaged in launch or retrieval operations.

Launch Tubes

Ships that carry many similar small craft (such as carriers or “mother ships”, which carry fighter squadrons) sometimes install launch tubes in order to launch the small craft as efficiently as possible. A launch tube is a low-powered mass driver, which uses electromagnetic induction to propel the launched craft quickly away from the larger ship's hull. There is usually a “reloading”

mechanism, a set of elevators used to bring new craft into the launch tube very quickly.

If a ship is to launch small craft with a launch tube, begin by installing a hangar bay in which all of the carried small craft can be stored when not on flight operations. Then install a separate hangar bay just large enough to contain the largest craft to be accommodated by the launch facility. Finally, add one module of launch tube systems for every five dtons (or fraction thereof) of the largest craft to be accommodated. During and after The Rise of the Empire era, one module takes up two spaces, has a mass of 20 tons, cost M70.2, and uses 0.5 MW of power. Before The Rise of the Empire era, launch tubes are not available.

Step 11: Power

Power Plant

Before The Old Republic era, almost all starships use a fusion power plant design. Some isolated civilizations may even use the older fission power plant. With the invention of the Corfaize-Tibanna Gas Turbine (CTGT) or better known as the Corbana Gas turbines, most starships were equipped with the CTGT which provided cheap and safe power but uses large amounts of space.

A ship may have more than one separate power plant, to provide redundancy in case of systems failure or battle damage.

Total up all of the power (in MW) required to run all systems installed so far. For most ships, any remaining power requirements are trivial. The total power requirement must normally be met in full by installing power plant systems. The GM may choose to permit “underpowered” ships, but this adds extra complication as the crew must choose which systems to keep fully powered at any given time.

Since a ship’s maneuver drive and weapons cannot be used in hyperspace, the hyperdrive’s power requirement can be ignored unless it is greater than the sum of maneuver drive and weapon power requirements.

Select a power plant system from the following table. Power plants are also rated for output, giving the MW of power required for other ship’s systems that can be satisfied by the power plant. They are also rated for efficiency, giving the time that the power plant can operate on one cubic feet of fuel.

Output, mass, and cost are per 1/100 of space of power plant.

Power Plant Mass.

Multiply the mass by the generic mass multiplier.

Power Plant Space:

Multiply the spaces used by the generic space multiplier.

Efficiency:

During the years, CTGT power plant became more efficient. The number represents the fuel used, in cubic feet, to get 1 MW for an entire hour. Multiply the efficiency from the table below with the following multiplier:

N.A. during The Pre-Galactic era (use the power plants given in IW page 195, which are powered by hydrogen fuel)

x1 during The Republic era

x0.75 during The Fall of the Republic era

x0.7 during the Rise of the Empire era

x0.6 during The Rebellion era

x0.55 during The New Republic era

x0.5 during The New Jedi Order era

x0.45 during The Legacy era

Power Plant Table

System	Mass	Cost	Output	Efficiency
CTGT	0.1	0.1	1	1

Batteries

Short range ships, ships which use low power most of the time but high power in certain circumstances (like combat) may have batteries installed in place of a power plant or as an extra power source. Batteries are rechargeable by either the on board power plant or via a connection to the mother ship when docked. Batteries use no power unless recharging. A battery is installed by the space. 1 space of batteries delivers 100MW of power, have a mass of 10tons, cost M75.

Battery Mass:

Multiply the mass by the generic mass multiplier.

Battery Space:

Multiply the spaces used by the generic space multiplier.

A battery pack can only be installed for one system. For example, a TIE Fighter has two laser cannons. Each of these laser cannons needs a separate battery.

Recharge Rate:

Batteries recharge rate is 1MW per second. This is taken from the power plant’s capacity. A super charger may be installed on the battery. A supercharger takes no space, has no mass and doubles the cost of a battery and charges the battery with a rate 1 + 1% of the total power delivered by the power plant (round down).

Step 12: Fuel Tanks

Starships use power, provided by the power plant, which uses large quantities of corbana gas and some ships are equipped with blaster cannons which, when not using shells, also use large quantities of corbana gas with each shot. Much of a starship’s volume will be devoted to the storage and processing of this fuel.

Fuel Tanks

Starships need fuel tanks to store corbana gas, which is used to feed the power plant and starship dependent blaster weapons. Ships without hyperdrives and blaster weapons do not need much fuel for their own operation, although “tankers” that provide fuel to other ships are possible.

Fuel tanks are installed by the space. No matter what the era, one space of fuel tanks has an empty mass of 0.025 tons, costs M70.02, holds 500 cubic feet of fuel, and uses no power. Half-space fuel tanks systems can be installed, with half the mass and cost, and storing half as much corbana gas.

A CTGT uses exactly 1 cubic feet of fuel per 1 hour to provide continually 1 MW of power during that hour.

