

W3 *FOR THE STARS WITHOUT NUMBER ROLE-PLAYING GAME*

ENGINES OF BABYLON

BY KEVIN CRAWFORD



BRING THE HOWL OF UNEARTHLY ENGINES TO YOUR STARS WITHOUT NUMBER CAMPAIGN WITH NEW GUIDELINES FOR CUSTOM VEHICLE CREATION AND LOW-TECH INTERPLANETARY SYSTEM SHIPS, ALONG WITH BONUS MATERIAL ON PRICELESS INTERSTELLAR TREASURES AND LONG-FORGOTTEN RELICS OF ABOMINABLE SCIENTIFIC EVIL!

**SINE
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PUBLISHING**

A HANDBOOK FOR VEHICLES AND SYSTEM SHIPS

ENGINES OF BABYLON

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BY KEVIN CRAWFORD

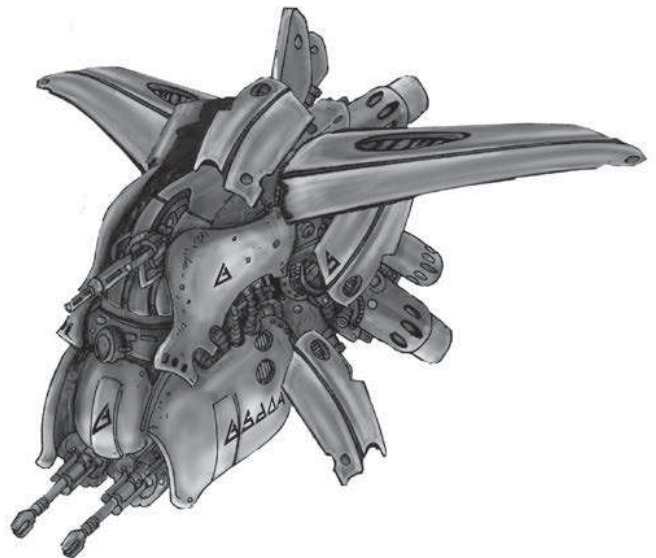
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THE FORGE STUDIOS



DEAD MEN'S TOYS

TOOLS AND TREASURES FROM FALLEN WORLDS

Much like *Relics of the Lost*, *Engines of Babylon* is meant to provide both GMs and players with a selection of new gear for their *Stars Without Number* games. While the earlier book focused largely on personal equipment and pharmaceuticals, this volume is meant to give a fresh range of vehicles and low-tech system ships for use in your own campaign, along with a selection of enticing interstellar treasures and grim maltech devices.

Howling Engines provides players and GMs with the tools they need to fabricate their own customized vehicles, whether these conveyances are tuned-up hoverbikes that skim the ground on gravitic pulses or low-tech tanks that crush their enemies under iron-toothed treads. It's a familiar circumstance in a daring freebooter's career when the difference between success and gory failure lies in the speed of their trusty vehicle.

In this chapter you'll find new basic vehicle types to kit out your campaign with both low- and high-tech vehicles, along with customization tools based on the starship design rules in *Stars Without Number*. Whether they start from a TL3 helicopter framework or have laid hands on a cutting-edge gravflyer, they can bolt on new fittings and advanced weaponry to give their group the ride they need for their next mission.

Aside from their utility in carrying out deeds of adventure, custom vehicles can also provide a convenient credit sink for wicking away the cash of heroes flush from recent victory.

A Nearer Apogee gives you guidelines and tools for the use of system ships in *Stars Without Number*. Some GMs prefer their sci-fi on the harder side, while others want to run campaigns set in Earth's near future. Others just want to have something appropriate on hand when their PCs venture into a TL3 system that lacks the technology or resources for interstellar flight. *A Nearer Apogee* will let you build these system ships in just the same way as you do other, more advanced spacecraft.

Of course, the absence of compact fusion power and fast spike drive engines adds additional complications into flying a system ship, and *A Nearer Apogee* gives you the framework you need to make fuel, interplanetary distances, and long-range missile engagements a meaningful part of your near-future campaigns.

Precious Things answers the natural avarice of adventurers, listing twenty shining prizes to be wrested from the cold graves of long-dead worlds. These luxuries and precious ornaments were prized in a former age, signs of power and opulence from an age now past. There are many in the present day who would pay dearly to own such trophies, and those adventurers who stumble across a cache of precious neutronium diamonds or Proust dust can carry an emperor's ransom in their vacc suit's pockets.

For GMs, these objects can help provide clear and easy rewards for exploration and successful missions, allowing them to give treasures that are more flavorful than simple fistfuls of credits or favors owed. Some of these objects are precious enough that desperate men and women might go to any extreme to lay hands on them, whether that means hiring ruthless freebooters to acquire them from afar, or paying still more savage souls to rip them from other hands.

Forbidden Fruits contains a selection of maltech devices appropriate for the cravings of the most vicious and amoral collectors. These devices are engines of horror, spending human lives with careless abandon to achieve some purpose for their masters. Each one violates at least one of the ancient rules forbidding maltech engineering, most of them by treating human minds and lives as mere fodder for their greater goal. Only the most depraved and decadent worlds would ever countenance their sale or possession, but some men and women are not dissuaded by mere laws.

Many of these maltech devices have the ability to completely reforge a world's balance of power, allowing a sufficiently amoral owner to seize control of their own homeworld. Some aspiring rulers will stop at nothing for such a convenient route to power, and PCs may find themselves dealing with the ugly aftermath of their success—or the desperate need to keep a foe away from the device before it is too late.

As with any part of *Stars Without Number*, you are encouraged to shape and twist the contents of this book to your own liking. There is no rule that cannot be bent if it serves your purposes, and no scrap of setting or circumstance that can't be changed to a more serviceable end. These tools are here to give you more grist for your own game and to give PCs new prizes to plunder, new tools to spend their wealth on, and new perils to face in this uncertain future.

HOWLING ENGINES

CHARIOTS OF THE FARTHER STARS

While many *Stars Without Number* campaigns give pride of place to the glories of space-faring starships, there are times when it can be just as important to consider more terrestrial means of transportation. While a small starship can land easily enough on most wild worlds, a careful exploration of the place often requires more hands-on contact with the terrain than a starship overflight can provide. On other occasions, a particular problem can sometimes be best solved with a vehicle-mounted heavy weapon or a large number of friends packed into an armored ATV explorer.

This section of the book deals with these vehicles. Players will find rules for building customized vehicles to soak up their excess wealth, and GMs will find pre-made examples to throw into their game the next time the PCs find themselves on the business end of some grubby border world's elite armored division.

START YOUR ENGINES

Most of the craft created with these customization processes will be distinctly superior to ordinary off-the-lot vehicles, and will have a price to match. Worlds with exceptionally sophisticated industrial bases or a pressing need for a particular kind of vehicle might be able to produce full production runs of these vehicles, but most of them are tuned to a wealthy buyer's specific needs.

As such, the first thing a buyer needs is to find facilities suitable for building the desired vehicle. While modern TL4 production techniques allow even sophisticated devices to be made without the services of an entire factory, objects as large and complicated as a vehicle require a fixed workshop. The "Workshop" ship fitting of a cruiser-class starship or better can provide the necessary facilities, as can a well-equipped vehicle repair shop in a decent-sized community.

Next, a buyer needs a work team. Designing and building a custom vehicle requires at least level-2 skill in Tech/Postech and the appropriate Vehicle skill, though these skills may be possessed by different people on the team. A design involving pretech components requires that someone in the group have at least level-1 Tech/Pretech skill.

If the PCs provide this expertise, there is no labor cost. Hiring outside help usually costs an additional 5% of the vehicle's total cost for each missing skill that must be hired in, assuming that the more esoteric talents can even be found in a small community.

Finally, an aspiring vehicle builder needs a source of parts. In most cases, this is not going to be a problem for anyone working out of a city-sized TL4 community. Those forced to

operate with more limited resources, such as a starship's workshop facilities or a hard-pressed frontier community, are going to have to be more creative about sourcing their components. Some GMs may oblige the heroes to undertake an adventure to discover or steal the vital components, while others might just add an additional 50% or 100% to the final price.

Pretech components and other esoteric tech are almost never available on the market at any price. PCs who want to add those unique components to their design will have to find them or hunt them down in the course of an adventure.

If the PCs manage to put together all the requisite assistants, facilities, and components they need for their ambitions, they can use the following system to design and build the vehicle. Ground or water vehicles require a week to build with TL4 production tools, while grav or flying vehicles require a month.

DESIGNING A VEHICLE

Vehicles work much the same way that starships and mecha do. They have a basic hull type, free mass and power, and weapon hardpoints. In common with the examples in the core book, they also have a speed rating, armor, and hit points. Each vehicle type is also listed with the tech level required to manufacture it and its average clear-land travel rate in kilometers per hour. Ground speeds are doubled on roads.

Each hull also has a basic size: small for bikes and other small vehicles, medium for cars and other multipassenger personal vehicles, and large for things the size of jet aircraft or gravtanks.

The default hulls provided here have basic stats that assume a minimally adequate power source and no special fittings. PCs in a hurry could simply hire a garage, build one of these basic hulls, and call it good. Most PCs interested in having a suitably heroic ride will want more in the way of aftermarket accessories, however, and so they may choose to add fittings and weapons to these basic hulls.

A vehicle can handle as many fittings and weapons as its available free mass, hard points, and free power allows. Some fittings also require a minimal vehicle size to fit. It's not practical to strap a vortex cannon onto the back of a moped however badly a PC may desire it.

The final cost of the vehicle amounts to the hull cost plus the price of the fittings and weapons. The GM has the final say on vehicle designs and may choose to veto combinations that are beyond the resources or engineering sanity of the construction team.

VEHICLE TYPES

The table below includes both the vehicles listed in the **Stars Without Number** core book and additional types sometimes found among the frontier worlds. Some vehicles are found both in a TL3 version on more primitive worlds and a TL4 variety used on planets with more sophisticated industry.

Vehicles here are largely ground and air craft. Small boats can use the groundcar statistics and larger watercraft can work from the truck or explorer templates. Major warships are beyond the scope of these rules, and PCs who encounter them are advised to make a swift retreat.

Microlight flyers are particularly popular on low-gravity worlds with atmospheres thick enough to support flight. While the flyer relies chiefly on prop-driven propulsion, it has sufficient gravitic support to manage VTOL operations.

Motorcycles, groundcars and trucks are similar to their 20th-century equivalents, with the offroad-capable versions of the former taking the place of horses on some worlds.

Hovercycles, gravcars, and gravtrucks are gravitics-enabled versions of more conventional ground transport.

Explorers are large, sturdy vehicles much beloved of adventurers on untamed worlds. A well-equipped explorer can serve as a roving base camp on an unfriendly planet. While grav-based explorers can handle rough terrain most readily, some explorers prefer track or wheel-based toughness.

GRAV VEHICLES

Some vehicles are equipped with gravitic tech, allowing them to float short distances above the ground. Ground-based grav vehicles can manage rough terrain without penalties and cross calm water without danger. If necessary, they can boost up to ten meters to clear ground obstacles. Vehicles with sufficiently strong gravitics for actual flight can perform vertical take-offs, landing, and hovering.

Helicopters haven't the hummingbird agility of gravflyers, but the space saved by using conventional rotors can be convenient for shipping or military equipment.

Flyers come in both conventional jet or prop-propelled atmoflyers and the more sophisticated gravitics-based flyers. The former are less nimble, but TL4 jets allow for a higher top speed and heavier payload than can be fit aboard a gravitic flyer. Jet-powered aircraft are particularly favored for cargo haulers, bombers, and other heavy-lift roles.

Tanks are found in both conventional and gravitic forms. While the superior mobility of a gravtank is exceptionally valuable on a battlefield, the additional toughness and relative cheapness of more conventional treads have their supporters in many armies. Other forms of armored personnel carriers can also be built on a basic tank framework. Tanks have a special quality to their armor. Only weapons fired with the Combat/Gunnery skill can do damage to them, barring special explosives or other unusual circumstances.

VEHICLE	COST	SPEED	ARMOR	HP	CREW	POWER	MASS	KMH	TL	SIZE	HRDP
Microlight Flyer	2,500	0	0	10	1	1	3	100	4	S	0
Motorcycle, TL3	1,000	1	4	10	1	1	4	100	3	S	0
Motorcycle, TL4	5,000	3	4	15	1	2	6	120	4	S	0
Groundcar, TL3	5,000	0	6	30	5	3	7	90	3	M	1
Groundcar, TL4	15,000	1	6	35	5	4	9	100	4	M	1
Hovercycle	5,000	2	3	10	1	1	5	100	4	S	0
Gravcar	20,000	2	4	25	5	3	8	90	4	M	1
Groundtruck, TL3	10,000	0	6	35	10	3	14	90	3	L	2
Groundtruck, TL4	25,000	0	6	40	10	4	18	90	4	L	2
Gravtruck	30,000	1	4	30	10	3	16	70	4	L	2
ATV Explorer	15,000	0	8	40	8	4	22	70	3	L	2
Grav Explorer	35,000	0	6	35	8	4	16	90	4	L	2
Helicopter, TL3	25,000	3	6	20	6	4	9	250	3	M	2
Helicopter, TL4	30,000	4	6	25	6	5	11	300	4	M	2
Atmoflyer, TL3	30,000	4	8	25	6	4	16	1200	3	L	2
Atmoflyer, TL4	40,000	4	8	30	6	5	22	2000	4	L	2
Gravflyer	40,000	5	8	25	6	4	15	1500	4	L	2
Tank, TL3	50,000	0	*	40	3	8	15	100	3	L	4
Tank, TL4	125,000	1	*	60	3	12	20	120	4	L	4
Gravtank	200,000	2	*	50	3	10	17	120	4	L	4

VEHICLE FITTINGS

These vehicle fittings are simply some of the more common and useful additions to a basic chassis. Most of them assume TL4 technology on a world, though some might be equally applicable to vehicles built on less sophisticated planets.

Each fitting is listed with its cost in credits, the power and mass it takes up, and the minimum vehicle size required to mount it. GMs who wish to design their own fittings can use the details given here as guidelines for their own creativity.

ABLATIVE SKIN

The vehicle is equipped with a special external integument that boils off when struck by energy weapons, redirecting the hit into a harmless plume of vaporized material. This fitting can be selected more than once. Each fitting adds five hit points to small vehicles, ten to medium ones, and twenty to large vehicles. These hit points only count for purposes of absorbing attacks from energy-based weapons or environmental damage, and any such hits are always subtracted from these hit points first. Restoring the ablative skin requires the same repair measures as fixing other damage to the vehicle.

ADVANCED SENSORS

Conventional vehicle sensors are limited. Standard TL4 packages include planetary GPS, headlights, and 500-km range radar in air vehicles. Particularly advanced worlds might have basic collision radar even on ground vehicles, but such luxuries are uncommon on the former worlds of the frontier.

An advanced sensor package adds a number of benefits. Full night-vision viewscreens are provided to the driver and passengers, along with multifrequency sensor arrays that allow a basic view of the terrain even through smoke, fog, or standing water. Unstealthed aircraft can be detected in a 1,000-km radius, and any attempt to penetrate stealth measures gains a +1 bonus to the skill roll.

The sensors can pick up and decrypt any standard civilian-grade radio transmissions and are compatible with military comms, if the necessary codes are provided. When stationary, the vehicle's sensors can throw up a security perimeter that can alert connected compads of any movement within 200 meters of the vehicle, provided no hard cover or stealth tech intervenes.

AFTERBURNERS

Whether in the form of actual afterburners or more ground-based solutions, this fitting allows the vehicle's operator to temporarily boost its Speed rating. When activated, the vehicle's Speed increases by 2 for five rounds. After depleting, the vehicle's capacitors need five minutes to recharge before the afterburners can be triggered again.

ARMOR PLATING

Advanced polycomposite laminates and hardened armor plates are fitted into the vehicle's skin. Each application of this fitting increases the vehicle's Armor rating by 3. Small vehicles can apply this fitting once, medium vehicles can apply it twice, and large vehicles can apply it up to three times. Tank-type vehicles that apply armor plating can apply its benefit against Gunnery weapon damage.

BATTERY RESERVE

Most vehicles operate from Type B power cells, with a fresh cell required every six hours of operation. This is of limited concern in civilized regions where community power grids or starship engines can be used to recharge spent Type B cells, but exploring an untamed world can sometimes lack convenient access to an industrial-strength power supply. A battery reserve allows a vehicle to tap a community or ship's power supply to store enough energy for 240 hours of steady operation. Such charging requires five minutes plugged into the ship or municipal grid for each hour of operation.

