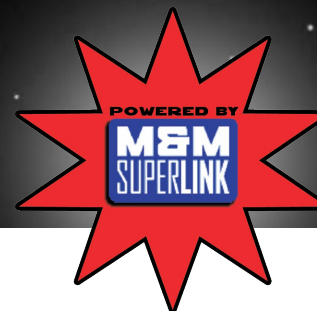
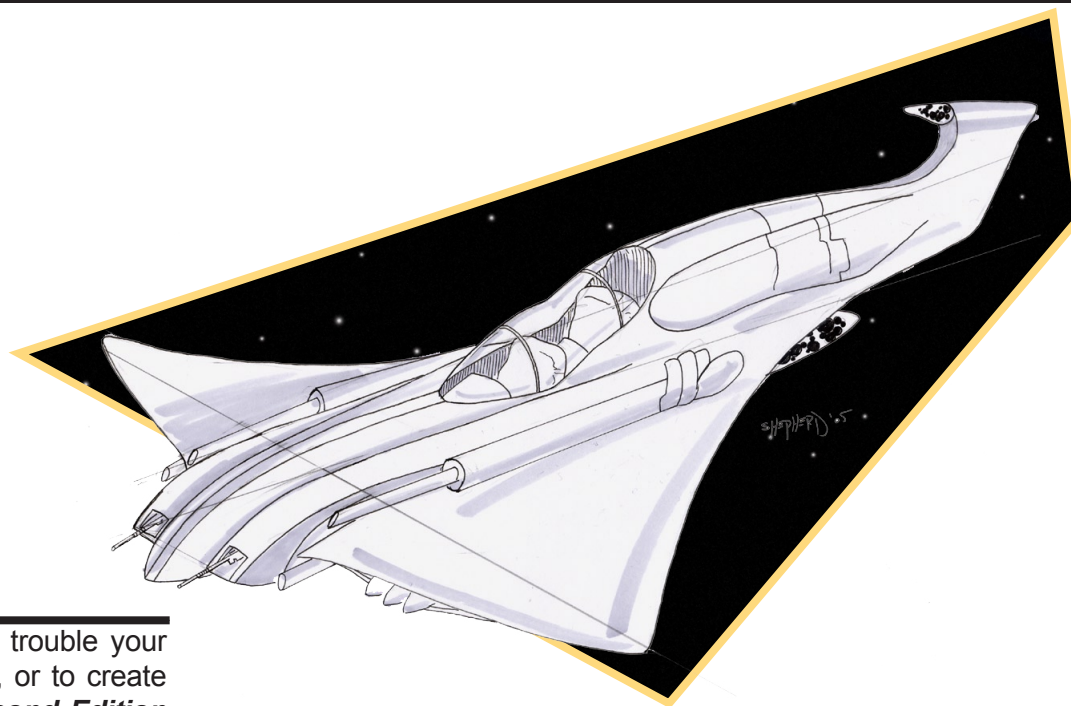


MCGUFFIN'S GUIDE TO SPACECRAFT CONSTRUCTION





INTRODUCTION

Whether your intent is to outfit an alien invasion force to trouble your superheroes, to recreate your favorite SF television show, or to create your own galaxy-spanning campaign using the *M&M, Second Edition* rules, *McGuffin's Guide to Spacecraft Construction* will assist you in creating spacecraft and space-stations to fit your needs.

HOW TO USE THIS BOOK

McGuffin's Guide to Spacecraft Construction is designed to be an extension of the vehicle construction rules that you can find on page 142 of *M&M, Second Edition*. These rules have been organized into two sections:

Section One gives you all of the rules and options to create your own spacecraft, with new Features and Powers.

Section Two provides you with 13 pre-built spacecraft to get you started, from fighters and freighters to time-machines and orbital planet-destroying satellites.

And for even more spacecraft goodness, you can check out our website at: <http://www.cracked-mirror.com> for our *McGuffin's Guide Spacecraft Construction Worksheets* that are designed to help you create your own spacecraft in a flash.

DESIGNATION OF PRODUCT IDENTITY

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ONE – SPACECRAFT CONSTRUCTION

Spacecraft, in form and function, are quite different than normal vehicles. While a small spacecraft may resemble a normal aircraft, a spacecraft is required to perform in harsher conditions and at longer range. Large spacecraft can barely even be compared to normal craft, often acting as combination mobile headquarters and computerized assistant.

SPACECRAFT TRAIT COST

Trait	Base Value	Cost
Strength	10	1 point per +5 Strength
Dexterity	10	1 point per +1 Dexterity
Intelligence	0	1 point per +1 Intelligence
Wisdom	10	1 point per +1 Wisdom
Charisma	0	1 point per +1 Charisma
Speed	—	Movement power cost
Size	Miniscule	1 point per size category
Skills	—	1 point per 4 skill ranks
Feats	—	1 point per feat
Features	—	1 point per feature
Powers	—	Base cost of power times rank

STRENGTH

A spacecraft's strength determines its carrying capacity. Spacecraft have a base Strength of 10 and buy up their Strength in increments of 5 for 1 point each. A spacecraft can move at normal speed carrying up to its medium load, 2/3 speed with a heavy load. It can also pull up to five times its heavy load at ½ speed (up to ten times, if equipped with the proper hauling equipment and given an unobstructed area in which to move). Each increase in size category increases a spacecraft's Strength by 10 at no additional cost.

DEXTERITY

A spacecraft's dexterity determines how agile it is in comparison to other spacecraft. Spacecraft have a base Dexterity of 10 and can increase their Dexterity by +1 for 1 point each.

OTHER ABILITY SCORES

Spacecraft have no Constitution score, because they are not living beings. Spacecraft always fail Constitution checks. Spacecraft do not recover from damage; they must be repaired instead. Spacecraft are immune to effects requiring Fortitude saving throws unless the effect works on inanimate objects. Spacecraft also have no Intelligence or Charisma scores.

These qualities of spacecraft: lacking three ability scores (-30 points) and Immunity to effects requiring Fortitude saves (30 points) average out to 0 points.

Spacecraft without Intelligence and Charisma are automatons,

operating on programmed instructions. They are immune to mental effects and interaction skills and automatically fail Intelligence and Charisma checks.

A spacecraft can buy up one (or both) of its non-existent ability scores from 0 by spending points; +1 ability score point per point spent. This gives the spacecraft the normal use of that ability. Note that a spacecraft with Intelligence but no Charisma is sentient (able to process sensory information and act on it, and can learn) but is non-sapient (not self-aware, lacking self-initiative, empathy and creativity).

DEFENSE

A spacecraft's Defense is 10 + its Size modifier. Note: Since the size modifier applies to both attack rolls and Defense, spacecraft of the same size have no modifier to hit each other.

SPEED

A spacecraft buys the appropriate movement power(s) for its movement speed, paying the normal cost. Spacecraft with multiple modes of movement (atmospheric, FTL, sub-light speed) can pay full cost for one and acquire the others as alternate powers (see pg. 108 *M&M2E*).

TOUGHNESS

A spacecraft's Toughness rating starts at 5. Each increase in Size category increases a spacecraft's Toughness by +2 at no additional cost.

SIZE

Spacecraft come in a vast range of sizes from that of a small automobile to that of a small moon. To account for this range spacecraft use the Spacecraft Size Category below.

A spacecraft has an initial size of Miniscule (or Medium size on the Character Size Scale) for a cost of 0. Each increase in size category increases the cost of the spacecraft by 1 point.

MODIFIER

A spacecraft's Size Modifier applies to the vessel's Attack and Defense bonuses. Since this modifier is applied to both Attack and Defense, spacecraft of equal size have no modifier to attack, or defend, against each other.

Spacecraft Size	Character Size	Modifier	Size	Strength	Toughness	Defense
Awesome	—	-32	5000+ ft.	110	25	-22
Colossal	—	-28	2000-5000 ft.	100	23	-18
Gargantuan	—	-24	1000-2000 ft.	90	21	-14
Huge	—	-20	500-1000 ft.	80	19	-10
Large	—	-16	250-500 ft.	70	17	-6
Medium	Awesome	-12	128-250 ft.	60	15	-2
Small	Colossal	-8	64-128 ft.	50	13	2
Tiny	Gargantuan	-4	32-64 ft.	40	11	6
Diminutive	Huge	-2	16-32 ft.	30	9	8
Fine	Large	-1	8-16 ft.	20	7	9
Miniscule	Medium	0	4-8 ft.	10	5	10

SPACECRAFT & INTERACTION SKILLS

Interaction skills require that an artificially intelligent spacecraft have some means to interact with other characters. For most spacecraft, this will take the form of speaking either with on-board speaker systems or via communications channels.