A ship usually has at least enough fuel tanks to store the fuel necessary for one jump at its maximum range and one take off and landing on a planet. Ships may have extra fuel tanks.

Fuel Processors

Starships sometimes perform “wilderness refueling”, refilling their fuel tanks from materials found on backwater worlds or out-of-the-way moons. The most common method is for a starship to skim the outer atmosphere of a gas giant planet, scooping up corfaize and tibanna gas. These gases cannot be found in many places. Corfaize and tibanna gasses that are skimmed must be processed and purified before it can safely be used as fuel.

Fuel processor systems are rated for the amount of unrefined fuel that they can process in one hour, measured in dtons.

Fuel processors are installed by the hull space. The statistics for each space of fuel processor depend on the era and are given in the following table. Half-space fuel processor systems can be installed, taking up half the mass, requiring half the cost and power, and processing half of the unrefined fuel of a single space.

Fuel Processor Mass:

Multiply the mass by the generic mass multiplier.

Fuel Processor Space:

Multiply the space used by the generic space multiplier.

Fuel Processor Table

Ship Build Era	Mass (tons)	Cost (M ³)	Power (MW)	Fuel Processed/Hour (dtons)
The Pre-Republic era	4	0.2	20	2.0
The Old Republic era	4	0.2	18	3.0
Fall of the Republic era	4	0.2	16	3.5
Rise of the Empire era	4	0.2	14	4.0
The Rebellion era	4	0.2	13	4.2
The New Republic era	4	0.2	12	4.4
The New Jedi Order era	4	0.2	11	4.7
The Legacy era	4	0.2	10	5.0

Step 13: Crew

Now that almost all of the ship's systems have been installed, consider how many crewmen will be needed to man them.

Typical crew requirements are given below, but these are averages; actual requirements can vary a great deal, and every individual ship may have a different crew roster. Military ships will have larger crews to allow for multiple shifts and to replace losses in combat. Transports often run with a bare minimum of crew to save money. A civilian yacht might not have any permanent crew, but when the yacht is in operation somebody needs to do each job. Ships with minimal crews call for talented people, since several jobs are doubled up.

In general, crew should have a skill level of at least 12 in the skill(s) appropriate for their positions. If the GM feels that a ship is undercrewed, he should assess penalties to appropriate skill rolls, especially in stressful situations when one crewman has to be in three places at once.

Crews, especially on large ships, are divided into sections; each section has a specific function and is usually commanded as a unit. For the purpose of these rules, we divided the various sections into core crew (the crewmen required to operate the ship's functions) and the support crew (the crewmen whose primary job is to support the core crew). The core crew includes the command section, the gunnery section, the flight section, the passenger service section, the cargo service section, the ship's troops, and the specialists. The support crew includes the maintenance section, the life support section, the medical section, and the general services section.

Before allocating the crew, decide how many passengers the ship can expect to carry; the size of several crew sections depends on the passenger capacity of the ship. Passengers can travel by low passage, standard passage, first-class passage, or luxury passage; although passenger accommodations can be shuffled from one trip to the next, the expected number of passengers in each class should be determined.

Aside from dividing crew into sections, the crew allocations listed here also classify crew into officers, petty officers, and crewmen. These terms are very specific to the Republic or Imperial navy, but every starship service tends to divide its crew in some fashion into "commanders", "experienced crewmen", and "ordinary

crewmen". In services other than the navy, feel free to apply different labels to each level of the crew as appropriate.

On many vessels, droids fulfill many tasks normally done by ordinary crewmen. Some affiliations even rely on a full occupation of droids instead of crewmembers of their own species. On small craft even the entire crew may consist solely of droids. Treat droids as crewmen with their own rank or specialty.

Command Section

The command section includes "bridge crew", the officers and support staff who coordinate all of the ship's activities.

Small craft usually run with only one to three crewmen in the cockpit. All of these crewmen are to be considered to be apart of the small craft's "command section".

Very small starships (100-200 dtons) often get by with as few as three crewmen in the command section; a commanding officer, a pilot who also serves as navigator, and an officer who runs sensors and communications systems.

Slightly larger vessels will usually split the available work among more officers. A five-man command section, typical for ships of 100-1,000 dtons size, would include: commanding officer, executive officer (who also serves as command pilot), navigator, sensor officer, and a communications officer.

Ships approaching 10,000 dtons in size will often have a 10-man command section: a commanding officer, an executive officer (command pilot), an additional pilot, two navigators, two sensor officers, two communications officers, and a computer officer.

On ships of 10,000 dtons or greater hull size, the command section often expands beyond the bridge, including more officers and a support staff that work elsewhere on the ship. The total number of personnel in the command section should amount to at least five per 1,000 dtons of ship.