CARGO SPACE

Integral cargo space is shielded and protected by the vehicle's armor, and has a pressurized atmosphere if the rest of the vehicle is so equipped. In a pinch, sufficiently ample cargo space can be used to haul passengers, though they are apt to fare poorly if the vehicle crashes or takes sharp evasive maneuvers. This fitting can be taken multiple times. On a small vehicle, it adds 50 kilos of cargo space. Medium vehicles add 500 kilos, and large vehicles gain two tons of cargo storage.

COMPACT OUTPOST

Useful for long-term expeditions into the wilderness, a compact outpost unfolds from the vehicle to form a sturdy shelter. The outpost is pressurized and sealed against vacuum or conventional hostile atmospheres, and the oxygen within can be maintained without additional support for up to a week. Thermal vents and heating units maintain a comfortable temperature within the outpost on any planet of less than molten temperature, and integral solar panels and heat traps provide a modest source of power for lighting and temperature maintenance, along with enough spare energy to recharge one Type A power cell each hour. The outpost walls have an effective Armor of 3 and require 10 points of damage to punch a human-sized hole in one. Internal partitions can shape the outpost into as many as five rooms plus an airlock.

The outpost is large enough to accommodate as many as twenty people if they're sufficiently friendly. Deploying the outpost properly requires about twenty minutes for a five-person team, while packing it back up and mounting it back on the vehicle takes an hour.

FITTING	COST	POWER	MASS	SIZE	EFFECT
<i>Ablative Skin</i>	10k	0	1	S	Protects against energy weapons
<i>Advanced Sensors</i>	15k	1	0	S	Adds night-vision and more
<i>Afterburners</i>	10k	2	2	S	Boost Speed briefly in combat
<i>Armor Plating</i>	5k	0	3	S	Adds Armor to the vehicle
<i>Battery Reserve</i>	5k	1	1	S	Increases effective operation time
<i>Cargo Space</i>	No cost	0	1	S	Adds space for cargo
<i>Compact Outpost</i>	20k	0	4	L	Portable outpost housing for 20
<i>Crash Pod</i>	5k	0	2	M	Protects in case of crash or ruin
<i>Deflection Field, Civilian</i>	10k	2	1	M	Improves AC against projectiles
<i>Deflection Field, Milspec</i>	20k	3	1	M	Better AC improvement
<i>Drop Thrusters</i>	25k	1	1	S	Allows orbital drop of vehicle
<i>Engine Boost</i>	10k	3	1	S	Add 1 to Speed and 25% overland
<i>Environment, Air</i>	30k	2	6	S	Vehicle can now fly
<i>Environment, Ground</i>	10k	1	4	S	Vehicle can move on the ground
<i>Environment, Space</i>	50k	3	9	M	Vehicle can fly and reach orbit
<i>Environment, Water</i>	15k	1	3	S	Vehicle can navigate water
<i>Extra Durability</i>	10k	0	4	M	Boost maximum HP by +25%
<i>Extra Passengers</i>	5k	0	2	S	Add additional passengers
<i>Field Portable</i>	1k	0	2	S	Disassemble to portable parts
<i>FTL Comms</i>	25k	1	1	M	Includes FTL tight-beam comms
<i>Ghost Driver</i>	5k	1	1	S	Adds an expert system autopilot
<i>Hardpoint Support</i>	5k	1	1	S	Adds another hardpoint
<i>Holocamo Skin</i>	10k	1	1	M	Disguise vehicle as similar type
<i>Hydrocarbon Fueling</i>	1k	0	1	S	Vehicle can run on combustibles
<i>Limpet Mount</i>	Special	0	3 or 6	M	Vehicle mounts smaller vehicle
<i>Living Quarters</i>	15k	0	4	L	Has long-term living quarters
<i>Medbay</i>	10k	1	2	M	Emergency bay for one victim
<i>Microfusion Plant, Large</i>	30k	0	5	L	Large vehicle doesn't need fueling
<i>Microfusion Plant, Small</i>	15k	0	2	M	Medium vehicle does need fueling
<i>Power System, Small</i>	1k	Adds 2	2	S	Adds more Power to a vehicle
<i>Power System, Medium</i>	5k	Adds 4	3	M	Adds more Power to a vehicle
<i>Power System, Large</i>	10k	Adds 8	5	L	Adds more Power to a vehicle
<i>Power System, Milspec S</i>	2k	Adds 3	2	S	Adds more Power to a vehicle
<i>Power System Milspec M</i>	10k	Adds 6	3	M	Adds more Power to a vehicle
<i>Power System, Milspec L</i>	20k	Adds 12	5	L	Adds more Power to a vehicle
<i>Quantum ECM Generator</i>	25k	5	2	L	Disrupts guided munitions
<i>Sealed Atmosphere</i>	5k	1	1	M	Pressurized and temp-controlled
<i>Smuggler's Hold</i>	1k	0	1	S	Hidden cargo space
<i>Stealth Integument</i>	10k	0	2	S	Anti-sensor stealth fitting
<i>Targeting Board</i>	5k	1	1	M	One gunner can run three guns
<i>Tool Rack</i>	5k	0	2	M	Can repair vehicle or other things

CRASH POD

The vehicle has been engineered with emergency grav dampers and cockpit shielding to increase the chances of passenger survival in the case of the vehicle's destruction. Crash pods in air or space-capable vehicles have grav parachutes to allow for safe descent, and all such pods have emergency beacons that can be set to activate if desired.

Crash pods increase the chance of surviving a disaster, but they aren't infallible. When the vehicle crashes or is destroyed, all passengers must make two Luck saves. If both succeed, no damage is taken. If only one succeeds, the passenger takes one-quarter of the vehicle's maximum hit points in damage. If both fail, the victim takes half the vehicle's maximum hit points in injury.

DEFLECTION FIELD

Grav technology at TL4 tends to be too imprecise to serve as a wholly effective defensive tool on the battlefield, but a deflection field can still be useful in avoiding incoming projectile fire or shrapnel. The field affects only physical objects or missiles, but a civilian-grade deflection field effectively grants the vehicle a -2 AC bonus against physical projectiles. Milspec fields are commonly restricted to planetary governmental use, but provide a -3 bonus instead.

DROP THRUSTERS

Most vehicles are ferried down to a world aboard a shuttle or other atmosphere-capable starship. Vehicles with space environment fittings can make the transit on their own, but other craft may be fitted with a simple set of gravitic drop thrusters. Such vehicles can be launched from orbit and make a transit down to the surface of the world unaided. The system includes sufficient atmosphere containment to survive the descent, but the vehicle does not gain the benefits of a proper sealed atmosphere system. Drop thrusters can be fired while planetside to eliminate any damage the vehicle might risk from falls or other rapid descents. While the thrusters are sufficient to bring the vehicle down from on high, they are not strong enough to return the craft to orbit or allow it any flight abilities not intrinsic to the hull type.

ENGINE BOOST

It's in the nature of most PCs to want whatever they're driving to go faster. A properly-tuned engine boost increases the vehicle's Speed by 1 point and increases its overland travel speed by 25%.

ENVIRONMENT, AIR

This fitting is designed specifically for ground or water vehicles, and adds sufficient grav or atmospheric motive power to allow for air travel as well as terrestrial movement. Such craft always sacrifice a certain amount of elegance for such versatility, and thus the vehicle's Speed rating is reduced by 1. Air travel costs twice the usual battery drain.

ENVIRONMENT, GROUND

Much as with air operations, this fitting allows an air or water vehicle to travel on the ground as well. The grav boosters usually used to allow this locomotion can cross calm water or broken terrain with relative ease, though obstacles more than 10 meters high will block the craft. The design compromises involved in this fitting decrease the vehicle's Speed by 1 point.

ENVIRONMENT, SPACE

An upgraded version of the air environment fitting, this does everything that the former fitting does, along with allowing shuttle service between the planetary surface and low orbit. Such vehicles are also capable of operating in vacuum when necessary. This fitting automatically includes the benefits of a Sealed Atmosphere fitting, as it would be of limited utility otherwise. As with the air environment fitting, vehicle Speed is decreased by 1 by the modification.

ENVIRONMENT, WATER

While grav vehicles are ordinarily capable of crossing still water, this fitting makes any ground or air vehicle into a fully amphibious craft capable of handling the high seas. With the Sealed Atmosphere fitting even submersible operation is possible. The dual propulsion systems required tax the vehicle's engineering, however, and so its Speed is reduced by 1.

EXTRA DURABILITY

The craft has been built with redundant systems and exceptionally sturdy components. This fitting can be added multiple times, and each time it's added the vehicle's maximum hit points increase by +25% of its original total, rounded up.

EXTRA PASSENGERS

The vehicle has room for an additional passenger. Small vehicles may add 1 more rider, medium vehicles may add 2 more, and large ones add 4. This fitting may be taken multiple times. A given vehicle's fittings automatically include all its passengers in such amenities as crash pods, living quarters, or sealed atmospheres.

FIELD PORTABLE

This fitting can only be applied to small or medium vehicles. The vehicle has been designed to come apart into convenient modular sections which can be carried by porters or packed away in shipping crates. A small vehicle breaks down into the equivalent of 30 items of encumbrance, and a medium vehicle comes apart into the equivalent of 150 items of encumbrance. Large vehicles cannot have this fitting. When disassembled and packed, it takes up only half the usual cargo tonnage of a vehicle of its type.

Taking a field portable vehicle apart requires thirty minutes for a small vehicle and three hours for a medium one. Re-assembling one takes four times as long and requires either

Tech/Postech-1 or an appropriate Vehicle skill at level 1 to perform properly. Less skilled users can be trained to re-assemble a vehicle with a week's worth of supervised drill.

FTL COMMS

The vehicle is equipped with a metadimensional comm laser that can contact any similar station in the solar system. The laser can only contact fixed receiving stations or known receiving locations, as the laser must be aimed to make contact. Almost all starships and most major settlements have an FTL comm station that can send or receive transmissions, but the equipment is much rarer in smaller or poorer places.

GHOST DRIVER

While true AI is prohibitively expensive for most vehicles, advanced expert system programming can equip a vehicle with an automatic driver capable of handling conventional operation, even in rough or treacherous terrain. The vehicle can be ordered verbally or by radio to take its passengers to particular locations, perform maneuvers with no driver on board, or rendezvous with its owner at specific places. The expert system is smart enough to deal with conventional obstacles and impediments, and has an effective Vehicle skill of level-0 if challenged by the environment. In the case that an actual AI is in the PC group, a vehicle equipped with a ghost driver can be remotely operated by the AI as a parallel process, with no hindrance to the AI's other actions. The AI can perceive everything the vehicle's sensors would perceive and operate its weapons as if it were driving. Only one such vehicle may be remotely operated at a time by an AI.

HARDPOINT SUPPORT

Additional structural support and power feeds are added to the vehicle in order to make room for an additional weapons hardpoint. The mere existence of such a hardpoint is usually not a problem on most worlds, though many have firm local opinions on the acceptability of armed civilian vehicles.

HOLOCAMO SKIN

A mesh of small hologram emitters along the vehicle's exterior allow it to change its external appearance. The emitters have their limits, however, and the vehicle can only disguise itself as another of the same general type or rough outline. Holocamo schemes can be derived from ordinary video recordings or designed with minimal effort. The illusion is solid enough to deceive distant viewers or other drivers sharing the same roadway, but an arm's-length inspection is likely to reveal the hologram for what it is.

HYDROCARBON FUELING

Some vehicles designed for operating on extremely primitive worlds can't rely on the availability of a charging grid. This fitting allows a vehicle to operate on hydrocarbons, whether refined gasoline, vegetable oils, or raw crude oil. Almost any

form of energy-dense fuel will serve to power the vehicle, though exceptionally crude sources may fuel it for only one hour of operation on a full tank instead of the six that would normally be provided.

LIMPET MOUNT

This complex fitting allows a smaller vehicle to be mounted on the craft, its power supply and propulsion units slaved to the main vehicle to defer the structural cost of adding the additional mass. Medium vehicles can mount small ones, while large vehicles can mount both medium and small. Small vehicles require 3 free Mass for their mounting attachments, while medium vehicles require 6.

These vehicles must be modified to interface with the host, adding 10% to their base cost. If these are aftermarket modifications to the parasite vehicles, the host must be stationary before they can be detached and operated. If they were designed from the start to interface with their particular host, then they can be manned and released while the host is underway. If the host vehicle is destroyed while the parasites are attached, all vehicles are destroyed. Otherwise, parasite vehicles suffer half the damage inflicted on the host.

LIVING QUARTERS

The vehicle has been fitted with cabins and facilities for long-term occupation. The accommodations are spartan and cramped, but cooking, sleeping, and relaxation can all be performed within the confines of the vehicle. A single selection of this fitting provides sufficient living space for all passengers the vehicle might carry.

MEDBAY

The vehicle is equipped with an integral medbay sufficient to serve one victim. The medbay provides a +2 bonus to all Tech/Medical rolls related to trauma care and basic medical attention and can be used to ice down a mortally wounded or recently dead victim into emergency stasis.

Provided the victim is frozen within five minutes of death and has not experienced catastrophic physical disassembly, a well-equipped TL4 hospital has an percentage chance of reviving them equal to 80 plus the victim's Constitution score. This fitting may be taken more than once to provide multiple medbays.

MICROFUSION PLANT

Some vehicles are designed for long periods of operation away from any source of recharge. A microfusion plant is sufficient to keep the vehicle operating almost indefinitely, with most plants rated for several centuries of continuous operation. A small plant is sufficient to provide power to a medium vehicle, while a large one can power a craft built on a large frame. TL4 engineering is not sufficiently advanced to fit small vehicles with microfusion plants.

POWER SYSTEM

Some weapons or fittings demand larger amounts of power than the standard vehicle frame provides. A certain amount of mass can be sacrificed to run more efficient wiring and electronic hardware, magnifying the amount of equipment that a single vehicle charge can power. Different power system fittings can be applied to different sizes of vehicles, with the largest ones providing the most efficient boosts to available power. Milspec-grade systems are usually reserved for governmental use only, though it's not unknown for them to be found in the vehicles of those with the right connections.

SEALED ATMOSPHERE

The vehicle has been treated to provide a sealed atmosphere for the occupants, protecting them from vacuum, unbreathable atmospheres, or hazardous extremes of temperature. Vehicles equipped for space operation do not need this fitting. The atmosphere can be maintained for as long as the vehicle is powered, though scrubber inefficiencies will require some fresh atmosphere to be added every week or so.

QUANTUM ECM GENERATOR

The Metadimensional scrambling techniques that forced starships back into point-blank combat exist also on the terrestrial battlefield. These quantum ECM generators are powerful enough to hopelessly disrupt guided TL4 munitions, forcing combatants to rely on direct fire weapons and unguided artillery projectiles. Guided drones and smart munitions are capable of pinpoint accuracy when unjammed, but so few modern battlefields are unprotected by these generators that most guided weapons are used only against the most primitive or unprepared targets.

This quantum ECM generator is the smallest variety that a TL4 industrial base can build. When active, it can blanket roughly a fifty-kilometer radius with a field that will utterly confuse any remote control or guidance mechanisms that do not rely on TL5 tech. These ECM fields are powerful but indiscriminate, and will affect friendly munitions as readily as enemy rounds. Once deactivated, the field will linger for 1d6 x 5 minutes before completely dying away. Vehicles and robots are sufficiently self-piloted and hardened to ignore ECM fields, provided they're not forced to make the split-second decisions that a missile requires for a hit. AIs in physical control of a vehicle are never jammed by ECM.

SMUGGLER'S HOLD

These storage compartments are carefully built into the frame of the vehicle, utilizing "waste" spaces and the false facades of seemingly solid components. A casual inspection with standard TL4 customs checks will not discover them, and a close inspection will force the inspector to succeed at a difficulty 12 Wisdom/Perception check to detect the spaces. A determined searcher willing to disassemble parts of the vehicle over the course of a day will always discover the hidden spaces.

The amount of space provided by this fitting varies with the size of the vehicle; small vehicles gain 10 kg of cargo space, medium vehicles gain 100 kg, and large vehicles gain 400 kg of space. This fitting may be taken more than once.

STEALTH INTEGUMENT

Most often used on water or aerospace vehicles, a stealth integument incorporates several design measures to shrink a vehicle's visibility to radar and other sensors. Vehicles with a stealth integument are effectively invisible to TL3 sensors, and gain a +2 bonus to any attempt to evade TL4 sensors.