SKILLS

Spacecraft can have skills just like characters at the same cost (1pp per 4 skill ranks). However, a spacecraft cannot have skills based on abilities that it lacks, nor can a spacecraft have skills that rely on it having the same physical structure as a character (such as Climb, Sleight of Hand or Swim). Useful skills for a spacecraft include:

- Computers:** Useful for interfacing with other computer networks.
- Concentration:** At the GM's discretion, this may be a useful skill for intelligent, self-aware vessels in difficult combat situations.
- Diplomacy:** Another skill useful for Intelligent, self-aware spacecraft.
- Gather Information:** This may be useful to self-aware vessels for monitoring a planet's communications traffic.
- Intimidate:** For self-aware spacecraft, this skill may be useful for coercing crew members or opposing vessels.
- Investigate:** Useful for assisting crew in forensic analysis.
- Knowledge:** Whether a vessel is intelligent or not, Knowledge skills could be used to simulate a spacecraft's memory banks or archives.
- Language:** Useful in campaigns where the Language Translator option is not available.
- Notice:** A spacecraft's Notice skill acts as its passive sensor system (see sidebar at right).

Pilot: A useful skill allowing a spacecraft, intelligent or otherwise, to operate on autopilot.

Search: A spacecraft's Search skill acts as its active sensor system (see sidebar below). If a vessel is not intelligent, substitute a crew member's Search skill when using the spacecraft's active sensors.

Sense Motive: Useful to self-aware spacecraft.

FEATS

While spacecraft can have feats at the same cost as characters (1pp per feat rank), some feats are less useful or even useless to spacecraft. Common feats for spacecraft are listed below.

All-out Attack	Improved Aim	Redirect
Attack Focus	Improved Defense	Set-Up
Attack Specialization	Interpose	Sneak Attack
Defensive Attack	Move-by Attack	Taunt
Evasion	Ranged Pin	Well-Informed

ACTIVE SENSORS VERSUS PASSIVE SENSORS

Spacecraft utilize two types of sensor systems; Active sensors (a spacecraft's Search skill) and Passive sensors (a spacecraft's Notice skill).

Active sensors operate by sending a pulse of some kind (radar, sonar, etc.) to bounce off a target and gather information. Due to the nature of bouncing a signal off a target, active sensors can be detected by the target they are used on with a Notice check (DC 10).

Passive sensors consist of measurement devices that track fluctuations in the immediate surroundings of a spacecraft. Infinitesimal differences in electromagnetic radiation hitting a spacecraft are detectable by dense arrays of passive sensors dotting the vessel's hull. Passive sensor use cannot be detected by other spacecraft.

FEATURES

A spacecraft may have any number of features chosen from the lists below. Certain features may be considered "standard" for your campaign. Check with your GM to determine if any features are included in your spacecraft's design and what their costs may be.

Artificial Gravity

The spacecraft is equipped with a rotating section that simulates the natural gravity of the constructing race's home planet.

For an additional feature, the spacecraft is equipped with a high-tech system that simulates gravity without the need for rotation.

Combat Simulator

A combat simulator is a special room equipped with various devices intended to test characters' skills and allow them to train in realistic combat situations. Generally, a combat simulator has a suite of devices that can simulate any appropriate attack effect at a rank up to the campaign's PL. A combat simulator normally has safety interlocks so its attacks are always non-lethal, but these can be disengaged so the simulator's attacks do lethal damage.

For an additional feature, the combat simulator can also project realistic illusions, allowing it to recreate or simulate almost any environment. Combat simulators are useful for training and short "war games" (pitting characters against each other or simulated opponents). As another feature, a combat simulator designed to project illusions can be programmed as a recreation facility, allowing characters to travel on virtual vacations, take part in fictional-interactive dramas, or simulate experiments that may be too dangerous to perform in a laboratory.

Communications

A communications system allows the spacecraft to receive and transmit on a wide range of radio and TV bands, monitor police and emergency channels, coordinate communications between crew members, and so forth. It includes communications equipment, consoles, and monitors. The system's access to restricted communication bands depends on the clearance and skills of the user. Heroes often have access to special

government channels, while a successful Computers skill check (DC 25) can grant a user illegal access to restricted systems.

Computer

A state-of-the-art computer system serving the entire spacecraft (a mainframe or mini-mainframe system). This allows characters to make full use of the Computers skill and the computer can be programmed to handle routine ship functions (including monitoring communications channels and controlling weapons systems). For an artificially intelligent spacecraft, purchase this feature and Intelligence.

Extra-spatial Interior

Your spacecraft is larger on the inside than it appears on the outside. This additional space can be used as cargo area, crew quarters, or any combination of the two. Just how much larger the interior of your spacecraft is left up to your gamemaster.

Fire Prevention System

The spacecraft is equipped with an automatic system for detecting and extinguishing fires. Any large open flame sets the system off. It functions like the Nullify power (pg.94, *M&M2E*) at rank 5 against fire. A computer-controlled prevention system can be programmed to ignore certain sources of fire or the system can be placed on manual control (requiring someone to personally activate it).

Grappling/Manipulator Arm

The spacecraft has been fitted with an extendible arm that can be used to tow other spacecraft or to manipulate cargo. This feature is usually available on less advanced spacecraft where the Tractor/Repulsor Beams power isn't available.

A Grappling/Manipulator Arm has a base Strength equal to that of the spacecraft. For each additional point spent on this feature, increase the Arm's strength by 5.

A Grappling/Manipulator Arm can move objects, but cannot perform tasks of fine manipulation (like typing, or manipulating controls). A Grappling/Manipulator Arm cannot inflict damage directly; it cannot

'punch' or 'crush' objects. Using a Grappling/Manipulator Arm to 'grab' a spacecraft is a Standard Action and can usually only be accomplished on an immobile target.

Gym

A gym consists of weight-training and other exercise machines, space for working out, stretching, and similar exercises, and all the necessary amenities (lockers, showers, etc.). Some spacecraft may incorporate the gym feature into the combat simulator for a multi-purpose training room.

A gym is a particularly important feature on spacecraft without the Artificial Gravity feature. Space travelers in a zero-gravity environment can experience serious health problems if they do not exercise regularly.

Hangar

A spacecraft hangar houses fighter craft and other space vehicles, and includes a launching mechanism for fighters or a flight deck for the smaller craft to launch from. A hangar also has facilities for repairing and maintaining the vehicles it houses.

Hidden Compartments

The spacecraft has hidden compartments or cargo areas holding up to a tenth of the craft's medium load in cargo. A Search check (DC20) allows a searcher to find the hidden compartment. For each additional point spent, increase the DC of the check by 5.

Holding Cells

These are special cells for holding prisoners, usually temporarily, although some spacecraft might have more permanent holding facilities. The cells are equipped with Nullify devices (ranked at the campaign's PL) or their basic Toughness is increased by 50%, which option should be agreed upon by both the player and the GM. Both options may be taken for a cost of two features.

Infirmary

An infirmary consists of hospital beds and equipment for the full use of the Medicine skill. An infirmary can provide treatment for a number of

patients equal to the spacecraft's PL at one time and it can be assumed to have the necessary facilities to handle any unusual physiologies of the spacecraft's owner(s).

Laboratory

A laboratory is a facility for the use of Knowledge skills in performing scientific tests or experiments. It contains all the necessary scientific equipment, including dedicated computers if the spacecraft doesn't have its own computer system. Characters can use the laboratory to perform research, study unusual phenomena, and so forth.

Library

A library allows for the use of various Knowledge skills when doing research. A library may consist of printed material, microfilm, computer databases, or a combination of the three. A library allows characters to take 20 on most Knowledge skill checks unless the information they're looking for is particularly obscure (in the GM's judgment).

Living Space

The spacecraft includes all the necessary amenities for people to live in it full-time. This includes bunk space, a common kitchen or cafeteria facility, dining area, and living space.