On any starship, up to the first 10 members of the command section will all be officers. After that, about 50% of the section will be officers, 25% will be petty officers, and 25% will be ordinary crewmen.

Engineering Section

The engineering section includes technicians who operate the ship's drives and power plant. It also includes technicians who perform routine maintenance and repairs on the drives.

The engineering section requires one engineer for every five spaces of hyperdrive, maneuver drive, or power plant systems during any era for all known species and civilizations. The Bakuran and Shindaarni do not have the same taboo for automation and therefore only need one engineer for every 20 spaces. The number of engineers is rounded down, although ships of 200 dtons or more almost always have at least one engineer. Small craft don't normally carry an engineering section, relying instead on maintenance technicians carried by the parent ship.

The first two crewmen in the engineering section are always officers, the chief engineer and the second engineer, or "chief engineer's mate". After these two, the engineering section will have about 10% officers, 20% petty officers, and 70% ordinary crewmen.

Gunnery Section

The gunnery section includes not only the "gunners" who operate ship's weapons in combat, but also the fire-control and tactical specialists who coordinate weapon fire in accordance with orders from the ship's captain.

Spinal mount weapons need one gunnery crewman per 100 spaces taken up by the weapon (round to the nearest whole number). Bay weapons need at least two crewmen, and turret weapons need at least one crewman per turret.

Small craft don't normally carry a gunnery section. The gunnery functions are usually taken over by the pilot or another command crewmember.

The gunnery section will usually have about 10% officers, 30% petty officers, and 60% ordinary crewmen. On warships, there is usually at least one officer or petty officer to serve as a chief gunnery officer; if the gunnery section is large, there will be at least one petty officer per type of weapon on board.

Flight Section

The flight section includes pilots and crew for the ship's attached small craft, including personal vehicles, gigs, shuttles, fighters, and even subsidiary spaceships of 100 dtons or more. It also includes "flight control" officers, who coordinate the traffic of such smaller vehicles.

Each small craft needs its own pilot, as well as any other crew that is needed when the craft is in operation. Each craft also needs at least one technician to provide regular maintenance. If the ship has at least four small craft on board, then the launch facilities themselves (hangar bays, launch tubes, and so on) will need at least one crewman for every four small craft. Finally, if the ship has at least 10 small craft on board, then it needs at least one flight control crewman for every 10 small craft.

The pilot for each small craft of 10 dtons or more will be an officer, as will any flight control crewmen. After that, the flight section usually includes 10% officers, 30% petty officers, and 60% ordinary crewmen.

Passenger Service Section

The passenger service section includes crewmen whose primary job is to tend to the comfort and entertainment of passengers. Crewmen in the passenger service section are also called stewards.

Ships designed to carry passengers always require at least one crewman dedicated to passenger care. A ship needs one extra steward for every 50 low passengers, one for every 20 standard passengers, one for every 10 first-class passengers, and one for every two luxury passengers.

The passenger service section's first crewman is usually an officer called the chief steward; this officer often acts as the ship's day-to-day accounts and running the ship's store. After the chief steward, the passenger service section usually consists of 10% officers, 20% petty officers, and 70% ordinary crewmen.

Cargo Service Section

The cargo service section includes crewmen whose primary job is to handle cargo loading and unloading operations, and to monitor and care for a cargo when a ship is in transit. Cargo handlers are also called stevedores.

Even many ships that make a living carrying freight have no specific cargo service section. Such ships press other crew into service to help with cargo handling, or they rely on cargo handlers working at each port of call. The major exception is Rebel Alliance merchant vessel working inside Imperial territory; such ships cannot usually call on port stevedores, so they carry their own cargo-handling crew instead.

Any starship that carries cargo for pay must have at least one crewman dedicated to cargo handling. Small merchant ships will usually press other crewmen into service during cargo loading or unloading. Large merchant ships with at least 1,000 spaces of

cargo storage are likely to have dedicated teams of stevedores (and appropriate cargo-handling equipment) for every 250 spaces of cargo.

The cargo service section is led by a crewman called cargomaster. This individual supervises loading and unloading operations, and double-checks the cargo manifest. If the cargomaster is the only stevedore on board, he is usually a petty officer reporting to the ship's purser. If there are multiple stevedores on board, then the cargo service section usually consists of 10% officers, 20% petty officers, and 70% ordinary crewmen.

Ship's Troops

Most ships of at least 1,000 dtons size have an armed contingent on board, the ship's troops. On a warship, these are marines or navy troopers; on a civilian ship, they are usually security forces organized in a paramilitary fashion. The ship's troops contingent varies in size from a single fire team up to a whole regiment. They often fill the role of security forces aboard their ship and take part in military exercises when required by the ship's commanding officer. They are also used for damage-control parties, for manning some ship's weapons, and for boarding actions.