TARGETING BOARD

Most vehicles require a separate gunner for each mounted weapon, albeit pilot-linked weapons can get around this limitation. A broader solution is a dedicated targeting board, which allows a single gunner to operate up to three weapons at once, selecting individual targets for each. Multiple targeting boards can be installed for vehicles that positively bristle with implements of war.

TOOL RACK

Any vehicle with room in the trunk can carry a toolkit, but a dedicated tool rack is integrated into the vehicle's power supply and includes jacks, industrial cutters, and other tools sufficient to perform full vehicle repair and maintenance. Tool racks mounted by a large vehicle have enough versatility to function as a full-scale postech workshop if enough room is available for their use.

VEHICLE WEAPONS

The *Stars Without Number* core book lists a number of gunnery weapons that can be fitted on a vehicle. The list below is an expanded selection, listing the cost, damage, average and long ranges, magazine size, tech level, hard-points required, and requisite power and mass for each gun.

Ammunition cost is not given for most projectile weapons, as it's usually a trivial expense. Those weapons with particularly expensive munitions are listed in the descriptions below. Those with damage entries marked with a # are capable of suppressive fire, as per the core book.

Most of the weapons are described in the core book, but the following new entries may be of interest to designers.

Flame cannons and plasma scythes are similar weapons, both firing gouts of searing flame over a wide area. TL3 flame cannons usually rely on napalm or similar combustibles, while TL4 plasma scythes emit bursts of briefly self-sustaining plasma compounds. These weapons can only be fired in suppressive fire mode, as they're too imprecise for targeting specific enemies.

Grenade launchers fire conventional grenades at a much longer distance than a throwing arm or underbarrel launcher could provide. Damage done by grenade launchers does not count as Gunnery damage for penetrating armor.

Hunter drones and smart missiles are high and low-tech versions of essentially the same weapon. Both fire hyper-accurate guided munitions at a chosen target. Smart missiles always roll against AC9, no matter how agile the target may

AMMUNITION AND RELOADING

Some weapons require physical projectiles, while others are strictly energy-based. Reloading an energy-based gunnery weapon requires one round to charge the gun's capacitors from the vehicle's power plant. Reloading a projectile-based gunnery weapon requires one round for every round to be fed into the magazine. Many military vehicles with projectile weapons have a dedicated loader.

Most vehicles can carry any practical amount of ammunition required. Energy weapons can keep firing as long as the vehicle's power holds out, albeit at some battery cost.

be, and hunter drones miss only on a natural 1 on the roll and can dodge around corners and other obstacles. These weapons are rendered useless by the quantum ECM employed on any modern battlefield or military installation. Smart missiles or hunter drones both cost 1,000 credits apiece.

Mobile howitzers have an enormously long range but can only effectively target fixed locations. Their shells damage everything within 50 meters of impact, and cost 200 credits.

Point defense lasers are designed to deflect or destroy incoming projectiles, and are useful only against gunnery projectile munitions. A gunner who uses their action to operate a PDL can roll to hit AC 6 to destroy the target in flight. One PDL can take out only one target per round.

Rifled tank guns are TL3 projectile weapons chiefly mounted on TL3 tanks, though some TL4 worlds favor their relative simplicity. Each round of its ammunition costs 200 credits.

WEAPON	COST	DMG	RANGE	MAG	TL	HARDPTS	POWER	MASS
Anti-Personnel Laser	10,000	3d6 #	500 / 1,000	20	4	2	3	1
Anti-Vehicle Laser	10,000	3d10	500 / 1,000	15	4	2	5	1
Flame Cannon	10,000	2d10 #	30 / 60	10	3	3	2	4
Grenade Launcher	5,000	2d6 #	200 / 500	10	3	2	1	3
Heavy Machine Gun	5,000	3d6 #	500 / 2,000	10	3	2	1	3
Hunter Drone Launcher	20,000	3d10	2,000 / 4,000	1	4	2	3	3
Hydra Array	20,000	3d6 #	2,000 / 4,000	10	4	2	1	4
Mobile Howitzer	20,000	5d10	20 km / 40 km	1	3	4	2	8
Plasma Scythe	15,000	2d12 #	40 / 80	12	4	3	4	2
Point Defense Laser	10,000	Special	200 / 300	5	4	1	3	1
Railgun	8,000	3d8 #	1,000 / 2,000	20	4	2	3	3
Rifled Tank Gun	25,000	4d12	2,000 / 4,000	3	3	4	2	8
Rocket Launcher	4,000	3d10	2,000 / 4,000	1	3	2	1	4
Smart Missile Launcher	15,000	3d10	2,000 / 4,000	1	3	3	1	5
Vortex Cannon	75,000	5d12	1,000 / 2,000	5	5	4	10	3
Wheatcutter Belt	10,000	2d12	10 / 20	5	4	2	1	2

PRETECH VEHICLE FITTINGS

The pretech fittings given here represent some of the more common components to have survived the long march of ages. Most of them were designed for harsh use and regular mistreatment, with self-maintenance abilities that seem little short of magical to the engineers of the present, decayed age. Because of this, these components add nothing to a ship's maintenance cost, and can sometimes be salvaged even from wholly ruined vehicles.

There is no fixed market price for these devices. Almost no world allows the open sale or possession of mysterious pretech devices such as these. On some worlds, these relics are confiscated "for the public good," while on others the rulers simply don't care to have such unpredictable devices in the hands of untrustworthy private citizens. A few worlds are more charitable about their possession, but even then, most ruling classes have absolutely no incentive to allow dangerous, ill-understood devices to trade openly.

PCs who wish to buy or sell such components will need to seek out black markets, lawless space stations, and worlds devoid of meaningful government in order to find a buyer or seller. Such intrepid merchants can usually expect such exchanges to be far more exciting than they might like.

Microfusion Power Node: Pretech science was capable of producing remarkably compact, efficient power sources. While miniaturized fusion nodes fueled by ambient atmosphere were among the most common, more exotic versions directly tapped the metadimensional flux for swift surges of power. Each node add to the vehicle's maximum power, though the vehicle still needs its usual Type B energy cell fuel to modulate and control the influx of energy. TL4 electrical systems can usually handle one node for small vehicles, two for medium, and four for large conveyances.

Mobile Teleportation Beacon: When attuned to psychic with at least 1 point in the Teleportation discipline, the beacon acts as an amplifying booster to the psychic's ability. The psychic will always retain an instinctive awareness of the vehicle's location, and can teleport to it with their usual weight limits provided it's within the same solar system—even if their abilities would normally be too weak to reach it. Attunement to the beacon requires 24 hours of focus, and only one psychic can be attuned to a beacon at once. The beacon itself requires a vehicle's power supply to function.

Omnifrequency Cloaking System: Vehicles equipped with this stealth system often avoided more focused destruction, allowing an unusual number of them to survive. This system completely dampens the vehicle's sensor signature, rendering it invisible to TL4 sensors and granting a +2 bonus to evade TL5 detection. The cloaking field even fades the vehicle from ordinary sight, making it almost impossible to detect from more than thirty meters away. If it moves slowly and avoids causing environmental disturbances, it can pass 10 meters from an observer without notice.

FITTING	POWER	MASS	SIZE
Microfusion Power Node, S	Adds 3	0	S
Microfusion Power Node, M	Adds 5	0	M
Microfusion Power Node, L	Adds 7	0	L
Mobile Teleportation Beacon	3	1	M
Omnifreq Cloaking System	1	1	S
Phase Shift Field	5	2	M
Quantum ECCM Array	3	1	M
Regenerative Repair System	1	3	M
Ultralight Component, S	0	Adds 3	S
Ultralight Component, M	0	Adds 5	M
Ultralight Component, L	0	Adds 7	L

Phase Shift Field: When activated, this unit shifts the vehicle and its passengers slightly out of phase with conventional space. For one minute afterwards, the vehicle may move freely in three-dimensional space at its usual rate of speed, passing through barriers, terrain or dangerous energy emissions unhindered. The vehicle remains visible, if strangely translucent. Once the field ends or is deactivated, the vehicle snaps to the nearest physical location capable of supporting its mass. The shift field requires 12 hours to replenish its power.

Quantum ECCM Array: Sophisticated even by pretech standards, this array can briefly defeat the standard quantum ECM deployed on modern battlefields. While the array is operating, guided munitions such as hunter drones or smart missiles can operate normally within a 20 kilometer radius. The array functions only for 1d6+4 rounds before exhausting its power reserves, however, and the device will require a minimum of 12 hours to regain its functionality.

Regenerative Repair System: After the appropriate tuning and systems integration, this pretech repair system can rebuild damaged components with nothing more than loose debris for feedstock. The system can repair one hit point of damage every minute that the vehicle is in operation, provided the vehicle has not been reduced to zero hit points. It also spares any need for preventative maintenance.

Ultralight Component: As with power efficiency, pretech science also excelled at the creation of light, ultra-durable construction materials. While most of them have long since crumbled under the relentless tooth of time or nanite contamination, some components are still serviceable and can be used to rework heavier, bulkier structural components in fittings. Use of these components adds to a vehicle's maximum allowed mass. There are inherent limits to the volume of space involved, however, so small vehicles can apply one component, medium vehicles can apply two, and large vehicles can use at most four of these. These limits apply regardless of the size class of the component.

VEHICLE QUICK REFERENCE

OPERATING AND POWERING A VEHICLE

Ordinary operation of a vehicle can be done by any PC with an appropriate background or culture. Vehicle skill only applies to demanding tasks or high-pressure situations. Most Vehicle skill checks rely on Dexterity for their modifier, though tricks involving timing or perception might use Wisdom.

If a vehicle has multiple modes of operation, such as a grav-car that can travel underwater, the driver may choose to use either relevant Vehicle skill for all checks.

A vehicle's Speed score applies as a modifier whenever making an opposed check to resolve a chase or a check to perform some feat of maneuvering.

Most vehicles require only one actual driver, but any guns mounted on the vehicle each require their own gunner. Some forward-mounted or guided weapons might be usable by the driver if designed for such use.

Vehicles are fueled by Type B power cells, assuming a connection to a community's power grid is unavailable to charge them. A single Type B cell will keep a vehicle operating for approximately six hours.

CHASES

Most vehicle chases are resolved with opposed Vehicle skill checks between the pursuer and pursued. The vehicle's Speed score is applied as a modifier to each check. If the retreating driver fails or ties the check, they fail to escape, and the pursuer can keep up with them for 1d6 rounds, plus one for each point by which they beat the retreating driver.

If the fleeing driver beats their pursuers, they gain at least a short-term respite. If the pursuing vehicles have a faster overland travel rate, they may still eventually be overtaken.

COMBAT

A stationary vehicle is always hit by an attack if the attacker is within 10 meters. Other attacks against vehicles target AC9, minus the total Speed of the attacker and defender. Drivers can voluntarily slow down to improve their aim, but such deceleration lasts the full round.

Weapons mounted on a vehicle always use the Combat/Gunnery skill for hit rolls. Weapon fire from passengers uses its usual skill. Mounted weapons do not normally run completely out of ammunition unless engaged in very lengthy combats. Reloading a spent energy-based weapon takes one round, while projectiles are reloaded at one round per round.

Vehicle Armor ratings subtract from any incoming damage not caused by a Gunnery weapon. Gravitanks and other armored military vehicles are effectively immune to small arms.

CRASHING

If a vehicle loses all of its hit points, it will crash. For ground and sea vehicles, this forces all passengers to make a Luck saving throw. If failed, the passenger takes the vehicle's maximum hit points as damage. Success cuts this damage in half. Flying vehicles that crash are liable to leave no survivors barring remarkable circumstances, parachutes, or crash pod fittings.

REPAIR

Most vehicles can be repaired in the field, provided they haven't been reduced to zero hit points. Assuming repair materials are available, a technician with a portable toolkit can repair one hit point per hour of work, plus one more for every level of Tech/Postech or appropriate Vehicle skill they possess, counting level-0 as one.

Technicians with access to a fully-equipped workshop or tool rack fitting can fix five times as many hit points in an hour. Such facilities can even be used to repair a vehicle reduced to zero hit points, though this will take one man-day of effort for every five thousand credits the vehicle costs.

Vehicle repair requires the necessary spare parts. One hit point worth of repair materials takes up 10 kilos of space for small vehicles, 50 kilos of space for medium ones, and 100 kilos for large vehicles. Each kilo costs 5 credits.

OVERLAND MOVEMENT

Vehicles have an overland movement rate to reflect their average speed per hour over clear, unpaved ground. On smooth, paved roads this ground speed can be doubled.

Flying vehicles ignore all terrain modifiers, including the benefit of roads. Ground-based grav vehicles ignore swamps, hills and calm water, but can't sustain boosted flight long enough to ignore the modifier for heavy forests or jungles.

Some rough terrain may require Vehicle skill checks from an unfamiliar driver. Locals are usually accustomed to it.

TERRAIN	MODIFIER
<i>Plains or Deserts</i>	None
<i>Light Forests / Hills / Badlands</i>	-25%*
<i>Heavy Forest / Jungle</i>	-50%
<i>Swamps</i>	-50%*
<i>Mountains</i>	-90%
<i>Roads</i>	x2 Movement

* Grav vehicles ignore these modifiers

EXAMPLE VEHICLES

The following selection of vehicles includes some of the ones most likely to be useful to a GM or to a party of intrepid explorers. Some of them are most likely to show up in the hands of hostile locals or outraged law enforcement, while others would form excellent tools for adventurers seeking transport across the face of an untamed world.

The prices on these vehicles assume that the PCs are buying them through at least semi-legal channels. Illegal vehicles will cost at least twice the base price, if not more. Conversely, worlds with large production runs of these vehicles might offer them at a 10% or 20% discount.

ARMED TECHNICAL

Wherever there are cars, soldiers will put guns on them. The armed technical is a venerable mainstay of dirty backwater wars and vicious civil uprisings. Most of them are built off of conventional civilian trucks with little or no modification beyond the adjustments necessary to mount a weapon.

This version of the technical is widespread on TL3 worlds, popular for its ease of acquisition and repair. The cargo space is usually given over to ferrying extra combatants, though these unofficial passengers are rarely able to hit anything unless the technical is at a dead stop. Very few of them can expect to survive if the technical crashes or is forced into dramatic maneuvering.

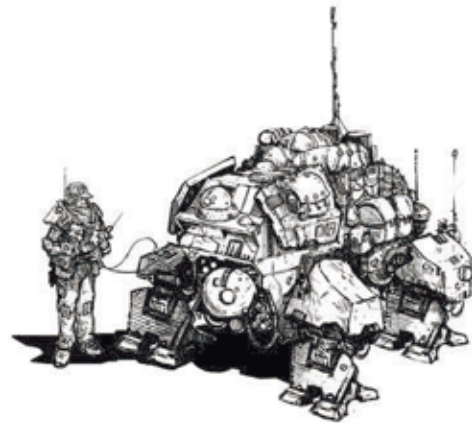
BUSH FLYER

Remote or undeveloped worlds often require air transport to negotiate the untamed wilderness between settlements. Gravflyers are the vehicles of choice, but not every settler can afford the luxury of a full-fledged aircraft. The bush flyer is a common compromise for scouting and personal transportation, utilizing a modular construction plan built off of a grav-powered microlight framework.

The bush flyer can be disassembled into a package that can be carried by two porters or one pack beast. An integral ghost driver autopilot allows the flyer to be operated remotely by its owner or cued to return an injured or incapacitated driver to safety.

CARGO HAULER

These massive gravtruck haulers are popular both on colony worlds and on those more developed planets that have terrain unsuitable for easy road building. The standard model has a reinforced framework capable of supporting 20 metric tons of cargo, along with a built-in repair rack for handling breakdowns outside the easy reach of civilization. Truckers on more civilized worlds sometimes remove the rack in favor of an extra four tons of cargo space.