For an additional feature, a spacecraft can provide a number of private

SPACECRAFT CREW ACCOMODATIONS

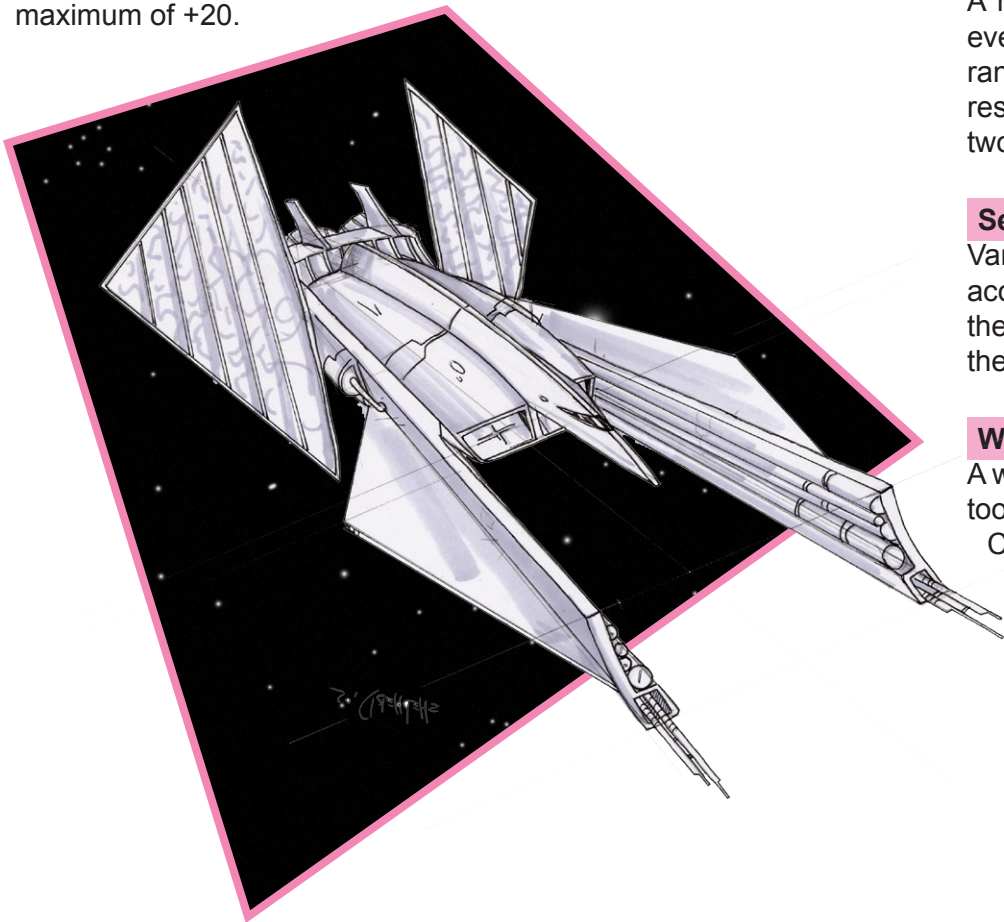
Spacecraft are not always large, restricting the number of crew and passengers that they may carry. A good rule of thumb to use for crew/passenger capacity is that the smallest spacecraft (Miniscule size on the Spacecraft Size Category chart) has a crew/passenger capacity of up to 5 Medium sized people. For each size category above that, move the crew/passenger capacity of the spacecraft one rank up the Time and Value Progression table. So, a Fine sized spacecraft would have a crew/passenger capacity of 10, a Diminutive spacecraft of 25, a Tiny spacecraft of 50, etc.

Note: A spacecraft can hold up to twice the listed capacity above, but the quarters will be crowded, much like a military vessel.

living suites. This allows a spacecraft's crew to live in relative comfort, and with some privacy, at the cost of less living area. This option is more likely to be found on personal or luxury spacecraft, while military spacecraft are likely to require their crew to share living quarters.

Navigation System

The spacecraft has the equivalent of the direction sense Super-Sense (pg. 102; *M&M2E*), granting a +5 bonus on all skill checks related to navigation. This can be increased by +5 per additional point spent to a maximum of +20.



Power System

A power system is a system of generators (fusion, fission, or anything else) that provides the spacecraft with energy to run all of its systems. The spacecraft also has emergency back-up power systems should the main generators fail. Back-up power generally lasts for a number of hours equal to the spacecraft's PL.

Rescue Beacon

A rescue beacon is an automatic distress system that triggers in the event of a spacecraft emergency. All ships within reasonable broadcast range of a spacecraft may use active or passive sensors to detect a rescue beacon (DC10 Notice check. For every light-year between the two spacecraft a -2 penalty is imposed).

Security System

Various locks and alarms protect the spacecraft from unauthorized access to its systems. A Disable Device check (DC 20) overcomes these systems. For each additional point spent on this feature, increase the DC by 5.

Workshop

A workshop has all the facilities for use of various Craft skills. It includes tools, workbenches, supplies, and so forth. The GM may rule certain Craft skills cannot be used in a workshop, or require a workshop of its own (which is an additional feature). For example, a workshop can easily handle woodworking, metalworking, and machining, but might not be suitable for creating magical inventions, which require a separate dedicated workshop.

POWERS

Absorption Shielding

Absorption shielding allows a spacecraft to absorb energy attacks that target it and redirect that energy into its own systems. Subtract the Absorption Shielding rank of a spacecraft from the damage bonus of the affected attack. If the remaining bonus is +0 or greater, make a normal Toughness save against the remaining damage bonus, otherwise the spacecraft ignores the attack's damage completely. A spacecraft's Absorption rank counts as a bonus to its Toughness save for power level purposes.

After absorbing damage, as a reaction, a crew member can immediately use Boost on one of the spacecraft's traits at a rank equal to the rank of the Absorption Shielding or the attack's damage bonus, whichever is less. Choose what systems the absorption shielding effects from the following list when it is taken: engines, regenerative systems, tractor beam, or one weapon system.

A spacecraft's absorption shielding can be used to boost the effects of multiple weapon systems for an increase in the cost of this power by 2pp/rank, or to boost the effects of all of a spacecraft's systems for an increase of 4pp/rank.

Absorption [*Type*: Energy; *Cost*: 4 pp/rank]

EXTRA

- Energy Storage (+1): The spacecraft "stores" absorbed energy. Each attack gives the spacecraft energy equal to the damage bonus the Absorption Shielding stops. The spacecraft can have up to (rank x 10) energy points at once (excess energy dissipates harmlessly). Stored energy "bleeds off" at a rate of 1 point per round. This rate can be reduced with the Slow Fade feat. Stored energy points may be used to fuel other effects (chosen when Absorption Shielding is taken) as desired on a 1 point per rank basis. The Progression Feat (see pg. 110; M&M2E) increases your storage capacity by one multiple per application (x11, x12, etc.).

Automated Medical Bays (Auto-doc)

The spacecraft is equipped with computerized medical facilities that are designed to assist injured crewmembers in healing. With a full-round action, an Automated Medical Bay can do any one of the following:

- Grant a character an immediate recovery check for the subject's worst damage condition, with a bonus equal to this power's rank. If the check fails, the subject must wait the normal recovery time for that condition. If successful, this power can be used on the subject again normally.
- Grant a bonus on Saving Throws equal to this power's rank against effects with disease or poison descriptors. The bonus applies to the subject's next save against the effect.
- Stabilize a dying character with a power check (DC 10).

Healing [*Cost*: 2pp/rank]

POWER FEATS

- Persistent: The auto-doc can heal incurable damage (see Incurable, page 109 M&M2E)
- Regrowth: When healing a disabled condition, an auto-doc can cause lost or destroyed organs and limbs to regenerate as well.

EXTRAS

- Resurrection (+1): The auto-doc can restore life to the dead. If the subject has been dead for fewer minutes than this power's rank, make a DC 20 Con check for the subject with a bonus equal to this power's rank. If successful, the patient's condition becomes disabled and unconscious. If the check fails, another check cannot be made. Applying the Progression feat to this power moves the amount of time a subject can be dead one step up the Time and Value Progression Table (from rank in minutes to rank x 5 minutes, then rank x 20 minutes, rank in hours, and so forth).

- Total (+1): The auto-doc can completely heal multiple damage conditions at once. For every 5 points the recovery check (including the bonus from this power) exceeds the DC, the subject's next worse condition heals as well.

Chameleon Hull

Using holographic technology you can alter the appearance of your spacecraft. For 2pp/rank your vessel can assume the form of any spacecraft of the same size category. For 3pp/rank the spacecraft can assume any form of the same size category and, roughly, the same mass. Using either option, the spacecraft gains a +5 bonus to Disguise checks per rank in this power.

Morph [*Cost: 2pp/rank or 3pp/rank*]

Cloaking System

Your spacecraft is equipped with a system that bends light around the vessel, allowing it to become visually undetectable. This gives the spacecraft total concealment from all visual senses.