Ship's troops contingent vary in size from about three per 1,000 dtons to three per 100 dtons. They are armed and organized according to the standards of the service from which they are drawn.

Specialists

Large ships, especially military vessels, will carry full-time officers and specialists for a variety of tasks: communications, sensors, landing teams, security staffs, science crew, and so on. Allocate as many specialists as appear to be needed to fit the ship's functions, considering all the crew that were assigned to other core-crew sections.

Total up all of the crewmen allocated thus far, these are the core crew.

Maintenance Section

The maintenance section includes technicians who perform generalized maintenance and damage control on all of the ship's systems (the drives, power plants, life support, and other systems as well).

The maintenance section includes one full-time mechanic if there are at least eight core crewmen on board; one more for every full 40 core crewmen or 400 dtons of ship, whichever is greater. Maintenance crewmen usually report to the chief engineer. The section normally consists of 10% officers, 20% petty officers, and 70% ordinary crewmen.

Life Support Section

The life support section includes technicians who specialize in performing maintenance and damage control on the ship's life support systems.

The life support section includes one full-time technician if there are at least 15 core crewmen and passengers. Life support technicians usually report to the chief engineer. The section normally consists of 10% officers, 20% petty officers, and 70% ordinary crewmen.

Medical Section

The medical section includes fully certified medical doctors, nurses, and medical technicians to care for crew and passengers.

The medical sections includes one full-time medic if there are at least 15 core crewmen and passengers on board; one more for

every full 40 core crewmen and passengers. A ship should have at least one medic per sickbay system.

On a small ship, the first medic is usually a petty officer reporting to the ship’s chief steward or directly to the captain. On a ship of 1,000 dtons size or larger, the first medic is usually an officer. A large medical section usually consists of about 20% officers, 30% petty officers, and 50% ordinary crewmen.

General Service Section

The general service section includes a number of different specialties, all of whom provide basic services to the crew and passengers. These run shops and storage, provide ship’s security (especially if there are no ship’s troops aboard), provide food service, handle cargo, and perform other operations.

All ships require service crewmen to take care of the crew’s general needs, as well as to provide services that both crew and passengers share. Allow one such crewmen if there are at least 15 core crewmen and passengers on board; one more for every full 40 core crewmen and passengers. Increase the size of the general service section by 50% if there are no ship’s troops on board, both to perform security duties and to reflect the fact that the ship’s troops often act as supplementary service crew when not on combat duty.

The general service crew usually consists of about 10% officers, 20% petty officers, and 70% ordinary crewmen.

Step 14: Quarters & Miscellaneous

Once the crew size has been determined, quarters and other working spaces can be installed.

Quarters

Crew and passengers need quarters to live in during travel. Several classes of accommodation are available. The space taken up by these systems is only about 50% allocated to living space; the rest is taken up by common areas (corridors, galleys, lounges, and so on) and life support equipment.

Bunkrooms:

A bunkroom is a room with 10 bunk beds (each with a small locker), intercom, controls for light and temperature, and shared sanitary facilities. Bunkrooms are generally used only on warships, where space is at a premium. One bunkroom can accommodate up to 10 crewmen.

Stateroom:

A stateroom is a cabin capable of housing one or two people. It contains beds, chairs, desks, closets, and sanitary facilities. There is an intercom and controls for temperature.

Luxury Stateroom:

A luxury stateroom is a spacious cabin capable of housing one or two people in great comfort. Its fittings are similar to those of a standard stateroom, but are much more expensive and attractive.

Low Berth:

A low berth is a suspended-animation system, capable of housing up to two passengers for long periods of time without drawing on ship’s supplies or life support. So long as the ship’s power plant continues to operate, the low berth will maintain its occupant in good health. A low berth can be designated as an emergency low berth with the same volume, mass, and cost; an emergency low berth will carry four passengers, but it is too dangerous for routine passenger transport (see IW page 166).

Small Craft Seating:

A unit of small craft seating provides moderately comfortable seating for 12 passengers for a short period of time (up to 12 hours). It is normally installed only on small craft intended for short-term operations (orbital shuttles, for example).

A flag officer will normally have his own luxury stateroom. A ship’s commanding officer normally has his own stateroom, as does any officer commanding the engineering, gunnery, or flight sections, or the ship’s troops. Other officers and petty officers live two to the stateroom. Ordinary crewmen and ship’s troops may share staterooms, although on warships (especially Imperial warships) they are often housed in bunkrooms. Each luxury passenger should have his own luxury stateroom, while standard and first-class passengers should have their own staterooms; couples or groups traveling together may share staterooms, but this should not be assumed when installing quarters.

Half-space versions of low berths or small craft seating may be installed, with half the mass, cost, power requirement, and capacity.