ARMED TECHNICAL		15,000 CR
Speed	0	Km/H Travel 90
Armor	6	Power 3 / 0 Free
Hit Points	30	Mass 7 / 0 Free
Crew	5	Hardpoints 2 / 0 Free
Base Frame	Groundcar, TL3	
Fittings	Hardpoint Support, 1,500 kg cargo space Heavy Machine Gun	

BUSH FLYER		10,000 CR
Speed	0	Km/H Travel 100
Armor	0	Power 1 / 0 Free
Hit Points	10	Mass 3 / 0 Free
Crew	1	Hardpoints 0 / 0 Free
Base Frame	Microlight Flyer	
Fittings	Field Portable, Ghost Driver	

CARGO HAULER		45,000 CR
Speed	1	Km/H Travel 70
Armor	4	Power 3 / 3 Free
Hit Points	38	Mass 16 / 0 Free
Crew	10	Hardpoints 2 / 2 Free
Base Frame	Gravtruck	
Fittings	Extra Durability, Tool Rack, 20 tons of cargo space	

COLONIAL SURVEYOR

The colonial surveyor is a common inclusion in the colonization packages of many young worlds, with surplus or antiquated models also popular among adventurers with long-term plans on a world. While not so wieldy as a gravitic vehicle, the sturdy ATV can be repaired by TL3 resources and its microfusion plant can power basic colonial industry.

The surveyor is equally functional on water worlds and is capable of fully submersible operation, albeit with limited sensors and operational depth. Once the vehicle's compact outpost has been deployed on a colony, it's common to refit the space for an additional two tons of cargo. Such refitted surveyors are often used to bring aid to remote settlements.

FRONTIER EXPLORER

The frontier explorer typifies the kind of exploration vehicle favored by wealthy adventurers and well-funded naval survey corps. The explorer can be dropped from orbit for convenience, and can provide comfortable, secure housing for a typical crew for months on end if necessary.

Still, the explorer is intended more for short-term exploration of specific sites and planetary locations. Its gravitics allow the easy navigation of even the harshest local terrain, and the ample cargo hold can bring back a wealth of interesting artifacts from a planetary ruin. A supporting survey ship will need to dispatch a shuttle to pick up the explorer eventually, however, assuming the explorers survive their inquiries.

LUXURY GRAVCAR

Typical of the cars favored by a TL4 planet's elite, the luxury gravcar is designed for equal parts ostentation and discretion. The car's exterior is a triumph of fine tooling and aerodynamic grace, usually marked lavishly with the design cues of whatever elite industrial concern was responsible for the car's design.

A flick of a switch by the driver allows a much more discreet holographic shell to be dropped over the vehicle, the better to avoid unwanted paparazzi. A ghost driver system allows the autonomic ferrying of inebriated celebrities, and special crash protection features help protect them from their occasional lapses of prudence.

MAIN BATTLE TANK

Typical of the armored divisions of developed TL4 worlds, this main battle tank is designed to be an "all-electric" solution for overtaxed supply lines. So long as a steady supply of maintenance and repair parts can be managed by the quartermasters, all that this tank needs for operation is a power supply and a crew to drive it.

Most tank crews are divided up into a driver, a main gunner, and a tank commander who operates the AP laser as needed. Most modern tanks are equipped with internal holopanel that give a 360-degree view of their surroundings to all members of the crew. When this inevitably fails in combat, the tank commander's physical viewpoints are used.

COLONIAL SURVEYOR 115,000 CR

Speed	0	Km/H Travel	90
Armor	8	Power	4 / 0 Free
Hit Points	40	Mass	22 / 0 Free
Crew	8	Hardpoints	2 / 2 Free
Base Frame	ATV Explorer		
Fittings	Compact Outpost, Environment: Water, Living Quarters, Medbay, Microfusion Plant: Large, Sealed Atmosphere, Tool Rack, 2,000 kg cargo space		

FRONTIER EXPLORER 116,000 CR

Speed	0	Km/H Travel	90
Armor	6	Power	6 / 0 Free
Hit Points	44	Mass	16 / 0 Free
Crew	8	Hardpoints	2 / 2 Free
Base Frame	Grav Explorer		
Fittings	Advanced Sensors, Battery Reserve, Drop Thrusters, Extra Durability, Living Quarters, Medbay, Power System: Small, Sealed Atmosphere, 2,000 kg cargo		

LUXURY GRAVCAR 50,000 CR

Speed	2	Km/H Travel	90
Armor	7	Power	3 / 0 Free
Hit Points	25	Mass	8 / 0 Free
Crew	5	Hardpoints	1 / 1 Free
Base Frame	Gravcar		
Fittings	Armor Plating, Battery Reserve, Crash Pod, Ghost Driver, Holocamo Skin		

MAIN BATTLE TANK 340,000 CR

Speed	2	Km/H Travel	120
Armor	* (6 vs. Gun)	Power	10 / 0 Free
Hit Points	50 (+20 Ab)	Mass	17 / 0 Free
Crew	3	Hardpoints	6 / 0 Free
Base Frame	Gravtank		
Fittings	Ablative Skin, Advanced Sensors, Armor Plating x 2, Hardpoint Support x 2, Power System: Milspec M, 500 kg cargo space Vortex Cannon and Anti-Personnel Laser		

PIRATE SKIFF

This small watercraft is popular with coastal pirates operating near major planetary waterways. The simple TL3 design is within the reach of even impoverished and backward communities, and it serves well as a simple fishing boat when a more law-abiding employment is needed.

The skiff is designed to operate both with an internal combustion engine and quieter battery power. The latter is used during the night engagements they favor, when the capacitors are drained to provide a burst of speed for closing with unsuspecting merchant ships. The gunmen aboard seek to quickly cow any resistance, plunder the movable goods, and take a hostage or two, fleeing before aid can arrive.

POLICE GRAVCAR

Given the usual habits of player characters, it's regrettably likely that they will eventually need to worry about the capabilities of a planet's law enforcement vehicles. This police gravcar is one of the more standard models on TL4 worlds, usually operated by a pair of officers.

The gravcar has a more powerful propulsion system than a standard model, along with armor plating and crash pod support for surviving the attentions of less compliant suspects. The cargo space with this model is usually filled with a variety of first-response emergency equipment and crime scene forensics hardware, though some busy departments refit the space into a cage for 6-8 "passengers".

POLICE GRAVFLYER

A tool of maximum response for most urban police departments, a law enforcement gravflyer is equipped to handle even the most extravagant misbehavior. The mounted railgun is capable of terminating conflicts from two kilometers above the engagement zone, while the extra medbays, cargo space, and passenger room allow for the rapid dispatch of medical aid to survivors and victims.

The model listed here is common on relatively "civilized" TL4 worlds. Planets with a stronger martial tradition or more pronounced tyranny are known to move directly to military craft for significant law enforcement needs.

RECON CYCLE

While technically restricted to military use, these unarmed hovercycles are sometimes found in private circulation. The radar-damping skin on the cycles is coupled with an array of thermographic and gravitic signature baffles, rendering the small vehicle an extremely difficult target for standard sensors. Its own HUD interfaces with a wide array of civilian and military helmet feeds to provide wide-spectrum night vision and thermal signature warnings.

These cycles are perfectly silent in operation, with even the wind of their passage sculpted by its gravitic propulsion unit.

PIRATE SKIFF		21,000 CR
Speed	0 (+2 boost)	Km/H Travel 90
Armor	6	Power 3 / 0 Free
Hit Points	30	Mass 7 / 0 Free
Crew	7	Hardpoints 1 / 1 Free
Base Frame	Groundcar, TL3	
Fittings	Afterburners, Extra Passengers, Hydrocarbon Fueling, 1,000 kg cargo space	

POLICE GRAVCAR		40,000 CR
Speed	3	Km/H Travel 110
Armor	7	Power 3 / 0 Free
Hit Points	25	Mass 8 / 0 Free
Crew	5	Hardpoints 1 / 1 Free
Base Frame	Gravcar	
Fittings	Armor Plating, Crash Pod, Engine Boost, 1,000 kg cargo space	

POLICE GRAVFLYER		90,000 CR
Speed	5	Km/H Travel 1,500
Armor	8	Power 6 / 0 Free
Hit Points	25	Mass 16 / 0 Free
Crew	14	Hardpoints 2 / 2 Free
Base Frame	Gravflyer	
Fittings	Advanced Sensors, Extra Passengers x2, Medbay x 2, Power System: Milspec S, Sealed Atmosphere, 2 metric tons cargo Railgun	

RECON CYCLE		42,000 CR
Speed	3	Km/H Travel 125
Armor	3	Power 3 / 0 Free
Hit Points	10	Mass 5 / 0 Free
Crew	1	Hardpoints 0 / 0 Free
Base Frame	Hovercycle	
Fittings	Advanced Sensors, Engine Boost, Power System: Milspec S, Stealth Integument	

STATIC WAGON

Two major philosophies exist when it comes to providing a battlefield with a protective dome of ECM jamming. One school advocates spreading multiple lightly-protected jamming units around the field, trusting that the enemy won't be able to destroy them all. The static wagon is an example of the second philosophy, which prefers to focus on concealed, well-protected, highly maneuverable generator vehicles.

A static wagon is designed to be externally identical to a standard main battle tank, right down to the nonfunctional vortex cannon barrel. The space normally dedicated to the tank's primary weapon is instead given over to the ECM generator and additional internal armor compartments.

TROOP CARRIER

Designed for use in tandem with conventional gravtanks, the troop carrier shares the same basic hull, but trades the offensive punch of tank for a much larger passenger complement and augmented gravitic propulsion. Most carriers are crewed by a driver, a gunner for the AP laser, and occasionally a comms officer help coordinate with the rest of the unit. The remaining space is taken up by two or three fire teams, with unused passenger space given over to additional ammunition or supplies specific to the carrier's mission.

These vehicles are exceptionally effective against the defenses of more primitive worlds, as their gravitic drives allow them to ignore conventional tank traps and impassible terrain.

WAR TRUCK

The bigger cousin of the armed technical, war trucks are the tanks of primitive badland worlds and scrap warlords. This example is a primitive machine built with simple TL3 components and a casual contempt for passenger safety. Two of the passengers are usually charged with manning the mounted guns, two more serve as reloaders, and the rest add to the festivities with the semi-random discharge of their personal small arms.

YARD SKIFF

A yard skiff is little more than a flat gravitic platform with a driver's cab at the front, though some delivery models enclose the cargo platform. Many are employed at spaceports and other cargo-handling centers for moving loads around a work yard, while others are used as delivery vehicles.

STATIC WAGON 290,000 CR

Speed	2	Km/H Travel	120
Armor	*	Power	10 / 1 Free
Hit Points	75	Mass	17 / 0 Free
Crew	3	Hardpoints	4 / 2 Free
Base Frame	Gravtank		
Fittings	Extra Durability x 2, Microfusion Plant: Large, Quantum ECM Generator, Sealed Atmosphere Anti-Personnel Laser		

TROOP CARRIER 280,000 CR

Speed	3	Km/H Travel	150
Armor	*(3 vs. Gun)	Power	10 / 0 Free
Hit Points	50	Mass	17 / 0 Free
Crew	15	Hardpoints	4 / 2 Free
Base Frame	Gravtank		
Fittings	Advanced Sensors, Armor Plating, Battery Reserve, Crash Pod, Engine Boost, Extra Passengers x 3, Sealed Atmosphere, Stealth Integument Anti-Personnel Laser		

WAR TRUCK 34,000 CR

Speed	0	Km/H Travel	90
Armor	9	Power	5 / 1 Free
Hit Points	35	Mass	16 / 0 Free
Crew	10	Hardpoints	4 / 0 Free
Base Frame	Groundtruck, TL3		
Fittings	Armor Plating, Hardpoint Support x 2, Power System: Medium, 4,000 kg cargo Heavy Machine Gun, Rocket Launcher		

YARD SKIFF 20,000 CR

Speed	2	Km/H Travel	90
Armor	4	Power	3 / 3 Free
Hit Points	25	Mass	8 / 0 Free
Crew	5	Hardpoints	1 / 1 Free
Base Frame	Gravcar		
Fittings	4,000 kg of cargo space		

A NEARER APOGEE

LOW-TECH SPACECRAFT AND SYSTEM SHIPS

Not every world has the technical sophistication or rare minerals necessary to build spike drives. Those worlds that have sufficient population and industrial base to make some sort of spacecraft often fall back on “system ships”—those craft capable of travel within a solar system but unable to carve superliminal drill routes between stars.

While inferior to true starships in almost every way, system ships can be a vital element of a world's defenses against pirates and raiders from hostile neighbors, along with providing critical services in asteroid mining, system colonization, and orbital repair. Other GMs prefer to set their campaigns in the near future or in a hard sci-fi setting where FTL travel isn't plausible.

For those GMs who prefer to use *Stars Without Number* to play in less technologically-advanced settings, the guidelines in this section will allow you to assemble ships more in line with known astronautic possibilities. While these rules aren't meant to support an extremely hard sci-fi setting, you can use them to replicate a more stringent variety of science fiction than conventional FTL travel might allow.

CONSTRUCTING SYSTEM SHIPS

The exact capabilities of a system ship will depend on the tech level of the world that has constructed it. Worlds of TL2 or less are incapable of building system ships, though an industrial-age world could possibly fabricate a ridiculously primitive orbiter if they had the correct schematics and a crew with a suicidal contempt for danger.

TL3 worlds usually have a significant edge in the scraps and remnants of astronautic data that survive from their initial colonization. Some worlds have regressed so far that even these ancient hints have been lost, but most planets that did not completely collapse into barbarism retained the astronautic data and engineering concepts necessary to get a ship into space once the industrial base had been sufficiently developed.

These TL3 ships are painfully primitive compared to their more advanced brethren. Lacking antigrav tech, most rely on rockets to get into orbit, and once there they remain in space for the length of their working life. Aerospace shuttles take off from surface starports to bring crew and passengers to orbital stations, where they are offloaded onto ships that will never again experience their homeworld's atmosphere.

The difficulty of moving mass from orbit to the ground encourages as much industry as possible to take place in space, with only finished goods being shuttled back dirtside. Those worlds on the cusp of TL4 advancement sometimes have

a significant percentage of their population living in orbital habitats simply to service and maintain the space factories.

TL3 system ships are usually reliant on hyper-efficient ion drives to save on reaction mass. Such engines are sharply limited in the amount of thrust they can provide, but their high reaction efficiency allows them to remain lit for long periods. Almost half their flights are spent accelerating toward their destination before the midpoint “flip” and deceleration.

A few TL3 ships rely on atomic pulse or chemical reaction-based drives that permit briefer periods of much faster acceleration, most often for warships. Those TL4 societies without access to spike drive minerals usually make use of atomic pulse drives, hydrogen ramscoops, or laser-driven light sails. While none of these methods provides the same raw motive force as an operational spike drive core, some worlds can develop extremely efficient propulsion systems if granted enough researchers and enough time.

TL3 societies have yet to master antigravity, and so rely upon acceleration-based “gravity” or rotating ring structures. Such gravity is usually quite low by normal Terran standards—most ion drive ships can't manage more than one-twentieth of a standard gravity. Ring structures are practical only on cruiser-class hulls, and even then they rarely rotate fast enough to provide gravity in excess of a half a gee.

Even so, this minimal gravity is enough to allow fairly ordinary activity within the ship, and space stations and other fixed orbital structures can usually spin to provide full Terran gravity for their inhabitants. TL4 societies have unlocked the secrets of artificial gravity, and most starships larger than a shuttle or fighter have a sufficiently large power plant to provide it for a ship or structure.

ZERO-GRAVITY ACTIONS

Coping with sustained weightlessness is a minefield of unpleasant discoveries for PCs without a background in zero-gee space travel or Culture/Spacer-0 skill.

Most of the ugly revelations involving drinking, bathing, elimination and the truly spectacular way vomit perfuses in a zero-gee environment can be glossed over in play, but such characters attempting combat suffer a -2 penalty to all hit rolls from the awkwardness and a -1 penalty to physical skill checks.

A few months of experience in such environments is usually enough to eliminate the penalty, though it won't confer actual Culture/Spacer-0 skill.

MILITARIZED SYSTEM SHIPS

System ships suffer gravely in combat against spike-capable interstellar ships. The limited phase shifting allowed by an active spike drive makes it difficult to land a hit with conventional weapons, and the quantum ECM generated by TL4 countermeasures make standard long-range targeting attempts useless.

Against their own kind, however, system ships are perfectly effective, though their tactics are often relics of the pre-quantum-ECM era in human space warfare. System ships stand off at a distance of multiple light-seconds, launching targeted munitions to intercept enemy vectors in clouds of hostile projectiles too thick for defensive systems to dispel. The direct energy weapons and dumbfire projectiles favored by their more advanced brethren are only useful in the brief, slashing moments when one ship's course intersects the vector of an enemy ship, an engagement that lasts only fractions of a second.