Invisibility [*Type: Total concealment from all visual senses; Cost: 8pp*]

Compartmental Separation

Spacecraft with this power can separate into two smaller functional spacecraft. When creating a spacecraft with Compartmental Separation the combined spacecraft takes this power and the two separate component craft are built on (power rank x 15) power points. The combined spacecraft and its component craft have separate traits, although the combined form often (but not always) shares the best of the components' traits. Component craft can't be built on more points than the combined spacecraft's total divided by the number of components.

Gestalt [*Cost: 1pp/rank*]

POWER FEAT

- Progression: Normally a Compartmental spacecraft is made up of two components. Each application of this feat moves the

maximum number of component craft one step up the Time and Progression Table.

Defense Grid

Your spacecraft is equipped with a system that allows it to intercept or deflect attacks made against it. A spacecraft with a Defense Grid may attempt to intercept any number of attacks in a round as if using the Block action (page 155, M&M) with no cumulative penalty. Once a block attempt fails, the defense grid cannot be used again until the next round.

Deflect [*Type: All ranged attacks; Extras: Action 2 (reaction); Cost: 4pp/rank*]

Disruptor Beam

Disruptor Beams are deadly energy weapons that weaken and destroy the structure of spacecraft. On a successful ranged attack roll, the target spacecraft loses Toughness equal to this power's rank (to a maximum of -15). The target then makes a Toughness save (at the reduced score) against damage equal to this power's rank. If the save fails by 20 or more, the spacecraft is atomized, leaving nothing behind. Damage and reductions in a spacecraft's Toughness are permanent until repaired, although spacecraft with Regenerative Systems may use that power normally.

Disintegration [*Power Feats: Improved Range 11; Cost: 11pp + 4pp/rank*]

Electro-Magnetic Pulse (EMP)

An EMP is a weapon system designed to temporarily disable an enemy vessel. If a successful ranged attack is made with an EMP, the target spacecraft must make a Toughness saving throw (DC 10 + power rank). A failed save means that the spacecraft is dazed; a save that fails by 5 or more means that the target craft is stunned. Targets that fail the Toughness save by 10 or more are inoperable and must be restarted. The target gets a new save each round to recover from being dazed or stunned, with a +1 bonus per previous save.

Stun [*Power Feats: Improved Range 11; Cost: 11pp + 2pp/rank*]

Energy Shielding

Your vessel is equipped with an energy shield that can surround it and protect it from attack. Energy Shielding increases a spacecraft's Toughness save +1 per rank.

Force Field [*Cost: 1pp/rank*]

EXTRA

- Impervious (+1): The spacecraft's Energy Shielding stops some damage completely. If an attack has a damage bonus less than your vessel's Energy Shielding rank, it inflicts no damage. Penetrating damage ignores this modifier; the spacecraft makes a normal saving throw against it.

FLAW

- Ablative (-1): Damage degrades your Energy Shielding. Each time it provides its bonus, it loses 1pp of effectiveness. When reduced to 0pp, it turns off. Energy Shielding recovers its effectiveness after about an hour of inactivity.

Ion Cannons

Ion Cannons are the standard weapons on most spacecraft. They are designed to cut through an enemy vessel's hull, destroying vital ship systems and killing crew. An Ion Cannon's damage equals its power rank.

Blast [*Power Feats: Improved Range 11; Cost: 11pp + 2pp/rank*]

SPACECRAFT WEAPON RANGES

Spacecraft operate over vast ranges. The immensity of space means that space-battles can take place across the breadth of a solar system or in orbit around a small moon.

To take these ranges into account, the spacecraft weapon systems presented here use the Improved Range power feat (see p.109, M&M2E) to increase a vessel's range. Each weapon system is built using Improved Range 11 as a baseline value, which gives that weapon system a range-increment of just under one-mile (5000 feet) and maximum range of approximately 9.5 miles (50,000 feet) per rank.

FTL (Faster Than Light) Drive

A slow but direct form of interstellar travel, the FTL Drive allows a spacecraft to move faster than the speed of light through the vacuum of space. A spacecraft with an FTL Drive can fly at light-speed at rank 1, crossing one light year per year. Each additional rank moves this one step up the Time and Value Progression Table. So rank 2, allows a vessel to travel twice the speed of light, then five times, and so on.

Space Travel [*Cost: 1pp/rank*]

Hyperspace Drive

The second fastest means of interstellar travel, the Hyperspace Drive allows a spacecraft to travel faster than light-speed by moving through another dimension in which the laws of physics differ from our own. A spacecraft can shift from normal space into hyperspace (or the reverse) as a Move action. Actual travel times are left to the GM's discretion.

Super-Movement [*Type: Dimensional Movement; Cost: 2pp*]

Jump Drive

The fastest form of interstellar travel, the Jump Drive allows a spacecraft to move instantly from place to place without crossing the distance in between. As a full action, a spacecraft can 'Jump' the distance shown on the Extended Range Table.

Teleport [*Extra: Accurate; Cost: 3pp/rank*]

POWER FEAT

- Progression: Some larger spacecraft are capable of carrying other nearby vessels with them when using their Jump Drive. A spacecraft may carry one additional vessel with a Size no more than half its own for one rank. Additional applications allow a spacecraft to move this number one step up the Time and Value Progression Table.

Language Translator

A language translator allows instantaneous translation between a spacecraft's crew and alien creatures or cultures. Filtering all communications through the spacecraft's Language Translator enables the vessel's crew to understand all languages and translate their transmissions into alien languages.

Comprehend 2 [*Type*: speak and understand all languages; *Cost*: 4pp]

Life Support System

All spacecraft come with a built in life support system to keep their crew alive in space.

Immunity 9 [*Type*: Life Support; *Extra*: Affects Others (+0); *Cost*: 9pp]

Long Range Sensors

A spacecraft with Long Range Sensors is able to use its Notice and Search skills and any sensory powers over great distances. Each additional power rank increases the vessel's sensor range, as shown on the Extended Range Table. While a spacecraft's Long Range Sensors are in use it cannot use other sensors.

ESP [*Type*: All senses; *Cost*: 4pp/rank]

Matter Accelerator

Using some means of propulsion (typically magnetic or gravity-based), a Matter Accelerator fires an asteroid or other projectile (of Gargantuan size or larger) at a target.

Blast [*Power Feats*: Improved Range 11; *Extras*: Area (explosion); *Cost*: 11pp + 3pp/rank]

Matter Replicator

Matter Replicators are capable of creating just about anything from food or machine parts to clothing or weapons. A small, personal Matter Replicator (5pp) can create objects up to one 5-foot cube in size with Toughness up to its power rank. To create larger objects, apply the Progression power feat.

Objects created using a Matter Replicator can be destroyed or recycled, in whole or in part, through the use of another, or the same, Matter Replicator. Otherwise, they appear to all senses as real as any other object a character encounters. Although it should be noted, some people feel that food created using a Matter Replicator doesn't taste as good as the 'real thing.'

Create Object [*Power Feats*: Innate, Precise; *Extra*: Duration (continuous); *Cost*: 2pp + 3pp/rank]

Matter Transmitter

A Matter Transmitter allows creatures or cargo to be transported over long distances instantaneously by converting their physical forms to energy and then reassembling them.

A standard industrial Matter Transmitter (8pp) can move 200lbs of cargo up to 1000 feet. Such a transmitter is designed primarily for moving cargo from one spacecraft to another without docking. Each additional power rank increases a Matter Transmitter's range, as shown on the Extended Range Table.

More advanced Matter Transmitters are more powerful (allowing them to move cargo farther) and can move larger amounts of cargo (through additional applications of the Progression power feat).

Teleport [*Power Feat*: Change Velocity, Progression 1; *Extra*: Accurate; *Flaw*: Long-Range; *Cost*: 2pp + 2pp/rank]

Neutron Torpedoes

Powerful weapons, Neutron Torpedoes are primarily a military armament. A basic torpedo consists of an explosive warhead mounted on a simple propulsion system, although most torpedoes are capable of being equipped with different types of warheads, each for a different situation.

Blast [*Power Feats*: Improved Range 11; *Extras*: Area (explosion); *Cost*: 11pp + 3pp/rank]

More sophisticated Neutron Torpedoes can be fitted with tracking systems allowing them to pursue their target. The example listed below has two chances to hit its target (see Homing; pg. 109, M&M 2E).