Quarters Table

System	Spaces	Mass (tons)	Cost (M ⁷)	Power (MW)
Bunkroom	2	0.5	0.01	neg.
Stateroom	4	1	0.05	neg.
Luxury Stateroom	8	2	0.15	neg.
Low Berth	1	4	0.05	neg.
Small Craft Seating	1	1.5	0.01	neg.

Workshops

Many ships need built-in workshops to support the engineering and maintenance staff. Machine parts often need to be repaired or replaced, and if a needed component isn’t immediately available it may need to be fabricated by hand.

Regardless of era, one workshop system takes up 2.5 spaces, has a mass of 15 tons, cost M⁷0.06, and uses negligible power. Workshops at an later era will have better equipment. Up to three personnel at a time can work in each workshop.

One workshop should be installed for every 60 full personnel in the engineering, maintenance, and life support sections. On exploration ships, especially those likely to be in unexplored space for long periods, this requirement is often exceeded.

If a workshop is available, any penalty for not having one is negated. A workshop also provides a +2 bonus to the user’s skill on any task involving the diagnosis or repair of ship’s systems.

Laboratories

Ships intended for exploration, survey, or other scientific work need laboratory space for the science specialists on board. Each laboratory system is dedicated to a single scientific skill and cannot be used to support other skills.

Regardless of era, one laboratory system takes up two spaces, has a mass of 10 tons, and costs M⁷1. Laboratories devoted to certain physical sciences (GM’s discretion) use 0.3 MW of power each; other laboratories use negligible power. One scientist at a time can work in each laboratory. One laboratory should be installed for every science specialist in the crew, unless some of the scientists are working in a survey module (see below).

A laboratory gives a +2 skill bonus in any situation where the associated scientific skill is being used and lab equipment would be a benefit.

Survey Modules

Exploration and survey ships often carry specialized astronomical instruments and sensor arrays. These sensors are not useful for ship-combat situations and can't be used to target ship's weapons. Instead, they are used to detect astronomical object at multi-parsec distances, and to survey planetary surfaces in detail from orbit.

Regardless of era, one survey module takes up four spaces, has a mass of 12 tons, and uses negligible power. A survey module costs M760 during the Old Republic era, M715 during the New Republic and later and M730 in between. At the GM's discretion, a survey module can count as laboratory space for skills like Astronomy, Cartography or Geology. It provides space for four scientists. A ship will rarely need more than one survey module, unless it is likely to have many survey specialists working at the same time.

For rules regarding the use of a survey module see Interstellar Exploration above.

Sickbays

Any ship carrying medical personnel may have sickbays where the sick and injured can be treated under controlled conditions. A sickbay includes medical beds with special instruments and storage for drugs and surgical equipment. A large sickbay can include a motion-controlled theater for surgical procedures.

Regardless of era, a sickbay system takes up one space, has a mass of one ton, costs M70.2, and uses negligible power. One medical specialist at a time can work in each sickbay, and there is room for two patients per sickbay. Multiple sickbay systems can be combined into one larger medical facility (with a kolto-tank, up to 3960 BBY, or bacta-tank, from 4,000 BBY). One sickbay should be installed for every two people in the medical section. If there is only one medic on board, but that medic is an officer, he is usually given a sickbay to work in.

Cargo Space

Any leftover space in the ship may either be left as "empty space" or designated as a cargo hold. Each space of cargo hold has room for 500 cubic feet of cargo. Necessary cargo doors, ramps, tie-downs, and other equipment are included. Multiple spaces of cargo can either represent a single large hold or a number of smaller holds. Holds may be installed in half-space increments.

An empty cargo hold has no mass or cost.

Step 15: Special Features

Many ships appearing in the Star Wars movies, computer games and novels may have unique features not included in the ship design rules described here. Such features may include s-foils, ion engines, lack of artificial gravity, and so on. These special features will be added to this section when encountered during the ship design.

Cluster Engines

Maneuver drives can be clustered together and operate as if one engine. Thus not providing a multiplier for acceleration but also not providing a divider for max speed in space.

External Systems:

In order to conserve space on a ship, some systems may be placed outside of the ship's hull. Imperial Star Destroyers are known for their external shield generators, many Alliance starfighters have external maneuver drives, and the Millennium Falcon has external sensors, and so on. Although this saves space, the external systems can be targeted by enemy gunners within their arc of vision and only -6 to hit.

Inertial Dampeners:

Imperial cockpits lack inertial dampeners. This reduces the mass, cost and spaces used by 10%.

S-foils

S-foil motivators divide the wing into two separate wings. This was especially useful in combination with cluster engines. While the s-foils were closed, higher speeds were possible (although the acceleration was lower). When the s-foils were extended, the top speeds dropped but the maneuverability, as a direct effect of the increased acceleration, increased.

Vacuum Cockpit:

Imperial pilots always wear vacuum space suits. Their cockpit does not have life support. This reduces the price, mass and space with 10%.