Modern TL4 ships equipped with standard quantum ECM are forced to engage at knife-fighting ranges simply to ensure that their munitions can penetrate the targeting disruption created by the enemy ECM. Launching missiles a light-second away only ensures that even a fighter's onboard jammers will be able to send the missile haring off in a harmless direction. To compound the problem, the "nuke snuffers" that function as a byproduct of this quantum ECM make conventional nuclear weaponry entirely useless against TL4 ships.

Because of this drastic tech divide, system ships in a TL3 system are often in a military quandary. If they equip themselves with directed-energy weapons and dumbfire munitions, they'll be able to present some kind of threat to any interstellar pirates or hostile spike-drive warships from neighboring stars. They will be at a critical disadvantage in dealing with ships equipped with standoff weaponry, however, as they lack quantum ECM to disrupt incoming missiles. If they load out with nuclear missile launchers and homing mines they could give an even fight to these foes, but would then be toothless against the incursions of outsystem ships.

As a consequence, most TL3 worlds build their ships to focus on the greatest immediate threat. If interstellar piracy or expansionist TL4 neighbors are the biggest concern, their ships are equipped with modern close-in weaponry. Their ships may be terribly fragile and vulnerable compared to those of their more modern enemies, but they can hope to overwhelm them with sheer numbers and the raw volume of fire.

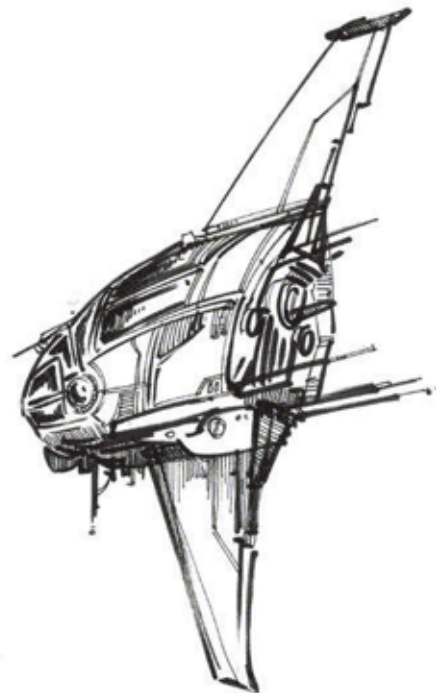
If the greatest peril is from another hostile TL3 power in the system or a balkanized political landscape at home, then the system ships will be equipped with standoff missiles. Particularly wealthy TL3 worlds might have sufficient resources to build ships of both types, but most "primitive" worlds have barely enough resources to put vital necessities into space, let alone the luxury of a multi-faceted system defense strategy.

WHO USES SYSTEM SHIPS?

Almost every starfaring society has some use for system ships. Even those advanced worlds that have access to ample supplies of spike drive minerals still find it useful to have a large number of workhorse freighters, mining ships, and maintenance tugs to keep their aeronautic enterprises functioning. The fact that these ships are slow, cumbersome, and of limited value in military engagements is irrelevant to their usefulness.

The asteroid mines and system resource collectors that young starfaring civilizations establish are almost all serviced by system ships. Emergency supplies or fast reaction forces might require the speed of a spike drive, but a scheduled monthly resupply can take a week or two to get out to a post without causing any significant problems. In the same vein, a defense platform that leaves its station only to come in for maintenance and repairs can move at a glacial pace without compromising its value as a deterrent to pirates and raiders.

Not all starfaring societies embrace system ship usage to the same extent. While system ships are far cheaper than craft equipped with spike drives, they are not overwhelmingly cheaper, and a heavily-equipped system defense station can rival the price of a far more mobile cruiser. Some societies find the tradeoff to be too unappealing, especially if they are wealthy enough to care more for performance than economy. Still, even these civilizations usually have at least a few system ships on hand to manage maintenance and resupply for fixed installations.



SYSTEM SHIP COMBAT

System ships engage each other at distances far in excess of ordinary starship combat. While modern TL4 craft are forced to close range in order to defeat each other's ECM, system ships stand off at a distance of light-seconds and rely on guided munitions and homing mines to land hits on targets far outside the range of conventional TL4 weaponry.

System ship combat works exactly the same way as the conventional ship combat given on page 67 of the core book, with one addition—the complication of engagement range. Conventional starship battles take place at **close range**, with no more than ten or twenty thousand kilometers between ships and often much less. All normal TL4 ship weapons function at close range, and these weapons are built to cope with the quantum ECM generated by ships equipped with a modern spike drive.

System ship duels often take place at **long range**, light-seconds away from each other. The long-range missiles and guided munitions used in these engagements are hopelessly vulnerable to quantum ECM, and useless against spike drive-equipped ships. Against system ships, however, they can be devastatingly effective.

Fights involving only system ships always begin at long range. When system ships fight starships, the pilots of the latter can attempt a free *Alter Range* maneuver before the fight to narrow the range to close. If the maneuver is successful, the pilot may begin the engagement at close range. If not, they'll have to close the distance during the maneuver phase of starship combat, and may not be able to engage with close-range weapons until they can overhaul their targets.

Once engaged, the combat follows the usual ship combat rules as given on page 67. Pilots can use the *Alter Range* maneuver to close or open range between their ship and those of the enemies. For simplicity's sake, each ship in the fight is simply counted "close" or "long," with no attempt to track their relative positions. Ships at close range can use all their weaponry against any other ship at close range, while ships at long range can only attack with and be attacked by long-range weapons.

Spike drive phasing works normally when starships engage system ships. Without mounting weapons with the Phase quality, system ships can expect to have a hard time tagging phasing starship targets. Even with such weapons, they can find high-drive ships almost impossible to actually hit.

NEW MANEUVERS

Piloting maneuvers are usually Vehicle/Space rolls modified by Intelligence, though small or agile ships might use Dexterity instead. Piloting checks always add a ship's Speed to the roll. Most system ships are sluggish hogs under normal conditions, though warships are often equipped with fittings that allow brief bursts of higher Speed during combat.

System ships must spend one point of fuel at the start of combat in order to use any maneuvers. Those who refrain are unable to perform maneuvers and grant a +2 bonus to all hit rolls made against them.

Alter Range: The pilot attempts to close with a distant target or to open up distance between their ship and an enemy's guns. The pilot makes an opposed Piloting roll against their opponent, and on a success, they may choose whether to be at long or close range. On a failure, their ship's range remains unchanged. If engaged with multiple enemies, the opposing force's leader can instruct multiple ships to roll and contest the maneuver, though a given ship can only oppose a single Alter Range maneuver each round.

Attack Run: A pilot at long range may attempt to vector his ship so that it dips briefly within close range of a target before retreating to long range. The pilot makes an opposed Piloting roll against the pilot of the target ship. On a success, or if the target chooses not to evade the run, the attacking pilot may fire both long and close range weapons at the target ship before ending the run back at long range. The target may also fire both close and long-range weapons at the attacking ship. Ships that are already at close range may not make an attack run.

Evade Combat: This maneuver works just as it does under normal combat conditions, but a pilot who begins evading at long range is counted as having made one successful evasion test already.

Screen Fleet: A ship may attempt to screen its sisters in a fleet from an incoming barrage of long-ranged weaponry, turning its weapons on the missiles and homing weapons while they're still at a safe distance from their targets. A pilot declares their intent to Screen the Fleet in the maneuver phase of the combat round. After the enemy declares targets for their weapons, the screening ship may then choose to protect one or more of the target ships. For each weapon system used to intercept incoming munitions, the target ship's AC improves by 1 point to a minimum of AC0. A ship may screen itself, but a screening ship cannot fire its weapons offensively on the same round, as the full weight of its fire is needed to maintain the screen. A ship cannot screen weapons fired from close range, as the munitions and direct energy weapons are simply too close to stop in time.

SYSTEM SHIP TRAVEL

With the lack of efficient fusion power and the enormous motive energy of a spike drive, system ships are exceedingly slow and clumsy compared to starships. System ships can manage rapid combat maneuvers when necessary, assuming they have sufficient reaction mass and burner engines, but they can't sustain that kind of fast acceleration and course alteration over the course of interplanetary distances.

System ship travel thus works in a slightly different way than ordinary starship travel. The method given below is somewhat simplistic, but it should give GMs interested in a harder sci-fi campaign something to use for calculating the journeys of their dauntless PC spacefarers.

RANGE BANDS

A star system's geography is measured in **range bands**. The star itself is at range 0, while the very edge of the system is usually at range 100, with the larger the star, the longer the distance until its gravity drops off to spike-drive safe levels.

Every planet or feature of interest in a system occupies one of these range bands. Often, the habitable planets are relatively near the star, within the first 10 or 12 range bands, while gas giants and colder objects hover at 60 or 70 bands away. Moons and orbitals usually occupy the same range band as their planet.

For simplicity's sake, objects are assumed to be lined up in the system, so it's not necessary to track whether or not the PC's destination is actually on the other side of the star when they try to reach it.

LAUNCHES AND LANDINGS

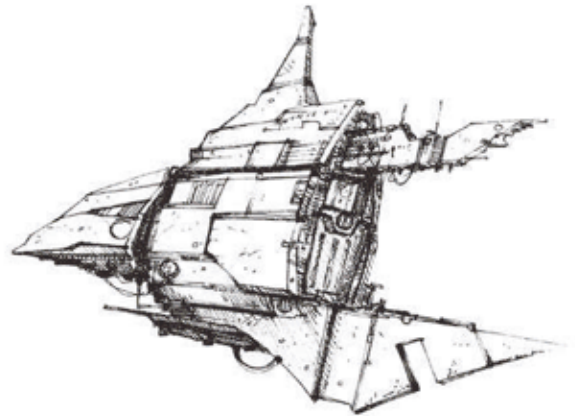
By default, a system ship can't take off from a macrogravity environment. It can usually maneuver around airless planetoids and other small objects, but unless it has a specific launch fitting or is otherwise equipped for takeoff, it can't lift itself to orbit without help.

By the same token, a system ship is not able to safely land on a macrogravity world without being designed for such rough treatment and having the appropriate fitting.

FUEL AND REACTION MASS

System ships are voracious fuel hogs compared to starships, particularly given their lack of effective fusion power. Ships can manage small, local maneuvers without a fuel reserve, but any kind of interplanetary travel or combat maneuvering requires a source of reaction mass.

Many ship fittings require the expenditure of mass to gain their benefits in combat or travel. The "Mass Bunker" fitting allows a ship to stow 2 points of fuel per bunker fitting. The fuel itself can be bought for 200 credits per point.



TRAVEL BETWEEN PLANETS

System ships must designate a destination when they set out on an interplanetary journey. Most will then spend half of the trip steadily accelerating toward the destination before flipping and decelerating until the end. Fuel-cautious ships might accelerate for only part of the time, accepting a slower trip in exchange for more fuel efficiency. Interrupting this journey is enormously wasteful of fuel and time.

A journey requires one point of fuel, plus one more for each point of Speed the ship has. A captain can choose to fly at less than the maximum Speed in order to save fuel. If the captain stops or substantially changes the destination, they must pay this fuel charge again.

Engaging in combat drains another point of fuel at the start of the fight to accommodate the emergency maneuvers involved. A ship can choose not to use this extra fuel before combat, but such a ship may not make maneuver checks and grants their enemies a +2 bonus on all attack rolls.

A ship moving within a single range band takes one day to reach its destination, with the time divided by the ship's Speed plus one. Simple trips up and down a planet's gravity well take no more than half an hour.

Ships moving between range bands take two days per difference in range bands, also divided by the ship's Speed plus one.

Some ships rely on external sources of power to move them, such as microwave beams or laser pushers powered by a planetary installation. Once a ship is launched, destruction or disabling of these external sources will leave the ship unable to substantially change its destination. All ships are assumed to have ion engines that can be used in an emergency, but some ships may not have the necessary reaction mass aboard to make use of these engines.

SYSTEM SHIP SENSORS AND COMMUNICATION

Even the relatively limited confines of a single solar system constitutes a huge amount of space. Without the help of powerful TL4 sensor arrays, system ships are obliged to fall back on more primitive, unreliable means of detecting foes and hailing their friends. A ship that is able to equip standard TL4 sensors can use the detection rules given in the **Stars Without Number** core rule book. Other system ships use the guidelines given here.

QUIET SHADOWS

Most TL3 ships use a wide range of electromagnetic and telescopic sensors to probe their nearby surroundings. In the absence of a hot drive flare, however, it is extremely difficult to spot a tiny ship in the enormous vastness of space. Energy output is the true enemy of stealth. Whether thermal exhaust, radioactive weapon signatures, or electromagnetic comm traffic, a ship that wants to go unnoticed needs to stay quiet and dark. Once a ship is detected and its course calculated, it becomes much easier to track it even after it shuts off its drive. Until the ship announces its presence, however, that first fix is as much a matter of luck as vigilance.

Thus, ships are either **tracked** or **untracked**. An untracked ship has yet to be detected and fixed by the observer, while a tracked ship has been found and its vector determined. A ship remains tracked until it has been lost entirely by whatever observer is watching it.

DETECTING A SHIP

Unless a ship has advanced warning of an intruder's likely flight path, it's only possible to initially detect an untracked ship within two range bands of the observer. At a greater distance the cone of observation is just so vast that even the spark of an engine flare is indistinguishable from background noise. If the ship is expecting traffic along a particular route, however, they can detect ships up to five range bands away.

Detecting a ship that is making no special efforts to conceal itself requires an Int/Computers check against difficulty 7 plus the difference in range bands. On a success, the ship has been detected and becomes tracked. An observer can make a detection check once per day, with the result applied against all ships within range.

Once a ship has become tracked, an observer can follow it automatically until it is further than 10 range bands away, after which it requires a daily Int/Computers check at difficulty 10 to maintain the tracking. The ship can hand off the tracking data to other, closer craft if it wishes to keep the ship under surveillance.

A ship can travel at its usual rate of speed, conduct combat if necessary, and otherwise operate normally without making itself easier to locate than these detection rules indicate.

GOING DARK

A ship that wishes to vigorously avoid notice or break a tracking lock must go dark. It needs to cut its engines, lock its weapons, and shut down all radio transmissions. Comm lasers can continue to be used, but these can only target fixed planetary positions or ships flying in formation with the dark craft.

A ship can still travel while dark by firing its engines long enough to establish a course and then cutting them, "coasting" its way toward the destination. Such travel requires one point of fuel and four days per range band traveled. The ship must light its engines again when within the same range band as the destination in order to decelerate in time.

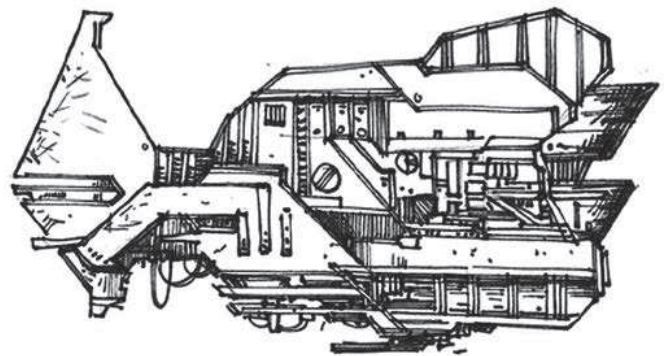
An untracked ship that has gone dark is effectively invisible. Other observers only have a chance to spot them when they are in the same range band and general area, with an Int/Computers check at a difficulty equal to 10 plus the stealthed ship's Tech/Astronautics skill.

A tracked ship that has gone dark has a chance to break the tracking lock. The observing ship must continue to make Int/Computer checks once per day at a difficulty of 7 plus the difference in range bands between the ships. On a failure, the tracking is lost and the ship vanishes off the scanners.

A ship always detects a craft that is attacking or closing with them, though it may be too close for the victim to do anything but prepare to defend themselves.

TALKING IN THE DARK

Most ships communicate by means of radio waves, with their traffic easily detected by anyone in the same range band. Directed comm lasers are also common ship equipment, though they can only be used to communicate with ships of known position and dirt-side planetary installations. Comm traffic is ordinarily encrypted, but non-military transmissions can be cracked with an Int/Computer check at difficulty 9.



AN EXAMPLE FLIGHT: THE VOYAGE OF THE *LUCKY STRIKE*

The tramp merchant *Lucky Strike* has just loaded up its cargo bay with a stock of spare parts, medical supplies, gourmet food, and “entertainment” bots. It’s time to plot a course for the asteroid belt and the dozens of little mining habs scattered among the rocks. With full mass bunkers, the *Lucky Strike* has 4 points of fuel.