Blast [*Power Feat*: Homing, Improved Range 11; *Extra*: Area (explosion); *Cost*: 12pp + 3pp/rank]

Phase Modulator

A phase modulator allows a spacecraft to adjust its physical nature in relation to the normal universe, allowing it to pass through solid matter using its normal movement. Phase shifted vessels cannot affect the physical world. Phase shifted vessels are unaffected by physical attacks but the GM may determine that it can be affected by certain energy attacks. A spacecraft's sensory effects still work normally and sensory effects work on it normally while it is phase shifted.

Insubstantial 4 [*Type*: Incorporeal; *Cost*: 20pp]

Regenerative Systems

Available to only the most advanced space-faring species, a spacecraft with Regenerative Systems is either a living bio-vessel or the product of advanced nanotechnology. In both cases, a spacecraft with Regenerative Systems is capable of repairing itself without the need for repair crews or a ship yard.

For each rank in Regenerative Systems, a spacecraft gains one of the following benefits:

- **Recovery Bonus:** One rank allows a spacecraft to make recovery checks at -4, with each additional rank improving this bonus by one (-3 at rank 2, +0 at rank 5, then increasing from there). At a +9 or better bonus, a spacecraft automatically succeeds on recovery checks (since they are DC 10).
- **Recovery Rate:** The spacecraft can make checks to recover from a particular damage condition. Each rank moves the rest time required to make a recovery check for a damaged condition one step down on the Time and Value Progression Table. So, a spacecraft with one rank in Regenerative Systems gets one check per hour of rest to recover from being injured. A second rank reduces that time to 20 minutes, three to 5 minutes, four to 1 minute, and so forth. If the time is brought below one action (3 seconds), the spacecraft gets a recovery check for that condition once per round with no need for rest. Each damage condition (Bruised, Injured, Unconscious, Staggered, and Disabled) requires a separate application of Regenerative System ranks, as follows: *Bruised or Unconscious:* One rank allows a recover check after 1 minute (10 rounds), two ranks after one round, three ranks per standard action, four ranks once per round with no rest. Bruised conditions recover automatically after the required time, with no check necessary. *Injured or Staggered:* One rank allows a recover check once per hour, two ranks per 20 minutes, three ranks per 5 minutes, four ranks per minute, five ranks per round, six ranks per standard action, and seven ranks per round with no rest. Injured conditions recover automatically after the required time, with no check necessary. *Disabled:* One rank allows a recover check per day, two ranks per 5 hours, three ranks per hour, four ranks per 20 minutes, five ranks per 5 minutes, six ranks per minute, seven ranks per round, eight ranks per standard action, and nine ranks per round with no rest.
- **Ability Damage:** One Regenerative Systems rank allows a spacecraft to recover a point of ability damage per day, two ranks per 5 hours, three ranks per hour, four ranks per 20

minutes, five ranks per 5 minutes, six ranks per minute, seven ranks per round, eight ranks per standard action, and nine ranks per round with no rest.

Regeneration [Cost: 1pp/rank]

POWER FEATS

- Persistent: The spacecraft can repair Incurable damage (see pg 109, *M&M 2E*).
- Regrowth: When the spacecraft recovers from being disabled, it can regrow severed or crippled parts and systems.

Reinforced Hull Plating

Your spacecraft is equipped with hardened hull plating that makes it more difficult to damage. Reinforced Hull Plating increases a spacecraft's Toughness save +1 per rank.

Protection [Cost: 1pp/rank]

EXTRA

- Impervious (+1): The spacecraft's Reinforced Hull Plating stops some damage completely. If an attack has a damage bonus less than your vessel's Reinforced Hull Plating rank, it inflicts no damage. Penetrating damage ignores this modifier; the spacecraft makes a normal saving throw against it.

FLAW

- Ablative (-1): Damage degrades your Reinforced Hull Plating. Each time it provides its bonus, it loses 1pp of effectiveness. When reduced to 0pp, it no longer protects the spacecraft at all. Reinforced Hull Plating with this flaw must be repaired (DC 10) before it can be used again.

Sub-light Drive

Spacefaring civilizations that have not yet achieved faster-than-light technology rely on sub-light drives to explore and colonize their solar systems. A sub-light drive is most commonly a reaction drive, a system that 'pushes' a spacecraft through space by expelling a super-heated reaction-mass behind it.

Space Flight [Cost: 1pp/rank] (see sidebar)

SPACE FLIGHT

Your spacecraft can travel at tremendous velocities through the vacuum of space (but not in an atmosphere). At rank 1, the spacecraft can cross 18 million kilometers (approximately 11.2 million miles) in ten years. Each additional rank moves the vessel one step up on the Space Flight Travel Table (*at right*). So, rank 2 allows the spacecraft to travel 18 million kilometers in 5 years, rank 3 reduces the travel time to 2 years, and so forth.

Note: At Space Flight 20 the spacecraft is moving at the speed-of-light (the equivalent of rank 1 Space Travel).

Rank	Effect
1	10 years
2	5 years
3	2 years
4	1 year
5	6 months
6	3 months
7	1 month
8	2 weeks
9	1 week
10	3 days
11	1 day
12	10 hours
13	5 hours
14	2 hours
15	1 hour
16	30 minutes
17	15 minutes
18	5 minutes
19	2 minutes
20	1 minute

Temporal Flux Drive

Rumored to be available in some hyper-advanced civilizations, the Temporal Flux Drive allows a spacecraft to travel to any point in time. Temporal mechanics and the effects of time travel are left up to the GM.

Super-Movement [*Type*: Temporal Movement; *Cost*: 6pp]

Tractor/Repulsor Beam

A Tractor/Repulsor Beam allows a vessel to move other spacecraft at a distance. This is often used to aid in docking maneuvers, tow disabled craft, or to maneuver enemy vessels to aid in boarding.

A spacecraft's effective Strength for lifting and moving objects is 5 times its power rank (see Carrying Capacity, pg 35 M&M 2E).

A Tractor/Repulsor Beam can move objects, but cannot perform tasks of fine manipulation (like typing, or manipulating controls) without the Precise feat. Objects move as if thrown with the spacecraft's effective Strength. Objects massing a heavy load or more move at a rate of 5 feet per round. Objects thrown as weapons base their damage off the vessel's Tractor/Repulsor Beam rank as if it were the spacecraft's Strength bonus.

A Tractor/Repulsor Beam cannot inflict damage directly; it cannot 'punch' or 'crush' objects. Using a Tractor/Repulsor Beam to 'grab' a spacecraft is an attack similar to a grapple with a Strength bonus equal to the Tractor/Repulsor Beam's rank. The target cannot grapple your vessel in return unless it also has a Tractor/Repulsor Beam. Grappling vessels cannot inflict damage, only pin and hold a target immobile. A pinned target can be moved like any other object, so long as it remains pinned. Using a Tractor/Repulsor Beam to grapple requires a standard action.

Telekinesis [*Extra*: Range (perception); *Cost*: 3pp/rank]

TWO – SPACECRAFT EXAMPLES

Harrington-class Battle Carrier

A Battle Carrier is a military vessel designed to carry a large number of fighters and other support craft into battle.

PL 20; Tech Level 8; EP: 235; PP: 47
STR 190, DEX 0, INT —, WIS 14, CHA —
DEFENSE -14; TOUGHNESS 31; SIZE: Gargantuan

SKILLS

Notice 20 (+22)