Step 16: Performance

At this point, the ship design is complete and a number of important attributes can be determined.

Ship Mass

Total Empty Mass (EMass):

Add together the Hull Mass (from Step 4) and the mass of all installed systems. Do not include the mass of ammunition, fuel, or payload. The result is the ship's empty mass. Round the EMass to three significant figures.

Total Loaded Mass (LMass):

This is equal to the empty mass, plus these additions:

- The mass of cargo carried. Assume five tons per space of cargo hold; this figure allows for holds that are not fully packed, for container mass, and so on. A dense, heavy load may be as much as 25 tons per space.
- The mass of crew and passengers. Assume 0.1 ton per person. As a rule of thumb, this can be simplified to one ton per bunkroom, 0.2 tons per stateroom or luxury stateroom, 0.2 tons per space of low berths, 0.4 tons per space of emergency low berths, or 1.2 tons per space of small craft seating.
- The mass of corbana gas. This can be simplified to one ton per space of fuel tanks.
- The mass of ammunition. This can be simplified to 0.03 tons per blaster shell for medium blaster cannons, 0.05 tons for large blaster cannon, and 0.02 tons for gatling blaster cannons.
- The empty mass of any small craft or vehicles carried in vehicle bays or hangar bays.

Round the LMass to two significant figures.

Health

Starships don't all operate to the same standard. Some are built by skilled craftsmen applying the best tools and resources, while others are built in ramshackle civilian shipyards by contractors who are engaging in wholesale fraud and embezzlement. Even a well-constructed ship will end to decay over time as wear and tear accumulates.

A vessel's general condition is indicated by its HT attribute (see BS page 483). In the Star Wars universe, a vessel just out of the shipyard will have a HT of 8-12. The vast majority of new ships will have a HT of 10, while only the most exceptional ships will have HT as low as 8 or as high as 12 (indicating truly atrocious or remarkably sound workmanship, respectively).

A vessel's HT attribute declines by one level every 50 years. Once a ship's HT drops below 8, it is too unreliable for use and is

normally scrapped. Thus a typical starship can expect to have a 150-year operating lifespan.

A spacecraft's purchase cost is naturally related to its workmanship and state of repair. The GM may choose to tie a ship's purchase cost to its HT attribute, permitting adventurers to buy old or ramshackle ships for a bargain price, or superbly built ships for a premium. A suggested scheme is as follows. Multiply the base cost for the ship (as given by the ship design sequence) by the Price Multiplier for its current HT score.

Ship HT and Cost Table

Vessel HT	Price Multiplier
12	5.0
11	2.0
10	1.0
9	0.5
8	0.1

Hit Points

The ship's hit points depend on its empty mass. Refer to the following formula and record the ship's hit points. Calculate dHP as $4 \times (\text{cube root of empty weight in lbs.})/10$. Alternatively, you can use the Ship Hit Points Table (see IW page 200).

Other Attributes

Total Cost:

Add together the cost of all components to get the ship's final cost. Round off to two significant figures.

Size Modifier (SM):

As determined in Step 2.

ASig:

This is the ship's active sensor signature. It is equal to SM, minus (TL-4) if the ship has stealth.

Life Support Capacity:

This measures how many people can be supported by the ship's life support systems for long periods (assuming enough provisions are on hand). Capacity is equal to $(2 \times \text{Luxury Staterooms}) + (2 \times \text{Staterooms}) + (10 \times \text{Bunkrooms})$. Low berths yield no life support capacity. Bridge systems and small craft seating modules also yield no life support capacity, although they can provide life support for strictly limited periods.

Space Acceleration (sAccel):

This measures how rapidly the ship can accelerate (including its ability to decelerate and maneuver). A ship's sAccel in yards/second per second is equal to 11 multiplied by the number of engines or engine clusters multiplied with tons of thrust provided by its maneuver drive, divided by the ship's total loaded mass in tons. Round off to two significant figures.

GMs may wish to calculate multiple sAccel for ships whose mass can change rapidly (e.g., with empty vs. full fuel tanks, or with empty vs. full cargo holds).

Space Speed Limit (MGLT):

This measures how fast the ship can travel. A ship's MGLT in yards/second is equal to 220 multiplied by the tons of thrust provided by its maneuver drive, divided by the ship's total loaded mass in tons, and divided by the number of engines.

GMs may wish to calculate multiple MGLT for ships whose mass can change rapidly (e.g., with empty vs. full fuel tanks, or with empty vs. full cargo holds).

Some ships have special engines

Hyperjump Performance (Jump):

This is the ship's hyper speed, inaccuracy and jump range, and is determined by the size of its hyperdrive. Range is determined by space and date. Speed by power and date and inaccuracy by date.