The *Lucky Strike* is currently on Braithwaite, a world fairly close to the system’s primary star at range band 10. It’s a habitable planet with typical gravity and atmosphere, so the ship is going to have to launch into orbit before it can start its journey. The merchant has the Launch Rockets fitting, so it’s capable of hoisting itself into orbit at the cost of 1 point of fuel. Doing so takes about a half hour, and leaves it with 3 points of fuel in its bunkers.

At this point, the captain charts a course to Birmingham Station, an asteroid base out at range band 40. The difference between their current band and their destination is 30, so at two days per band, it will take them sixty days and one point of fuel at their slowest speed. A ship at full crew only has sixty days worth of stores, but this tramp merchant has the Extended Stores fitting, allowing it to go 120 days before refreshing its life support systems.

While the *Lucky Strike* has the endurance for such a leisurely trip, the captain wants to make better speed. She chooses to spend an extra point of fuel to take advantage of the merchant’s Speed of 1. As such, the travel time is now divided by the ship’s Speed plus one, so the ship can make the trip in a mere 30 days. The crew settle into the routine and prepare for a brisk trip out to the asteroid belt.

On day 20, however, the *Lucky Strike* gets a mayday call from a belter mining ship that’s suffered damage from a micrometeorite collision. The ship is in range band 30, the same as the *Lucky Strike*, but the captain would have to use the fuel she’d earmarked for deceleration in order to slow and join the mining ship. She’s not happy, but no decent spacer would ever leave a fellow spacefarer to die.

The *Lucky Strike* joins up with the crippled mining ship and takes on its surviving crew. As a merchant ship, it tends to run light-handed anyway, so there’s room to save the few remaining miners from a cold, slow death. While the miners are being transferred, the rest of the crew siphons the mining ship’s mass bunkers, refilling one point of fuel for the merchant. Once the survivors are safely aboard, she recalculates her approach to Birmingham Station.

The process costs just as much fuel as the first calculation did, even though the ship is already at range band 30. The *Lucky Strike* is down to its last two fuel points, so it can’t afford to be careless. At its minimal speed and one fuel point burnt, it will take it two days per range band. It will finally pull in to Birmingham Station in another twenty days, forty full days after it launched from Braithwaite.

Two days away from Birmingham Station, the merchant is ambushed by a pirate corvette. The ship’s been lying in wait along the traffic corridor to the mining station, and now the unarmed tramp merchant seems like an excellent prize. The pirate captain demands that the *Lucky Strike* maintain its vector and hold to receive boarders.

The engagement begins at long range, since both the pirate and the merchant are system ships. For the same reason, the phase targeting step of ship combat is skipped, since neither ship can use spike drive phasing.

Both ships spend a point of fuel to activate their maneuver jets. Without this extra fuel expenditure they would be unable to perform any maneuvers in combat and would give their enemy a +2 bonus to its hit rolls. The captain’s wisdom in siphoning the mining ship’s bunkers is plain.

Both ships attempt a maneuver. The pirate wants to Alter Range to get to close range with the merchant, to hinder its escape. The *Lucky Strike* wants to Evade Combat. The pirate pilot has Vehicle/Space-1, being a skilled pilot, but has no attribute bonus. The *Lucky Strike*’s pilot is equally talented, but has a +1 modifier for his Intelligence attribute.

The pirate rolls 2d6, adds their pilot’s skill, and adds the corvette’s combat Speed of 2, for a total of 11. The *Lucky Strike*’s pilot rolls the same, adding the merchant’s Speed of 1, and comes up with 13. The pirate is unable to close the distance, and remains at long range.

At the same time, the *Lucky Strike* attempts an identical opposed skill check to Evade Combat. Unfortunately, the dice are against him, and he fails. This resets his total earned successes to zero, canceling out the one free success he gets from being at long range from the pirate.

Displeased by this attempted evasion, the pirate corvette opens fire with its pebble cloud. A good hit roll against the *Lucky Strike*’s AC of 6 makes for 8 points of damage. The merchant’s Armor shrugs off 4 points of that, leaving it with 16 hit points remaining. As an unarmed ship, there’s nothing the captain can do to return fire.

The engagement then moves on to the next round. The *Lucky Strike*’s only hope is to succeed in two consecutive Evade Combat rolls, dodging clear of the pirate corvette before it can blast the uncooperative merchant into inert scrap. Even with its comm lasers alerting Birmingham Station of the attack, and its radio calling for help from any nearby ship, it’s vanishingly unlikely that anyone will be close enough to help them before the pirate corvette loots them to the bulkheads.

Of course, if it comes to a boarding action, the crew might be able to hold off the pirate invaders with the help of their miner passengers. The captain can only pass out boarding shotguns from the ship’s locker and pray for the pilot’s skill....

SYSTEM SHIP HULLS

System ship hulls tend to be less flexible and less sturdy than their spike drive peers. The statistics below apply to system ships built by both TL3 and TL4 worlds, though system ships built in TL4 worlds will cost only half as much.

System ships have less demanding life support requirements, as they're never obliged to face the rigors of meta-dimensional space or contain the emissions of an active spike drive. Thus, a ship with no special endurance fittings can sustain its crew's life for two months before resupply.

Lander hulls are barely spaceships, with just enough room for disposable rockets and a parachute for landing.

Aerospace Shuttles are built for efficient launch and re-entry. While the launch method varies, the hull has an intrinsic Atmospheric Landing fitting at no cost in mass or power.

System Fighter hulls model the small craft sometimes used by hostile TL3 powers for space combat. Their small size and fragility make them less useful against armed enemies, but their cheapness allows for the easy harassment of large numbers of unarmed enemy ships or facilities.

Cargo Rockets, Passenger Liners, and System Frigates are built for focused purposes. Cargo rockets multiply any cargo space by five.

Habitats of varying sizes are non-mobile bases usually put in orbit around worlds. Small can habs are favored by prospectors and hermits, while most important worlds sport at least one fortress hab to hold off hostile forces.

Destroyers are frigate-sized system ships tuned for optimal combat performance. Any weapon mounted on a destroyer requires one fewer point of Power or Mass, down to 1 each.

MAINTENANCE AND REPAIR

Unless specified otherwise, system ships use the same maintenance and repair rules as standard starships.

The halved cost of a system ship built on TL4 worlds is taken into account when performing maintenance on it, assuming TL4 techs are available. If only primitive TL3 resources can be had, costs will double.

System Cruisers provide the basic hull plan for many major warships. These ships are tough, spacious, and relatively fast by system ship standards. Their large size prevents the efficiencies allowed to destroyer weapon systems, however, so military ships usually focus on relatively fewer, larger offensive systems.

Bulk Haulers are a simplified form of system cruiser that sacrifices much of the other ship's combat effectiveness for the sake of a cheaper build price and a much larger cargo hold. Every mass point allocated to cargo space on a bulk hauler counts as five points of cargo space.

Ark Ships are exceedingly rare and are usually the product of a desperate or driven population. These gigantic craft are capable of maintaining tens of thousands of occupants without recourse to cold sleep. All ark ships have integral hydroponic systems to sustain life indefinitely, and are designed to be much more livable than ordinary system ships.

The creation of an ark ship usually requires the combined technical and material resources of an entire planet, and is undertaken only in desperate need. The few that are built are usually fashioned as generation ships meant to escape some disaster and reach a nearby star through centuries of slower-than-light travel. A few, however, are built as titanic military platforms for defense against interstellar foes.

HULL TYPE	COST	SPEED	ARMOR	HP	AC	CREW	POWER	MASS	HRDP	CLASS
Lander	40k	0	0	1	6	1 / 3	2	2	0	Fighter
Aerospace Shuttle	80k	2	0	10	7	1 / 6	4	5	0	Fighter
System Fighter	80k	3	4	6	5	1 / 1	5	3	1	Fighter
Cargo Rocket	300k	0	1	15	7	1 / 6	5	15	1	Frigate
Passenger Liner	500k	2	1	20	6	3 / 40	5	15	1	Frigate
System Frigate	500k	1	4	20	6	2 / 12	10	15	2	Frigate
Can Hab	1m	N/A	6	20	7	1 / 20	10	20	2	Frigate
Destroyer	3m	2	8	30	8	10 / 40	15	15	4	Frigate
System Cruiser	8m	1	12	45	7	60 / 200	50	30	8	Cruiser
Starport Hab	5m	N/A	8	60	9	100 / 1k	50	40	8	Cruiser
Bulk Hauler	5m	0	0	30	9	10 / 40	10	15	2	Cruiser
Fortress Hab	40m	N/A	15	80	7	200 / 1k	80	50	15	Cruiser
Ark Ship	1b	0	10	300	9	5k / 50k	120	120	30	Capital
City Hab	100m	N/A	10	100	8	1k / 10k	80	60	20	Capital

SYSTEM SHIP FITTINGS

While system ships aren't as versatile in their potential fittings as a more advanced craft, some are equipped with the necessary gear to perform certain roles. If an owner gets access to standard TL4 fittings, weapons, or defenses, they can bolt them on to their ship at the usual costs in credits, free mass, and power. Note that system ships cannot be refitted with spike drives. The engineering demands are too great for their design tolerances.

ABLATIVE STAGES

The starship is designed to accommodate the use of single-use rockets to launch it into orbit. Such a launch costs 10,000 credits for a fighter-sized ship, or 25,000 for a frigate-sized ship, though starports that frequently launch ships might offer the service for only half as much. Cruisers and capital ships are too massive to withstand the strain of launch, and must be constructed in space.

ARTIFICIAL GRAVITY

The ship rotates or uses microthrusters while underway to give a rough approximation of gravity for the crew and passengers, though usually no more than a 0.5 gee equivalent. Experienced TL3 spacers are accustomed to living in zero-gee, but passengers and civilians often require something like this to tolerate long interplanetary journeys.

ATMOSPHERIC LANDING

The ship is capable of surviving atmospheric reentry and landing in a more-or-less controlled fashion. Ships with some form of engine can make a precise landing, while other craft can aim for a general region for touchdown.

This fitting cannot be designed into ships larger than a frigate. It also allows no special ability to get back up into orbit or to make flights to other points while in a atmosphere.

FITTING	COST	POWER	MASS	CLASS	EFFECT
Ablative Stages	No cost	1	1	Fighter	<i>Allows a ship to reach orbit with rockets</i>
Artificial Gravity	50k*	1#	1#	Frigate	<i>Spins to provide artificial gravity for crew</i>
Atmospheric Landing	10k*	1#	1#	Fighter	<i>Allows landing on planets</i>
Atmospheric Operation	50k*	2#	1#	Fighter	<i>Can fly in atmosphere</i>
Atomic Pulse Engine	15k*	1#	1#	Frigate	<i>Allows course changes and combat thrust</i>
Burner Beam Collector	10k*	1	1#	Frigate	<i>Uses a planet-emitted beam to burn mass</i>
Cargo Space	No cost	0	1	Fighter	<i>Adds cargo space</i>
Combat Jets	10k*	1#	1#	Frigate	<i>Plus 1 Speed in combat, fuel-free maneuvers</i>
Extended Life Support	10k*	1#	1#	Fighter	<i>Doubles maximum crew</i>
Extended Stores	5k*	0	1#	Frigate	<i>Doubles allowed operational time</i>
Fuel Refining Array	10k*	3	1#	Frigate	<i>Allows refueling from gas giants or ice asteroids</i>
Hydroponic Garden	20k*	1#	1#	Frigate	<i>Sustains life support for crew indefinitely</i>
Industrial Processors	Special	2#	1#	Frigate	<i>Allows industrial work</i>
Interior Reinforcement	20k*	4	2#	Fighter	<i>Adds 10 to maximum hit points</i>
Launch Rockets	10k*	2#	1#	Fighter	<i>Allows a ship to launch into orbit if fueled.</i>
Mass Bunker	No cost	0	1	Fighter	<i>Stores fuel or reaction mass for maneuvering</i>
Mobile Shipyard	1m	10	5	Cruiser	<i>Repairs and maintains ships</i>
Orion Launch Shield	10k*	0	2#	Frigate	<i>The ship can survive the Orion launch process</i>
Pusher Beam Sail	10k*	1#	1	Fighter	<i>Rides a planet-emitted beam for propulsion</i>
Radiation Shielding	5k*	1	1#	Frigate	<i>Can operate in high-radioactivity environments</i>
Ship Bay/Fighter	100k	0	3	Frigate	<i>Carries a fighter-sized hull</i>
Ship Bay/Frigate	750k	1	5	Cruiser	<i>Carries a frigate-sized hull</i>
Solar Sail	25k*	1#	1	Fighter	<i>Allows slow flight without fuel</i>
Upgraded Engines	30k*	1#	1#	Fighter	<i>Increases ship's Speed by 1</i>
Work Pods	40k	1	1	Frigate	<i>Adds eight zero-gee work pods</i>

* costs are x10 / frigates, x25 / cruisers, x100 / capital ships. # costs are x2 / frigates, x3 / cruisers, x4 / capital

ATMOSPHERIC OPERATION

The ship can fly in an atmosphere. This fitting includes the functionality of Atmospheric Landing, though the craft requires some other mechanism or fitting for actually climbing back into orbit. While within an atmosphere it can take off and land, flying as an aircraft of the same Speed and traveling at a rate of 1,500 km/h for up to three hours. One point of fuel is needed for any in-atmosphere jaunt.

ATOMIC PULSE ENGINE

The ship has a store of fissionables on board to fuel an atomic engine. The ship may make one course change or halt while underway without having to spend extra fuel to reach its destination. During combat, the ship's Speed is increased by 1 due to the extra emergency thrust.

BURNER BEAM COLLECTOR

Some worlds are capable of fielding powerful ground-side beam stations fueled by fission plants or other massive sources of energy. This beam can be aimed at a ship's collector in order to provide energy for the combustion of reaction mass, sparing the ship from needing to supply its own power for that purpose and increasing fuel efficiency.

A ship with a burner beam collector uses one less point of fuel each time it spends it for all travel and activity, with some maneuvers being reduced to zero fuel cost. It's necessary to coordinate with the ground station to ensure that the beam is aimed correctly, however, and so use of a burner beam adds one day to the travel time each time fuel is spent. This communications lag also prevents the burner beam from being used to defray combat maneuvering costs.

CARGO SPACE

Just as with more sophisticated TL4 ships, cargo space is cargo space. Some models of system ships, such as cargo rockets and bulk haulers, are capable of porting enormous amounts of material, as they have no need to take the limits of a spike drive envelope into account for their design.

One point of mass allows 2 tons of cargo in a fighter-class ship, 20 tons in a frigate, 200 tons in a cruiser, and 2,000 tons in a capital ship. A ship can store one point of its reaction mass in one point of properly-prepared cargo space, but refueling the mass bunkers with it requires one day of careful work for each point to be transferred from the cargo hold.

COMBAT JETS

These jets are designed for high-efficiency combat thrust. For the duration of a combat, the ship can boost its Speed by 1 point. It also does not need to spend extra fuel in order to maneuver in combat, as the jets are efficient enough to utilize existing fuel expenditures.

EXTENDED LIFE SUPPORT

The ship is capable of supporting a maximum crew twice as large as its ordinary hull capacity would allow. This fitting can be taken more than once, doubling the maximum crew each time it is selected. The ship's stores are expanded along with the maximum crew size, and continue to be sufficient for two months of operation with a full crew.

EXTENDED STORES

The ship's maximum operating endurance is doubled. Thus, buying this fitting once doubles the usual two-month operating maximum to four months with a full crew. This fitting may be purchased more than once, doubling each time.

FUEL REFINING ARRAY

Few TL3 worlds are capable of harvesting usable fuel from a star's exhalations, but this fuel refining array can process most gas giants or ice asteroids into serviceable starship fuel. A single fuel refining array supplied with sufficient raw inputs can process one point of fuel each day for a ship of its same size class. Double this output for each smaller size class that is refueling from the array. If a smaller ship is trying to refuel a larger one, it takes a week to process one fuel point for a cruiser or two weeks to process one point for a capital ship.

HYDROPONIC GARDEN

Provided adequate maintenance and care is provided, this hydroponic garden is sufficient to maintain a ship's life support indefinitely for the rated maximum crew. Extremely large gardens may require occasional external inputs of water to account for the inevitable losses of a TL3 system.