FEATS

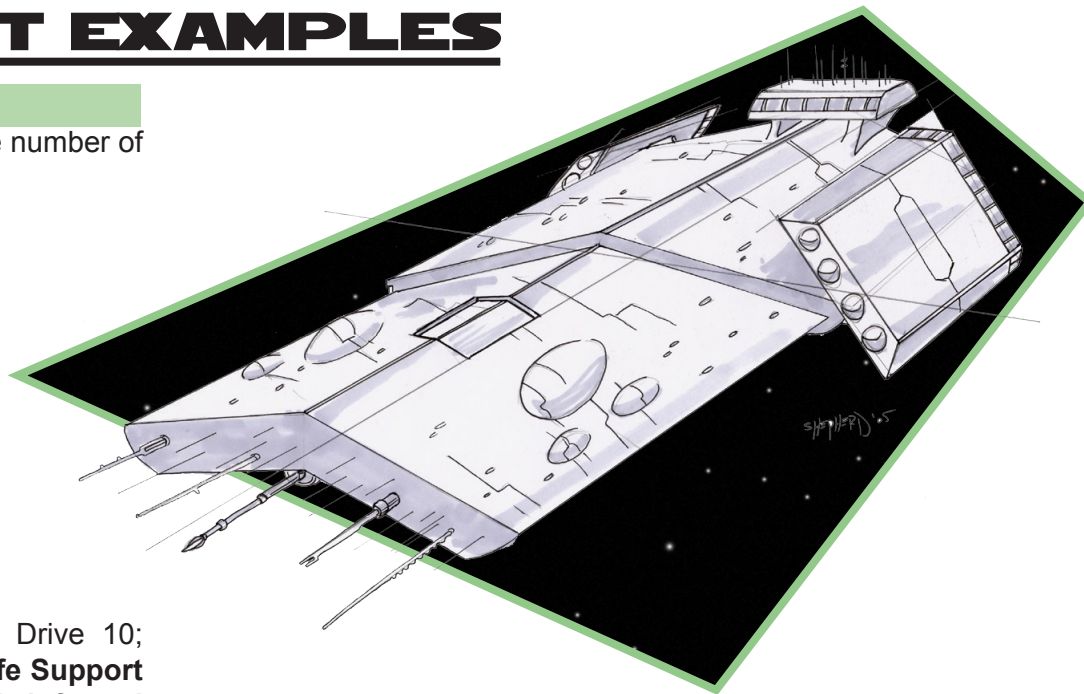
Move-by Action

POWERS

FTL Drive 10 [Space Travel; *Alternate Power*: Sublight Drive 10; Cost: 11], **Ion Cannons 20** [Extra: Autofire 3; Cost: 111], **Life Support System** [Cost: 9], **Long Range Sensors 15** [Cost: 60], **Reinforced Hull Plating 10** [Cost: 10]

FEATURES

Artificial Gravity 2, Communications, Computer, Gym, Hangar, Holding Cells, Infirmary, Library, Living Space, Navigation System, Power System, Rescue Beacon, Workshop



AUXILLIARY CRAFT

150 Escape Pods, 100 Fighters, 50 Heavy Fighters, 400 Life Boats, 50 Scouts

Abilities 14 + Skills 5 + Feats 1 + Powers 201 + Features 14 = 235
Auxilliary Craft = 28150 EP/ 5630 PP

Galactic-class Battleship

One of the largest class of warships, a Battleship is a heavily armed and armored military vessel.

PL 25; Tech Level 9; EP: 350; PP: 70
STR 210, DEX 0, INT —, WIS 18, CHA —
DEFENSE -22; TOUGHNESS 35; SIZE: Awesome

SKILLS

Notice 20 (+24)

FEATS

Move-by Action

POWERS

FTL Drive 10 [Space Travel; *Alternate Power*: Sublight Drive 10; *Cost*: 11], **Ion Cannons 25** [*Extra*: Autofire 3; *Cost*: 136], **Life Support System** [*Cost*: 9], **Long Range Sensors 15** [*Cost*: 60], **Neutron Torpedoes 25** [*Cost*: 86], **Reinforced Hull Plating 10** [*Cost*: 10]

FEATURES

Artificial Gravity 2, Communications, Computer, Gym, Hangar, Holding Cells, Infirmary, Library, Living Space, Navigation System, Power System, Rescue Beacon, Workshop

AUXILLIARY CRAFT

400 Escape Pods, 200 Fighters, 100 Heavy Fighters, 500 Life Boats, 100 Scouts, 10 Spaceplanes

Abilities 18 + Skills 5 + Feats 1 + Powers 312 + Features 14 = 350
Auxilliary Craft = 52990 EP/10590 PP

Gadfly-class Cargo Freighter

One of the most common types of spacecraft in operation, a Cargo Freighter hauls trade goods from one planet or solar system to another.

PL 10; Tech Level 6; EP: 47; PP: 10
STR 100, DEX 6, INT —, WIS 12, CHA —
DEFENSE -6; TOUGHNESS 20; SIZE: Large

SKILLS

Notice 4 (+5)

POWERS

Flight 10 [*Alternate Power*: Space Flight 8; *Cost*: 21], **Life Support System** [*Cost*: 9], **Reinforced Hull Plating 3** [*Cost*: 3]

FEATURES

Artificial Gravity, Communications, Computer, Hidden Compartments, Infirmary, Living Space, Navigation System, Power System, Rescue Beacon

Abilities 4 + Skills 1 + Feats 0 + Powers 33 + Features 9 = 47

Raszak-class Corvette

A small, maneuverable warship designed to escort larger military vessels.

PL 15; Tech Level 9; EP: 176; PP: 36
STR 80, DEX 10, INT —, WIS 14, CHA —
DEFENSE 0; TOUGHNESS 20; SIZE: Huge

SKILLS

Notice 4 (+6)

FEATS

Move-by Action

POWERS

Ion Cannons 15 [*Extra*: Autofire 3; *Cost*: 86], **Life Support System** [*Cost*: 9], **Neutron Torpedoes 15** [*Cost*: 56], **Sublight Drive 8** [Space Flight; *Cost*: 8], **Reinforced Hull Plating 1** [*Cost*: 1]

FEATURES

Artificial Gravity 2, Communications, Computer, Hidden Compartments, Infirmary, Living Space, Navigation System, Power System, Rescue Beacon

AUXILLIARY CRAFT

100 Fighters, 50 Heavy Fighters, 80 Life Boats

Abilities 4 + Skills 1 + Feats 1 + Powers 160 + Features 10 = 176
Auxilliary Craft = 14070 EP/2814 PP

Star Killer-class Destroyer

PL 20; Tech Level 8; EP: 327; PP: 66
STR 180, DEX 0, INT —, WIS 18, CHA —
DEFENSE -18; TOUGHNESS 23; SIZE: Colossal

SKILLS

Notice 20 (+3)

FEATS

Move-by Action

POWERS

FTL Drive 10 [Space Travel; *Alternate Power*: Sublight Drive 10; *Cost*: 11], **Ion Cannons 20** [*Extra*: Autofire 3; *Cost*: 111], **Life Support System** [*Cost*: 9], **Long Range Sensors 15** [*Cost*: 60], **Neutron Torpedoes 20** [*Cost*: 71], **Reinforced Hull Plating 15** [*Extra*: Impervious; *Cost*: 30]

FEATURES

Artificial Gravity 2, Communications, Computer, Gym, Hangar, Holding Cells, Infirmary, Library, Living Space, Navigation System, Power System, Rescue Beacon, Workshop

AUXILLIARY CRAFT

80 Escape Pods, 150 Fighters, 100 Heavy Fighters, 150 Life Boats, 100 Scouts, 10 Spaceplanes

Abilities 14 + Skills 4 + Feats 1 + Powers 262 + Features 14 = 327
Auxilliary Craft = 36590 EP/7318 PP

Escape Pod

Most large spacecraft come equipped with escape pods designed to allow crew members to escape catastrophic destruction of their vessel. These pods are built to hold up to five crew members. An escape pod's life support system will operate for up to one year but its storage space is limited; a pod with a full complement of 5 occupants will exhaust their food and water supplies within 10 days (15 with strict rationing).

PL 8; Tech Level 6; EP: 20; PP:4
STR 30, DEX 10, INT —, WIS 5, CHA —
DEFENSE 10; TOUGHNESS 15; SIZE: Miniscule

POWERS

Life Support System [Cost: 9], **Reinforced Hull Plating 10** [Cost: 10]

FEATURES

Power System, Rescue Beacon

Abilities -1 + Skills 0 + Feats 0 + Powers 19 + Features 2 = 20

Naismith-class Fast Courier

Designed to quickly transport information too sensitive for open communications channels from one place to another, a Fast Courier is mostly engine with a small area for passengers and crew.

PL 10; Tech Level 6; EP: 35; PP:7
STR 30, DEX 10, INT —, WIS 16, CHA —
DEFENSE 15; TOUGHNESS 13; SIZE: Diminutive

SKILLS

Notice 4 (+7)

POWERS

Life Support System [Cost: 9], **Reinforced Hull Plating 4** [Cost: 4],
Sublight Drive 10 [Space Flight; Cost: 10]

FEATURES

Communications, Navigation System, Power System, Rescue Beacon

Abilities 6 + Skills 1 + Feats 0 + Powers 23 + Features 5 = 35

Sinclair-class Fighter

A one-man military spacecraft designed specifically for ship to ship combat.