Top Air Speed:

To compute a ship's top cruising speed in a substantial atmosphere, begin by calculating the ship's drag as equal to her surface area (measured in ksf) multiplied by the appropriate factor from the Drag Table.

The top air speed in a Standard atmosphere is equal to the square root of $[15,000,000 \times (\text{Total thrust}/\text{Drag})]$. A streamlined hull is restricted to 740 mph, while an unstreamlined hull is restricted to 600 mph. The top air speed caps at the maximum speed the engines can provide (if used at all in an atmosphere).

Flight Time:

This is the maximum flight time when using only power for the M-drives. Divide the maximum fuel tank capacity (in cubic feet) by the power usage of the power plant when only providing power for the M-drives.

Drag Table

Streamlining	Drag Factor
Airframe Hull	100
Streamlined Hull (per dton)	200
Unstreamlined Hull (per dton)	1,000
Fixed Mounts	+0.25
Light Turret	+1
Medium Turret	+2
Large Turret	+3
Heavy Turret	+6
External Systems (per space)	+1

Hoover Height:

Stall speed defines the maximum height at which a ship can hover or if the ship is incapable of hovering.

Hoover Height = 1 yard + (1 yard x upward thrust/LMass)

Maneuverability:

Maneuverability is dependent on the ship's size and acceleration. Divide the ship hull size in dton by the ship's size modifier. Deduct the result from the acceleration. Round down to the nearest integer. The result is the modifier to vehicular dodge, half the Piloting (Contragravity) or (High Performance Spacecraft) skill modified with the Maneuverability.

Note: when the starships become larger, the maneuverability will drop drastically. It is easier for a small fighter to dodge asteroids or even blaster bolts than for a battleship.

Step 17: Finalize Design

The ship design is now complete. A new ship is usually categorized by size and function ("heavy cruiser" or "tramp freighter"). The first ship of a new class usually gives its name to the class.

STARSHIP TEMPLATE

The following small craft and starship designs are seen in the six movies and are typical for those eras.

Ship Name

Hull:

Systems:

Statistics:

Crew:

Production:

Description:

FIGHTER/BOMBER

Z-95 Headhunter



Z-95Mk1

Hull:

14 dton Wedge Streamlined hull, dDR 10 armor

Systems:

2 external cluster fission drives (thrust 85tons), Repulsorlifts (upward thrust 85tons), Small Cockpit, Model-0 sensors (scan 14), 2 Fixed Mount, 2 Triple Blasters, Fuel Tanks 500 cubic feet, Cargo Hold 100 cubic feet

Statistics:

EMass 140.445tons, LMass 157.545tons, Cost M759.6738, SM+6, ASig +6, Hull dHP 26 (262 HP), Life Support 3 man-days, Space 66MGLT and 13MGLT/s, Top Air Speed 134.2-135.1mph, Max Flight Time 3h55m, Hoover Height at 4'9", Maneuverability +10

Crew:

Flight Section: 1 pilot

Production:

Manufacturer: Incom / Subpro, era Fall of the Republic era

Z-95C4d

Hull:

14dtan Wedge Streamlined hull, dDR 10 armor

Systems:

2 external cluster fission drives (thrust 85tons), Repulsorlifts (upward thrust 150tons), Small Cockpit, Model-0 sensors (scan 14), 3 Fixed Mounts, 2 Triple blasters, 1 Space Bomb Launcher, Ordnance 2 Space Bombs, Fuel Tanks 500 cubic feet, Cargo Hold 100 cubic feet.

Statistics:

EMass 142.445tons, LMass 147.545tons, Cost M765.0238, SM +6, ASig +6, Hull DHP 26 (223 HP), Life Support 3 man-days, Space

63-65MGLT and 13MGLT/s, Top Air Speed 129.6-133.2mph, Max Flight Time 3h55m, Hoover Height at 6', maneuverability +10

Crew:

Flight Section: 1 pilot

Production:

Manufacturer: Incom / Subpro, era Fall of the Republic era

Z-95XT

Hull:

14 dtan Wedge Streamlined hull, dDR 10 armor

Systems:

2 external cluster fission drives (thrust 85tons), Repulsorlifts (upward thrust 85tons), Large Cockpit, Model-0 sensors (scan 14), 2 Fixed Mount, 2 Triple Blasters, Fuel Tanks 500 cubic feet, Cargo Hold 100 cubic feet.

Statistics:

EMass 141.445tons, LMass 143.645tons s, Cost M760.1738, SM +6, ASig +6, Hull dHP 26 (263 HP), Life Support 6 man-days, Space 65-66MGLT and 13MGLT/s, Top Air Speed 133.1-134.1mph, Max Flight Time 3h55, Hoover Height at 4'9", Maneuverability +10

Crew:

Command Section: 1 officer (instructor)

Flight Section: 1 pilot (trainee)

Production:

Manufacturer: Incom / Subpro, era Fall of the Republic era

Z-95ER

Hull:

14 dtan Wedge Streamlined hull, dDR 10 armor

Systems:

2 external cluster fission drives (thrust 90tons), Repulsorlifts (upward thrust 90tons), Small Cockpit, Model-0 sensors (scan 14), 2 Fixed Mount, 2 Triple Blasters, Fuel Tanks 2000 cubic feet, Cargo Hold 100 cubic feet.