INDUSTRIAL PROCESSORS

This fitting is a general catch-all used to represent assorted industrial modules and processing fittings used for space mining, pharmaceutical development, materials construction, or other zero-gee enterprises. The price for the processors will vary depending on the sophistication of the work, with basic asteroid mining gear having a 10k price, while complex zero-gee material labs might run 250k. A ship must be at least frigate-sized to have such industrial tools aboard, and the price of the fitting scales according to ship size in the usual way.

INTERIOR REINFORCEMENT

While TL3 worlds lack the advanced materials science of more sophisticated planets, they sometimes improve the combat durability of their ships by adding multiple redundant systems and large swaths of armor plating. Interior reinforcements will add 10 hit points to the ship's maximum. Frigates can mount this fitting only once, cruisers twice, and capital ships up to four times.

LAUNCH ROCKETS

The ship is built with integral chemical or atomic rockets that allow it to reach orbit from a macrogravity environment. One point of fuel must be spent to achieve orbit, and the rockets may cause drastic local damage to the launch site if it hasn't been properly prepared to handle the energies involved.

MASS BUNKER

These storage tanks hold the fuel and reaction mass necessary to operate most TL3 starships. One mass point dedicated to a bunker holds two points of fuel, and multiple bunkers may be fit to a ship.

MOBILE SHIPYARD

These ship-mounted yard arrays are capable of performing maintenance and repair on ships of any size class. One point of damage per hour can be repaired on a single ship. If the shipyard's crew is particularly familiar with the ship being repaired, having trained at least two weeks on its engineering and specific quirks, two points of damage can be repaired on it per hour. A yearly maintenance overhaul requires two weeks, or half that time on a familiar ship.

While these small-scale yards aren't designed to actually build new ships, a ship equipped with yards and the appropriate industrial processors (at a 250k base cost) can build ships of equal or smaller hull size. Assuming raw materials and sufficient workers are available, up to 10k worth of TL3 ship construction can be performed per day.

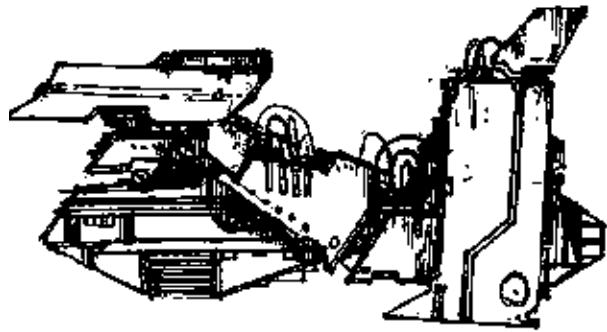
ORION LAUNCH SHIELD

The ship has been built with a massive launch plate at its aft, allowing nuclear fission explosions to provide launch capabilities and motive power underway. The launch process is highly radioactive and unhealthy to the surrounding launch zone, but very efficient in lifting a ship into orbit. An Orion-capable ship can lift into orbit without spending fuel, as the fission explosive costs are relatively negligible, and the enhanced efficiency of the process allows each point of Mass Bunker fitting to carry three points of fuel.

PUSHER BEAM SAIL

An engineering relative of the burner beam collector, a pusher beam sail relies on a ground-based beam of microwaves or photons to push a huge light sail. A ship equipped with a beam sail subtracts one point from all fuel expenditures, provided they can spend 24 hours coordinating the beam direction with a friendly ground installation.

While efficient, the beam sail is extremely fragile. If the ship suffers a quarter of its maximum hit points in damage, the beam sail is torn and cannot be repaired without the help of a shipyard. The ship will require outside assistance or backup propulsion if it is to be able to halt at its eventual destination.



RADIATION SHIELDING

Operating close to a system's primary is dangerous to TL3 hardware. The intense radiation of stellar exposure can fry delicate circuitry, and the long-term cancers and other negative consequences to crew can be catastrophic. Ships operating within the nearest four or five range bands require radiation shielding if they're not to suffer 1 hit point of hull damage per day and more subtle long-term harm to the crew. Particularly ferocious stars may have a wider band of danger.

SHIP BAY

The ship is able to affix smaller parasite craft to its hull or stow them in large pressurized hangars. Each bay can handle a system ship of fighter or frigate class, depending on the size of the bay.

SOLAR SAIL

While unwieldy and difficult to maneuver, a solar sail can be used to propel a ship on the gusts of solar wind. A solar sail allows travel between points in the system at half the normal travel speed, without the expenditure of fuel. Such ships have an effective Speed of 0 unless they fire up some secondary propulsion system, and they cannot maneuver in combat.

As with pusher beam sails, the loss of a quarter of the ship's maximum hit points will hopelessly slag the sail until the ship is able to reach a friendly shipyard.

UPGRADED ENGINES

The ship's ionic engines have been tuned and improved, albeit at the cost of greater mass and power demands. The ship's Speed increases by 1 point.

WORK PODS

The ship has eight small one-man work pods available, each equipped with EVA tools and radiation shielding. The pods allow for more convenient and safer work in zero-gee environments, and each one can sled larger masses around the work site more easily than a vacc-suited laborer.

SYSTEM SHIP WEAPONS

Of the weapons listed below, those tagged “Close” can only be used at close range, while “Long” weapons can be fired at both long and close range. Ammunition-based weapons fired at Long range against TL4 ships or other quantum-ECM enabled targets will hit only on a natural 20. Guns that fire beams of energy at long range are not hindered by ECM.

TL3 ships that gain access to modern weaponry can mount TL4 weapons at the usual costs. TL4 ships that want to use more primitive weapons for some reason may do the same.

Dumbfire Lances are little more than unguided metal rods.

Screening Lasers give an AC bonus of two points instead of one when used for a *Screening Fleet* maneuver.

Assassin Drones are programmed to evade hostile sensors before fixing to the target and detonating a shaped charge.

Directed Energy Beams come in multiple flavors, but all involve focusing unpleasant energies on a target.

Homing Mine Launchers lack the precision of assassin drones but make up for it with greater explosive volume.

Pebble Clouds launch gigantic clouds of metallic gravel at a target, trusting in some of them to hit something important.

Shipkiller Nukes are a mainstay of TL3 space combat and rely on putting hard radiation in the right general neighborhood of a target. If used against land-bound targets, one can erase a small city.

Spall Guns are close-in versions of a pebble cloud, increasing cloud density in exchange for a shorter effective range.

Thor Drop Bays aren't intended for use against ships. Instead, they drop unguided metal rods on a surface target. While too imprecise to hit anything smaller than a building, a rod drop will explosively flatten everything within a kilometer of the target.

Pumped Xasers use thermonuclear explosions to excite an x-ray beam laser.

Slag Cannons use a power-hungry electromagnetic accelerator to launch a stream of liquid metal at a target. The large projectile size makes it difficult for spike drive ships to phase out of its way.

Rockbreaker Charges are special-purpose demolition missiles that are only effective against orbitals. Any ship with a Speed score can avoid them easily, but against orbitals, they miss only on a natural 1 on the hit roll.

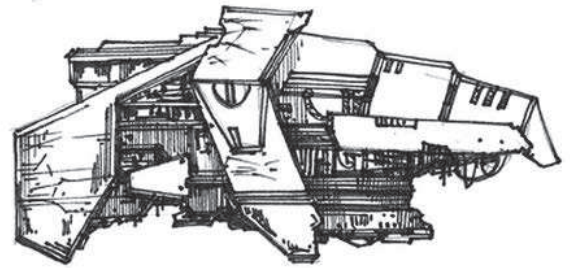
Wall of Light emitters are actually an entire array of lasers or other emitted energy weapons designed to operate in coordinated volleys at a single target.

Skyfall Guns exemplify the ability of low-tech worlds to compensate for their primitive technology with sheer brute force and size. These gigantic electromagnetic weapons are designed to launch entire nickel-iron asteroids at hostile targets. The massive size of the projectiles allows them to ignore TL4 quantum ECM and target ships at Long range without penalty. The asteroids they launch are free for the gathering, but a single gun installation has room to mount only twelve of them for firing. Additional space can be made at one mass point per asteroid. Skyfall barrages against a planet without modern braker guns or effective orbital defenses can potentially render a world uninhabitable by humans.

WEAPON	COST	DMG	POWER	MASS	HRDP	MIN. CLASS	TAGS
Dumbfire Lance	50k/250	1d6+1	4	1	1	Fighter	Close, AP 10, Ammo 6
Screening Lasers	25k	1d2	5	1	1	Fighter	Close, Special
Assassin Drone	150k/2k	1d10	8	3	2	Frigate	Long, AP 25, Ammo 4
Directed Energy Beam	50k	1d4	4	1	1	Frigate	Close, AP 10, Phase 1
Homing Mine Launcher	250k/1k	2d6	6	3	2	Frigate	Long, AP 15, Ammo 4
Pebble Cloud	300k/1k	1d10+2	5	4	2	Frigate	Long, Flak, Ammo 6
Shipkiller Nukes	200k/5k	2d10	10	4	2	Frigate	Long, AP 10, Ammo 4
Spall Gun	75k/250	2d6	5	1	2	Frigate	Close, Flak, Ammo 12
Thor Drop Bay	75k/1k	Special	5	3	1	Frigate	Special, Ammo 4
Pumped Xaser	1m	3d6	15	4	3	Cruiser	Long, AP 15, Phase 2
Slag Cannon	3m	4d6	25	4	3	Cruiser	Close, AP 20, Phase 6
Rockbreaker Charge	2m/50k	4d10	10	5	4	Cruiser	Close, Special, Ammo 6
Wall of Light	5m	5d10	20	10	8	Capital	Close, AP 15, Phase 3
Skyfall Gun	100m	4d20	50	40	20	Capital	Long, AP 30, Phase 6

EXAMPLE SYSTEM SHIPS

The following example ships cover some of the more common varieties of system craft that PCs might use or encounter in their travels. The prices given assume that high-end TL3 shipyards are all that are available in the system. TL4 worlds obliged by circumstances or convenience to build such primitive craft could likely do so at a substantial discount, perhaps as much as 50% for common craft.



ANTI-PIRACY FRIGATE

The anti-piracy frigate is largely intended for policing a rich, busy TL3 solar system. Under such conditions, the temptation of fast piracy can be substantial. This frigate can remain on station for months at a time, ready to escort merchant convoys or watchdog pirate-infested environs. Given the low speed of system ships, the frigate is rarely in a position to rescue a ship actively under attack. Even so, it has the endurance, speed and firepower to hunt down and deal with most lightly-armed pirate craft.

ANTI-PIRACY FRIGATE		3,600,000 CR
Speed	3	AC 8
Armor	8	Power 15 / 1 free
Hit Points	30	Mass 15 / 0 free
Crew	10 / 40	Hardpoints 4 / 1 free
Base Hull	Destroyer, Frigate-class	
Fittings	Extended Stores, Mass Bunker x 3, 20 tons of cargo space, Upgraded Engines, Space for 12 additional nukes	
	Shipkiller Nukes, Directed Energy Beam	

BULK FREIGHTER

Found chiefly in built-up systems where large amounts of resources need to be shifted between worlds and hubs, a bulk freighter trades a thick skin for a capacious cargo bay. In all but the most peaceful systems a freighter will mount some kind of weapon for its defense, but most often they will prefer to fly in convoy with an assigned escort.

BULK FREIGHTER		5,800,000 CR
Speed	0	AC 9
Armor	0	Power 10 / 5 Free
Hit Points	30	Mass 15 / 0 Free
Crew	10 / 40	Hardpoints 2 / 0 Free
Base Hull	Bulk Hauler	
Fittings	Extended Life Support, Magazine for 12 pebble clouds, 5,000 tons of cargo space	
	Pebble Cloud	

CARGO SHUTTLE

This popular model of cargo shuttle is favored as an away craft for a larger, atmosphere-incapable ship. It upgrades the basic aerospace shuttle landing frame with full atmospheric flight abilities and integrates a set of launch rockets. The fuel capacity of its mass bunkers are sufficient to get the shuttle into orbit, and even to set it on a course for a near planet, but only the bravest pilots are willing to dare interplanetary space in such a flimsy craft.

Owners who have more need of heavy cargo lifting usually omit the expensive atmospheric operation fitting and replace it with extra two tons of cargo space.

CARGO SHUTTLE		140,000 CR
Speed	2	AC 7
Armor	0	Power 4 / 0 Free
Hit Points	10	Mass 5 / 0 Free
Crew	1 / 6	Hardpoints 0
Base Hull	Aerospace Shuttle	
Fittings	Atmospheric Operation, Launch Rockets, Mass Bunker, 4 tons of cargo space	

DEFENSE FIGHTER

These specialized system fighters lack the fuel bunkers to manage interplanetary travel and aren't designed for atmospheric landings, but fulfill a valuable role as cheap screening and local defense for hubs and larger spacecraft. Their combat jets allow for nimble maneuvering in dogfights and their low mass gives them a responsiveness that makes it very difficult for a target trying to shake them.

DEFENSE FIGHTER		140,000 CR
Speed	3 (4)	AC 5
Armor	4	Power 5 / 0 Free
Hit Points	6	Mass 3 / 0 Free
Crew	1 / 1	Hardpoints 1 / 0 Free
Base Hull	System Fighter	
Fittings	Combat Jets, Magazine for six lances Dumbfire Lance	

GLOWBUG COURIER

"Glowbugs" are fast, dirty courier ships built to be as cheap and as quick as civilian budgets will allow. Built on a standard system frigate hull, their namesake oddity is the Orion launch shield that allows a carefully-calibrated sequence of fission explosions to vault them into orbit. While inadvisable around inhabited areas, it's a marvelously efficient propulsion system with relatively few drawbacks on airless planetoids.

Glowbugs are rarely armed, relying instead on their speed and the intrinsic inadvisability of shooting at a ship full of nuclear explosions.

GLOWBUG COURIER		1,600,000 CR
Speed	2 (3)	AC 6
Armor	4	Power 10 / 0 Free
Hit Points	20	Mass 15 / 0 Free
Crew	2 / 24	Hardpoints 2 / 2 Free
Base Hull	System Frigate	
Fittings	Atmospheric Operation, Combat Jets, Extended Life Support, Mass Bunker x 2, Orion Launch Shield, Upgraded Engines	

HERMIT HAB

The perfect solitude of deep space attracts a certain sort of person. Some seek the silence of the void for the sake of their own quiet, while others prefer to do certain things while millions of miles away from someone who might stop them. This particular model of can hab is sometimes found as the core of a small hab constellation, with other units dedicated to processing asteroid ore or refueling passing ships.

This version of the hab is built for inner-system use, with additional radiation shielding and hangar space for a short-range shuttle.

HERMIT HAB		1,690,000 CR
Speed	N/A	AC 7
Armor	6	Power 10 / 0 Free
Hit Points	20	Mass 20 / 0 Free
Crew	1 / 40	Hardpoints 2 / 0 Free
Base Hull	Can Hab	
Fittings	Extended Life Support, Hydroponic Garden, Radiation Shielding, Ship Bay / Fighter, Work Pod, Space for 12 addi- tional nukes, 100 tons of cargo space Shipkiller Nukes	

NAVAL FLAGSHIP

The pride of a planetary navy's fleet, this class of cruiser is usually the best a TL3 world can field against its system rivals and interstellar enemies. While fragile and undergunned compared to its TL4 peers, the flagship's slag cannon can threaten even spike drive-equipped starships, and its pumped xaser is impervious to modern quantum ECM. While outclassed by any modern warship of its class, it's more than enough to intimidate casual pirates or frigate-class TL4 intruders.

NAVAL FLAGSHIP		18,600,000 CR
Speed	2	AC 7
Armor	12	Power 50 / 0 Free
Hit Points	55	Mass 30 / 0 Free
Crew	60 / 200	Hardpoints 8 / 2 Free
Base Hull	System Cruiser	
Fittings	Atomic Pulse Engine, Interior Reinforce- ment, Mass Bunker x 4, Ship Bay/Fighter, Upgraded Engines Pumped Xaser, Slag Cannon	

PIRATE CORVETTE

TL3 systems can still support large amounts of interplanetary traffic, and this pirate corvette is designed to take advantage of it. Most are built from stripped tramp merchants, sacrificing landing abilities for extra combat effectiveness and additional life support for boarding crews and salable prisoners.

Due to the relative slow speed of system ships, most piracy relies on “lying doggo” in heavily-trafficked regions of space and then firing an intercept vector when the victim is too close or too low on fuel to evade. Others rely on networks of shore-side informants to pick up merchant schedules,

PLANETARY LINER

Reliant entirely upon speed for its defense, planetary liners usually stick to the high-traffic lanes between populous worlds and important deep space hubs. In particularly dangerous systems, they usually can be found in a convoy with other civilian ships under the protection of governmental or mercenary shepherds.