PL 10; Tech Level 8; EP: 67; PP: 14
STR 40, DEX 16, INT —, WIS 14, CHA —
DEFENSE 6; TOUGHNESS 17; SIZE: Tiny

SKILLS

Notice 8 (+10)

FEATS

Move-by Action

POWERS

Ion Cannons 10 [Cost: 31], **Life Support System** [Cost: 9], **Reinforced Hull Plating 6** [Cost: 6], **Sublight Drive 4** [Spaceflight; Cost: 4]

FEATURES

Communications, Navigation System, Power System, Rescue Beacon

Abilities 10 + Skills 2 + Feats 1 + Powers 50 + Features 4 = 67

Apollo-class Heavy Fighter

A two-man military spacecraft designed specifically for ship to ship combat, usually more heavily armed and armored than a regular fighter.

PL 12; Tech Level 8; EP: 117; PP: 24
STR 50, DEX 12, INT —, WIS 14, CHA —
DEFENSE 2; TOUGHNESS 22; SIZE: Small

SKILLS

Notice 8 (+10)

FEATS

Move-by Action

POWERS

Ion Cannons 12 [Cost: 35], **Life Support System** [Cost: 9], **Neutron Torpedoes 12** [Cost: 47], **Reinforced Hull Plating 9** [Cost: 9], **Sublight Drive 4** [Spaceflight; Cost: 4]

FEATURES

Communications, Navigation System, Power System, Rescue Beacon

Abilities 6 + Skills 2 + Feats 1 + Powers 104 + Features 4 = 117

Life Boat

Most large spacecraft come equipped with life boats designed to allow crew members to escape catastrophic destruction of their vessel. Life boats are built to hold up to ten crew members. A life boat's life support system will operate for up to one year but its storage space is limited; a life boat with a full complement of 10 occupants will exhaust their food and water supplies within 10 days (15 with strict rationing).

PL 9; Tech Level 6; EP: 19; PP:4
STR 40, DEX 9, INT —, WIS 5, CHA —
DEFENSE 9; TOUGHNESS 17; SIZE: Fine

POWERS

Life Support System [Cost: 9], **Reinforced Hull Plating 10** [Cost: 10]

FEATURES

Power System, Rescue Beacon

Abilities -2 + Skills 0 + Feats 0 + Powers 19 + Features 2 = 19

Pandora-class Scout

A scout is a small vessel with a crew of up to four. It's main purpose is to fly ahead of battle fleet, or into a combat zone, to gather information.

PL 9; Tech Level 7; EP: 100; PP:20
STR 30, DEX 16, INT —, WIS 18, CHA —
DEFENSE 8; TOUGHNESS 9; SIZE: Diminutive

SKILLS

Notice 14 (+18), Stealth 10 (+11)

POWERS

Life Support System [Cost: 9], **Long Range Sensors 15** [Cost: 60], **Sublight Drive 6** [Spaceflight; Cost: 6]

FEATURES

Communications, Navigation System, Power System, Rescue Beacon

Abilities 14 + Skills 6 + Feats 0 + Powers 75 + Features 5 = 100

Calvert-class Spaceplane

A short-ranged cargo vessel designed specifically to transport passengers and goods from a spacecraft in orbit to a planet, and vice versa.

PL 10; Tech Level 6; EP: 39; PP:8
STR 70, DEX 10, INT —, WIS 12, CHA —
DEFENSE 10; TOUGHNESS 15; SIZE: Medium

SKILLS

Notice 4 (+5)

POWERS

Flight 10 [*Alternate Power: Space Flight 4; Cost: 21*], **Life Support System** [*Cost: 9*]

FEATURES

Communications, Navigation System, Power System, Rescue Beacon

Abilities 4 + Skills 1 + Feats 0 + Powers 30 + Features 4 = 39

Baker-class Time Ship

A highly advanced vessel that is capable of carrying passengers anywhere in time and space.

PL 9; Tech Level 9; EP: 169; PP:34
STR 150, DEX 10, INT 18, WIS 24, CHA 2
DEFENSE 9; TOUGHNESS 7; SIZE: Fine

SKILLS

Notice 20 (+27), Pilot 8 (+8)

POWERS

Chameleon Hull 5 [*Cost:15*], **Jump Drive 20** [*Cost:60*], **Language Translator** [*Cost: 4*], **Life Support System** [*Cost: 9*], **Temporal Flux Drive** [*Cost: 6*]

FEATURES

Artificial Gravity 2, Communications, Extra-Spatial Interior, Living Space 2, Navigation System, Power System

Abilities 60 + Skills 7 + Feats 0 + Powers 94 + Features 8 = 169

APPENDIX

TABLE 1: INTERPLANETARY DISTANCES IN THE SOL SYSTEM (SHORT)

All distances are in millions of kilometers and use the object's average distance from the Sun. Due to planetary orbits, the distances shown on this table indicate the shortest distances between two objects (when they are closest to each other in their orbits).

▼ From	To ►	Mercury	Venus	Earth	Mars	Asteroids
Sun		58	108	150	228	405
Mercury		0	62	104	182	359
Venus		62	0	42	120	297
Earth		104	42	0	78	255
Mars		182	120	78	0	177
Asteroids		359	297	255	177	0
Jupiter		732	670	628	550	373
Saturn		1383	1321	1279	1201	1024
Uranus		2825	2763	2721	2643	2466
Neptune		4485	4423	4381	4303	4099
Pluto		5868	5806	5764	5686	5509

▼ From	To ►	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun		778	1427	2870	4497	5900
Mercury		732	1383	2825	4458	5868
Venus		670	1321	2763	4423	5806
Earth		628	1279	2721	4381	5764
Mars		550	1201	2643	4303	5686
Asteroids		373	1024	2466	4099	5509
Jupiter		0	651	2588	3753	5136
Saturn		651	0	1442	2607	3990
Uranus		2588	1442	0	1633	3043
Neptune		3753	2607	1633	0	1410
Pluto		5136	3990	3043	1410	0

TABLE 2: INTERPLANETARY DISTANCES IN THE SOL SYSTEM (LONG)

All distances are in millions of kilometers and use the object's average distance from the Sun. Due to planetary orbits, the distances shown on this table indicate the furthest distances between two objects (when they are furthest from each other in their orbits).

▼ From	To ►	Mercury	Venus	Earth	Mars	Asteroids
Sun		58	108	150	228	405
Mercury		0	166	208	286	463
Venus		166	0	258	346	513
Earth		208	258	0	378	555
Mars		286	346	378	0	633
Asteroids		463	513	555	633	0
Jupiter		836	886	928	1006	1183
Saturn		1485	1535	1577	1655	1832
Uranus		2928	2978	3020	3098	3275
Neptune		4555	4605	4647	4725	4903
Pluto		5958	6008	6050	6128	6305

▼ From	To ►	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun		778	1427	2870	4497	5900
Mercury		836	1485	2928	4555	5958
Venus		886	1535	2978	4605	6008
Earth		928	1577	3020	4647	6050
Mars		1006	1655	3098	4725	4903
Asteroids		1183	1832	3275	4903	6305
Jupiter		0	2205	3648	5275	6678
Saturn		2205	0	4297	5924	7327
Uranus		3648	4297	0	7367	8770
Neptune		5275	5924	7367	0	10397
Pluto		6678	7327	8770	10397	0

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TABLE 3: MINIMUM INTERPLANETARY TRAVEL TIMES — SPACE FLIGHT

To determine the minimum travel time of a spacecraft using Space Flight in the Sol System, multiply the spacecraft's flight time (determined by its Space Flight rank) by the multiplier given below.

For example, a spacecraft with Space Flight 10 traveling from Earth would take almost 105 days to reach Jupiter (3 days x 34.9 = 104.7 days) at it's closest.

▼ From	To ►	Mercury	Venus	Earth	Mars	Asteroids
Sun		3.2	6	8.3	12.7	22.5
Mercury		0	3.4	5.8	10.1	19.9
Venus		3.4	0	2.3	6.7	16.5
Earth		5.8	2.3	0	4.3	14.2
Mars		10.1	6.7	4.3	0	9.8
Asteroids		19.9	16.5	14.2	9.8	0
Jupiter		40.7	37.2	34.9	30.6	20.7
Saturn		76.8	73.4	71.1	66.7	56.9
Uranus		156.9	153.5	151.2	146.8	137
Neptune		249.2	245.7	243.4	239.1	227.7
Pluto		326	322.6	320.2	315.9	306.1

▼ From	To ►	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun		43.2	79.3	159.4	249.8	327.8
Mercury		40.7	76.8	156.9	249.2	326
Venus		37.2	73.4	153.5	245.7	322.6
Earth		34.9	71.1	151.2	243.4	320.2
Mars		30.6	66.7	146.6	239.1	315.9
Asteroids		20.7	56.9	137	227.7	306.1
Jupiter		0	36.2	143.7	208.5	285.3
Saturn		36.2	0	80.1	144.8	221.7
Uranus		143.8	80.1	0	90.7	169.1
Neptune		208.5	144.8	90.7	0	78.3
Pluto		285.3	221.7	169.1	78.3	0

TABLE 4: MAXIMUM INTERPLANETARY TRAVEL TIMES — SPACE FLIGHT

To determine the maximum travel time of a spacecraft using Space Flight in the Sol System, multiply the spacecraft's flight time (determined by its Space Flight rank) by the multiplier given below.