Statistics:

EMass 143.685tons, LMass 145.785tons s, Cost M762.6338, SM +6, ASig +6, Hull dHP 27 (265 HP), Life Support 3 man-days, Space 67-68MGLT and 13MGLT/s, Top Air Speed 138.9-139.8mph, Max Flight Time 11h7, Hoover Height at 4'10", Maneuverability +10

Crew:

Command Section: 1 pilot

Production:

Manufacturer: Incom / Subpro, era Fall of the Republic era

Description:

The Z-95's endurance, adaptability, and large numbers have led to its continued use long after its initial production run had ceased. A multi-purpose starfighter, the Z-95 has spawned countless variants, with individual forces, governments, squadrons and owners adding and adapting components and systems.

Developed in a cooperative venture between Incom Industries (later the Incom Corporation) and the later defunct Subpro Corporation, the Z-95 is largely recognized as the premiere starfighter of its era, and the forerunner of the incredibly successful X-wing starfighter.

The Z-95 has changed throughout the years, eventually evolving into the T-65 Incom X-wing starfighter. The initial models resembled atmospheric craft rather than deep-space starfighters. Early production models were twin-tailed wedge-shaped craft with bubble-cockpits.

As the series progressed, the bubble-cockpit got smaller, with increased instrumentation compensating for reduced visibility. Subsequent models had swing-wings and forked tail with twin engines. These initial models (the Mark I, or Z95Mk1) were very maneuverable in an atmosphere. The basic frame was 11.8 meters long, and had weapons hardpoints located on wing and fuselage.

Incom added new Z-95s annually during the height of production. Among the most common variants were the Z-95C4d, a ground support bomber equipped with additional bomb-racks and ordnance hardpoints. The Z-95ER was an extended range model, with additional consumable tankages. The Z-95ML was a missile launch platform, with added missile racks and long-range ordnance hardpoints. The Z-95XT was a two-person fighter used as a trainer. The Rebel Alliance used the XT as a training vessel as well as for ferrying runs in-system or between ships in the fleet.

These later era Z-95s had a basic configuration that strongly hinted at the T-65 X-wing that was to soon take the galaxy by storm. A thin pointed spaceframe rested between two large engine clusters,

from which foils extended outward. The tips of the foils typically housed the primary weapons (usually blasters or laser weapons) while the fuselage provided a more stable platform for missile weapons. Later in the production run, the Z-95AF4 (Assault Fighter 4) featured twin engine clusters that split into a total of four engine thrusters, much like the modern X-wing. These later Headhunters also had the capability of splitting the foils into attack position, widening the coverage area off the wing-mounted weapons.

Each generation of Z-95 has increased in speed. Compared to today's fighters, Z-95 have low maneuverability. The Mark I, with its aerodynamic styling, offered a greater airspeed-to-space speed ration than later models.

Z-95s are typically not equipped with hyperdrive engines, though famed Republic (and later Alliance) tactician Adar Tallon developed a variant, the Z95t, which featured a hyperdrive, and increased maneuverability. Later Z-95s did feature an Incom Gbk-435 hyperdrive motivator, and a Narmox Zr-390 navcom system. Smuggler Alliance leader Mara Jade piloted a modified Z-95 with a hyperdrive before switching to larger, more practical craft.

The Z-95 is notorious for being able to take brutal punishment before falling apart, though as starfighter weapon technology has progressed, Headhunter pilots would rather trust their flying than their armor and shields. Z-95s have respectable armor plating, but their shielding tends to be very light. Near the end of the product line, Z-95s could boast a titanium alloy hull and Xolyyyn shielding.

Weapon systems vary among the different models, but most Z-95s are equipped with two wing-mounted triple-blasters, which are fire-linked. Another common weapon system is a bank of concussion missiles. The dedicated missile platform Z-95s, of course, had increased payloads.

A common model featured twin Taim & Bak KX5 fire-linked laser cannons, and twin Krupx MG5 concussion missile launchers. These weapons are controlled through a Fabritech ANq 2.4 tracking computer and SI 5g8 "Quickscan" vector imaging system. Sensor systems include a Fabritech ANS-5c unit with long-range Phased Tachyon Detection Array #PA-9r and one short range Primary Threat Analysis Grid model #PG-7u.

CAPITAL SHIPS

CIVILIAN / UTILITY CRAFT