▼ From	To ►	Mercury	Venus	Earth	Mars	Asteroids
Sun		3.2	6	8.3	12.7	22.5
Mercury		0	9.2	11.6	15.9	25.7
Venus		9.2	0	14.3	19.2	28.5
Earth		11.6	15.9	0	21	30.8
Mars		15.9	19.2	21	0	35.2
Asteroids		25.7	28.5	30.8	35.2	0
Jupiter		46.4	49.2	51.6	55.9	65.7
Saturn		82.5	85.3	87.6	91.9	101.8
Uranus		162.7	165.4	167.8	172.1	181.9
Neptune		253.1	255.8	258.2	262.5	272.4
Pluto		331	333.8	336.1	340.4	350.3

▼ From	To ►	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun		43.2	79.3	159.4	249.8	327.8
Mercury		46.4	82.5	162.7	253.1	331
Venus		49.2	85.3	165.4	255.8	333.8
Earth		51.6	87.6	167.8	258.2	336.1
Mars		55.9	91.9	172.1	262.5	340.4
Asteroids		65.7	101.8	181.9	272.4	350.3
Jupiter		0	122.5	202.7	293.1	371
Saturn		122.5	0	238.7	329.1	407.1
Uranus		202.7	238.7	0	409.3	487.2
Neptune		293.1	329.1	409.3	0	577.6
Pluto		371	407.1	487.2	577.6	0

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TABLE 5: MINIMUM TRAVEL TIMES — SPEED OF LIGHT (SPACE TRAVEL 1)

The table below provides the minimum travel time to move from one body in our solar system to another for a spacecraft moving at the speed-of-light (Space Travel 1). For travel times at higher Space Travel ranks, divide the times given by the rank's multiplier on the Time and Value Progression Table.

▼ From	To ►	Mercury	Venus	Earth	Mars	Asteroids
Sun		3 min.	6 min.	8 min.	13 min.	23 min.
Mercury		0	3 min.	6 min.	10 min.	20 min.
Venus		3 min.	0	2 min.	7 min.	17 min.
Earth		6 min.	2 min.	0	4 min.	14 min.
Mars		10 min.	7 min.	4 min.	0	10 min.
Asteroids		20 min.	17 min.	14 min.	10 min.	0
Jupiter		41 min.	37 min.	35 min.	31 min.	21 min.
Saturn		77 min.	73 min.	71 min.	67 min.	57 min.
Uranus		160 min.	154 min.	151 min.	147 min.	137 min.
Neptune		249 min.	246 min.	243 min.	239 min.	228 min.
Pluto		326 min.	323 min.	320 min.	316 min.	306 min.

▼ From	To ►	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun		43 min.	79 min.	159 min.	250 min.	328 min.
Mercury		41 min.	77 min.	160 min.	249 min.	326 min.
Venus		37 min.	73 min.	154 min.	246 min.	323 min.
Earth		35 min.	71 min.	151 min.	243 min.	320 min.
Mars		31 min.	67 min.	147 min.	239 min.	316 min.
Asteroids		21 min.	57 min.	137 min.	228 min.	306 min.
Jupiter		0	36 min.	144 min.	209 min.	285 min.
Saturn		36 min.	0	80 min.	145 min.	222 min.
Uranus		144 min.	80 min.	0	91 min.	169 min.
Neptune		209 min.	145 min.	91 min.	0	78 min.
Pluto		285 min.	222 min.	169 min.	78 min.	0

TABLE 6: MAXIMUM TRAVEL TIMES — SPEED OF LIGHT (SPACE TRAVEL 1)

The table below provides the maximum travel time to move from one body in our solar system to another for a spacecraft moving at the speed-of-light (Space Travel 1). For travel times at higher Space Travel ranks, divide the times given by the rank's multiplier on the Time and Value Progression Table.

▼ From	To ►	Mercury	Venus	Earth	Mars	Asteroids
Sun		3 min.	6 min.	8 min.	13 min.	23 min.
Mercury		0	9 min.	12 min.	16 min.	26 min.
Venus		9 min.	0	14 min.	19 min.	29 min.
Earth		12 min.	14 min.	0	21 min.	31 min.
Mars		16 min.	19 min.	21 min.	0	35 min.
Asteroids		26 min.	29 min.	31 min.	35 min.	0
Jupiter		46 min.	49 min.	52 min.	56 min.	66 min.
Saturn		83 min.	85 min.	88 min.	92 min.	102 min.
Uranus		163 min.	165 min.	168 min.	172 min.	182 min.
Neptune		253 min.	256 min.	258 min.	263 min.	272 min.
Pluto		331 min.	334 min.	336 min.	340 min.	350 min.

▼ From	To ►	Jupiter	Saturn	Uranus	Neptune	Pluto
Sun		3 min.	6 min.	8 min.	13 min.	23 min.
Mercury		46 min.	83 min.	163 min.	253 min.	331 min.
Venus		49 min.	85 min.	165 min.	256 min.	334 min.
Earth		52 min.	88 min.	168 min.	258 min.	336 min.
Mars		56 min.	92 min.	172 min.	263 min.	340 min.
Asteroids		66 min.	102 min.	182 min.	272 min.	350 min.
Jupiter		0	123 min.	203 min.	293 min.	371 min.
Saturn		123 min.	0	239 min.	329 min.	407 min.
Uranus		203 min.	239 min.	0	409 min.	487 min.
Neptune		293 min.	329 min.	409 min.	0	578 min.
Pluto		371 min.	407 min.	487 min.	578 min.	0

TABLE 7:

INTERSTELLAR TRAVEL TIMES — SPEED OF LIGHT (SPACE TRAVEL 1)

The table below provides the minimum travel time to move from our solar system to another for a spacecraft moving at the speed-of-light (Space Travel 1). For travel times at higher Space Travel ranks, divide the times given by the rank's multiplier on the Time and Value Progression Table.

The times shown below are for distances from Earth, in our solar system, to the primary star in the system shown.

Star System	Travel Time
Alpha Centauri	1591 days (4 years 131 days)
Barnard's Star	2164 days (5 years 339 days)
Wolf 359	2840 days (7 years 285 days)
Lalande 21185	3026 days (8 years 106 days)
Sirius	3132 days (8 years 212 days)
Epsilon Eridani	3840 days (10 years 190 days)
Procyon	4161 days (11 years 146 days)
61 Cygni	4161 days (11 years 146 days)
Epsilon Indi	4314 days (11 years 299 days)
Tau Ceti	4336 days (11 years 321 days)

TABLE 8:

INTERGALACTIC TRAVEL TIMES — SPEED OF LIGHT (SPACE TRAVEL 1)

The table below provides the minimum travel time to move from our solar system to the extra-galactic object listed for a spacecraft moving at the speed-of-light (Space Travel 1). For travel times at higher Space Travel ranks, divide the times given by the rank's multiplier on the Time and Value Progression Table.

Extra-Galactic Object	Travel Time
Large Magellanic Cloud	58.4 million days (160,000 years)
Small Magellanic Cloud	73 million days (200,000 years)
Andromeda Galaxy (M31)	912.5 million days (2.5 million years)
Sombrero Galaxy (M104)	1.095 billion days (3 million years)
Centaurus A Galaxy (NGC5128)	4.38 billion days (12 million years)

TABLE 9:

COMMON DISTANCE MEASUREMENTS USED IN SPACE TRAVEL

Below are listed the most commonly used measurements used in space travel with unit conversions.

****Note:** an 'astronomical unit' is the distance from the Earth to our Sun.

Measurement	Travel Time
1 Astronomical Unit (A.U.)	1.5 million kilometers
1 Light Year	9.46 billion kilometers
Parsec	2.3 light years
Megaparsec	1 million parsecs

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