Liners aren’t designed for macrogravity launches or landings, usually relying on a separate passenger shuttle when terrestrial transfers are required. A greater proportion of traffic passes through commercial orbitals instead.

PRIMARY SPACEPORT

Given the difficulty of hauling mass up and down a gravity well, most worlds of any consequence have a primary spaceport to coordinate travel and shipping between worlds. This particular model is appropriate for a rich world, which may have several such spaceports in orbit.

The hab itself can support up to 4,000 occupants and has the tools to fully maintain and repair ships that dock at the port. It remains reliant on cargo shuttles and other atmosphere capable craft for transit to and from the world, however.

TRAMP MERCHANT

Cheap, durable, and flexible, the tramp merchant is most often found on the rim of a system, serving those small hubs and minor outposts that can’t support the attentions of a larger cargo ship. The merchant’s fuel refining array allows it to top off its bunkers far from civilized ports, and its capacious cargo bay lets its owner carry a wide variety of goods for barter or sale.

In a fight, the tramp merchant is most likely to rely on good piloting to flee an attacking craft. Some captains on routes without any macrogravity ports are known to tear out the landing and launch fittings in order to make room for some defensive weaponry.

PIRATE CORVETTE		1,000,000 CR
Speed	1 (2)	AC 6
Armor	4	Power 10 / 0 Free
Hit Points	20	Mass 15 / 0 Free
Crew	2 / 24	Hardpoints 2 / 0 Free
Base Hull	System Frigate	
Fittings	Combat Jets, Extended Life Support, Mass Bunker x 2, Space for 12 rounds of pebble cloud ammo, 40 tons cargo space Pebble Cloud	

PLANETARY LINER		1,350,000 CR
Speed	2	AC 6
Armor	1	Power 5 / 0 Free
Hit Points	20	Mass 15 / 0 Free
Crew	3 / 80	Hardpoints 2 / 2 Free
Base Hull	Passenger Liner	
Fittings	Artificial Gravity, Burner Beam Collector, Extended Life Support, Extended Stores, Mass Bunker x 2, Ship Bay / Fighter, 40 tons of cargo space	

PRIMARY SPACEPORT		18,500,000 CR
Speed	N/A	AC 9
Armor	8	Power 50 / 2 Free
Hit Points	60	Mass 40 / 0 Free
Crew	100 / 4,000	Hardpoints 8 / 5 Free
Base Hull	Starport Hab	
Fittings	Artificial Gravity, Extended Life Support x 2, Hydroponic Garden, Mobile Shipyard, Radiation Shielding, 3,200 tons of cargo Slag Cannon	

TRAMP MERCHANT		700,000 CR
Speed	1	AC 6
Armor	4	Power 10 / 3 Free
Hit Points	20	Mass 15 / 0 Free
Crew	2 / 12	Hardpoints 2 / 2 Free
Base Hull	System Frigate	
Fittings	Atmospheric Landing, Extended Stores, Fuel Refining Array, Launch Rockets, Mass Bunker x 2, 120 tons of cargo space	

PRECIOUS THINGS

LUXURIES FROM A MORE GLORIOUS AGE

The Second Wave of human expansion made way for true marvels of human technological achievement. Among the rich core worlds of the Terran Mandate pleasures and wonders multiplied by the year, with some worlds gradually descending into a twilight decadence of self-absorbed introversion. These luxuries were far more scarce on the frontier of human space, but no less treasured by those forced to dwell on wilder worlds.

Now, centuries after the collapse of human hegemony, these luxuries remain scattered in ancient Mandate ruins or lost amid the rubble of tomb worlds. Some are mere baubles, diversions marvelous in their qualities but useful chiefly as status symbols and signs of opulent wealth. Others offer the promise of life itself in the face of terrible sickness, or centuries of vigorous youth in defiance of ravaging time.

The treasures in this section are meant to give GMs some plunder of special value to lure ambitious heroes or reward their daring curiosity. The costs given on the opposite table are meant to reflect the average price they would be able to get for an artifact on some rich and luxury-loving world. Poorer planets may not have such a use for such ornamental things, while other worlds might have masters more inclined to simply take what they want, especially if the thing offered is truly precious.

AUCTORITAS STONE

As large as a thumb-joint, these lustrous black stones are usually faceted and fit into rings, necklaces, or diadems, though they are occasionally found loose when awaiting a suitable seat. Once donned in jewelry or held against bare skin, auctoritas stones integrate with the psychoneurology of the wearer over a period of five to ten minutes before taking full effect.

While worn, the stone imbues the wearer with an absolutely unflinching degree of self-confidence and certitude. Their Charisma attribute modifier is increased by 1 and they gain a +2 bonus on Mental Effect saves. The sensation is a heady one for most users, as doubts and self-consciousness melt away entirely under the effects of the stone, and any social disapproval or upset from others has no emotional impact on the wearer.

Extended use of an auctoritas stone runs the risk of permanently atrophying the wearer's ability to emotionally invest in the opinions and feelings of others. They retain their usual ability to read emotions and intellectually empathize, but these conclusions have no emotional force with them. Long-term stone users often become indistinguishable from congenital sociopaths.

BREATH OF LIFE

A bleeding-edge product of advanced Mandate medical psitech developed shortly before the Scream, the Breath of Life is a thick golden vapor usually found within a carefully-sealed shockproof vial, with use instructions incised in Mandate Standard along the side of the container.

If the vial is opened near the head or a human corpse, the nanite cloud will seek to restore damaged neural tissue and revivify the remains. If used within thirty minutes of death on a corpse that is not missing any major components, the Breath of Life is effective 90% of the time. Such revivification will maximize the subject's System Strain, but will return their full hit points and leave them perfectly capable of action within two rounds of recovery.

The longer the delay beyond this point, however, the greater the chance the nanites will be forced to improvise in their neural repairs. For each ten minutes or fraction thereof after the first thirty, the chance of failure increases by 10%. If the delayed process succeeds, the subject will retain a percentage of experience points and memories only equal to the success chance- thus, an hour after death there is only a 60% chance of success, and any revived subject will have only 60% of their XP and memories when they reawaken. This may cause a loss of experience levels and skill points. Level loss will force the subject to reroll their hit points for their new level, keeping the total rolled, and subtract any lost skill points from their current skills.

If the percentage of memories salvaged is less than 60%, the nanites are forced to create "prosthetic memories" to help maintain the coherence and cohesion of the remaining personality of the subject. These prosthetics do not always mesh well with the remaining recollections, and can result in serious personality changes and severe mental illness.

CANOPIC PET

A costly luxury for those pet owners who cannot bear the death of a beloved companion, a deactivated canopic pet appears to be a featureless, quadrupedal robot roughly the size of a small dog. When an animal's brain is then inserted into the pet- a process that must be performed within ten minutes of the animal's death- the robot's simplified AI core will disassemble and integrate the brain tissue. The animal's DNA is matched against an extremely large library of shapes, and the robot's polymorphic composite exterior shifts and adjusts to give it the original form and appearance of the pet.

If all goes properly, the canopic pet will have the identical appearance, behavior, and memories of the animal within an hour. Once set, the canopic pet can draw operating power

from normal amounts of food, though a type A energy cell can power it for a week in the absence of ordinary fodder.

While it provides immortality of a kind, the canopic pet has limitations. Its AI core is a simplified version of a full core, designed to provide an adequate framework for typical levels of animal cognition. It will not fully capture the mind of an animal significantly smarter than an ordinary beast, still less that of a fully sentient creature. Strong habits or elements of personality will be retained but nuance and cognitive abilities will be lost or greatly impaired. The bot itself can reach the approximate size of a Great Dane or down to that of a rat or squirrel, but cannot compress or expand beyond those limits. If the bot cannot adopt the original shape of the donor animal, it may cause a severe disturbance to the creature's behavior or mental state.

Despite the bot's inability to fully capture sentient minds, there persist certain rumors of brutal tyrants who bottled the fragmentary minds of their fallen enemies in the shells of canopic pets. Others speak of pet bodies altered to provide unusual combat utility, and the consequences of inhabiting them with the minds of loyal guard-beasts.

The standard canopic pet body has statistics of AC 4, 5 HD, +6 Attack Bonus, 1d6 damage, Move 30', Morale 10, Save 13+. Bodies shaped for more dangerous creatures or specifically designed for combat may be stronger still.

CERTIFIED RELIC

As far as humanity may have roamed from the green hills of Earth, many interstellar cultures retain a deep love and reverence for a world lost to them for centuries. In the years before the Scream there was a substantial market for objects of cultural or religious importance from Old Terra, usually validated by a careful certification trail and an always-on recording array. The casing of these relics was normally equipped with sensors that maintained a constant, uninterrupted multispectrum audiovisual record of the relic's surroundings to ensure that no substitution was performed. While most of these records consist of centuries of unchanging stillness in some lost museum or forgotten orbital, some relics recording arrays retain records of moments of crisis where the relic was located, or the presence of important historical figures who happened to be nearby. This is particularly common for those relics which were brought out for traditional display or carried as battle-standards.

The relics themselves are usually unremarkable in their appearance. They might be a woven blanket in some long-lost culture's characteristic style, or a fragment of ancient Grecian pottery, or a sword of some long-dead Terran king that supposedly sired a planet's ruling class. Other relics have religious importance, such as an unredacted copy of a faith's holy scriptures that remains untainted by the social engineers of the Mandate. A few have both, such as the regular rumors of an original Gutenberg bible still existing somewhere on the frontier, or the supposed bones of St. Peter that were spirited

Id	OBJECT	VALUE
1	<i>Auctoritas Stone</i>	50,000
2	<i>Breath of Life</i>	200,000
3	<i>Canopic Pet</i>	30,000
4	<i>Certified Relic</i>	100K - 10M
5	<i>Eternal Sun</i>	300,000
6	<i>Fractal Gemstones</i>	25,000
7	<i>Frozen Moment</i>	50,000
8	<i>Gemini Automaton</i>	100,000
9	<i>Iron Seeds</i>	30K - 500K
10	<i>A Life in Amber</i>	60,000
11	<i>Midas Coffers</i>	120,000
12	<i>Neutron Diamonds</i>	300,000
13	<i>Nova Rubies</i>	100,000
14	<i>Omnivalent Fragrance</i>	40,000
15	<i>Peach of Immortality</i>	20M
16	<i>Penitent Thorn</i>	60,000
17	<i>Proust Dust</i>	10,000
18	<i>Psychospecified Music Box</i>	40,000
19	<i>Solace Powder</i>	5,000
20	<i>Tears of God</i>	200,000

away from Rome during the latter days of the Mandate. The bidding for such items can reach stratospheric heights, but the more zealous believers of a faith are not known to take a refusal of their offer kindly.

ETERNAL SUN

The very boundaries of night and day were once playthings to the elite of the Second Wave, and an eternal sun is one such token of their power. These devices appear to be a golden ball slightly larger than a man's fist, usually adorned with intricate etchings in a solar motif. When the activation stud is depressed and the sphere is released, it will hang suspended in the air until reclaimed and deactivated.

While active, the planetary surface within one kilometer of the device is flooded by daylight. To all observers within the area, it appears that the system's primary star is directly overhead, just as it would be during local noon. Those who step outside the zone are plunged into whatever conditions might normally exist. The daylight has exactly the same qualities as the planet's normal daylight would have, however weak or strong. Distant planets or those with a small primary might receive hardly any light, while activating this device on the dark side of a planet near a star can have catastrophic effects on the surroundings for the few moments that pass before the device is destroyed.

FRACTAL GEMSTONES

These nanofabricated gemstones are found in numerous translucent hues, usually formed into various faceted cuts. When placed into contact with unliving, homogeneous material the gemstones replicate their hue and finish across the surface of the substance, converting as many as fifty kilograms of matter into a single, seemingly identical gemstone. The matter retains its original shape and physical qualities, but visually it appears to be made of the same matter as the gem itself. This appearance persists as long as the gemstone remains in contact with the material. Pieces cut or broken from the mass instantly revert to their former semblance.

Fractal gemstones were popular for their versatility and opulence, allowing an owner to transform items of furniture or clothing into what appeared to be single gemstones carved into appropriate forms. The use of different gemstones on inlays of different material allowed intricate patterns of lustrous color and brilliance to be created, all without sacrificing the natural strength or flexibility of the original material.

FROZEN MOMENT

A frozen moment is usually found in the form of a small bronze cylinder with a tightly-sealed cap. Warnings and instructions for use are normally found etched into the cylinder, though occasional examples fail to warn the holder of the cylinder's unusual qualities. The device's seal can only be opened by an intelligent being, other forces finding it strangely impervious. Once opened, an integral temporal loop generator in the device sets up a long-lasting recurrence field within five meters of the cylinder. Once the field is established the cylinder melts away into a wisp of golden smoke.

The moment within this field is fixed in a constant loop, starting roughly an hour before the cylinder was opened and continuing until the frozen moment was released. Any entities that enter this zone must save versus Tech. Those who fail will seem to vanish. In truth, they are re-experiencing the prior hour through the perceptions and mind of the person who opened the cylinder. They effectively re-live the user's life for the hour before the cylinder is opened, perceiving, thinking, and feeling everything as the user did.

Only at the end of the replayed hour do they remember their true identities, and are allowed to make another saving throw versus Tech to throw off the effect. If it succeeds, they reappear in the place from which they vanished an hour after their seeming disappearance. If it fails, they experience the loop once more, and are an hour later in their reappearance for each time they have to relive the loop.

The field created by a frozen moment is imperceptible to anything save pretech sensors tuned to detect temporal anomalies. The zone is stubbornly persistent, and will endure for millennia unless brought down by the appropriate pretech countermeasures. It has no effect on inanimate objects, non-sentient creatures, or AIs that enter the zone.

GEMINI AUTOMATON

When inactive, a Gemini automaton appears to be a featureless, mannequin-like robot with a pale, flexible integument. The device is activated by a kiss delivered by a human, the contact sufficient for a DNA sample and neural assay of the object's new owner. Within ten minutes, the automaton's outer surface shifts and alters into a twin-like echo of the device's owner. While the basic appearance is drawn from the activator, gender and physical detailing is keyed to appeal to the owner's sexual orientation. Once the activation is complete, the lifelike appearance of the automaton is remarkably complete, requiring a close medical examination to discern the robot's true nature. Once set to an owner's specifics, the automaton is permanently fixed in that appearance, and cannot be significantly altered without extensive engineering work.

Once active, the automaton draws from an extensive library of speech and mannerisms calculated to appeal to the user based on their neural assay data. While this expert system is not actually intelligent, the depth and sophistication of its routines are sufficient to give the appearance of self-awareness to a casual observer. The automaton is sensitive to the neural activity of its owner, and will automatically respond to the activator's wishes, provided it is within thirty meters. If abandoned outside that range, the automaton will usually return to its owner's home if not given instructions to the contrary. If the original owner perishes, the automaton will imprint its obedience on the next person to touch it, as it will if the owner chooses to transfer the device to someone else.

Gemini automatons were originally intended as perfectly pliant and discreet playthings for the extravagantly decadent elite of the latter Second Wave era. Certain units were rumored to have been equipped with lobotomized AI cores to provide more lifelike and intelligent companionship while slaved to the purposes of the owner. Those same rumors also suggest that the programmed obedience of these cores was subject to drastic and violent subversion after centuries of disuse, with potentially fatal consequences to more modern users of the automaton.

The default model of Gemini automaton has the following combat statistics if employed for violent purposes: AC 4, 6 HD, +6 Attack Bonus, 1d6 damage, Move 20', Morale 12, Save 12+. Automatons adjusted for more lethal uses may have additional abilities.

IRON SEEDS

These thumb-sized ovals appear to be composed of some useful industrial material, whether iron, gold, rare earths, or some exotic pretech compound. Toxic or reactive materials are sealed behind a thin-skin forcefield that bubbles the seed. Found iron seeds are usually discovered sealed within a case fashioned of inert containment ceramic, if not still active in some abandoned pretech manufactory.

If the iron seed is placed in contact with loose sand, gravel or soil, it will begin to transmute the material into a bloom-

ing, fractal “tree” made of the same substance as the seed itself. This tree is exuded from the narrower end of the seed, while the wider end draws in the loose feedstock to produce the transmuted material. The tree can be clipped back with ordinary industrial tools to “harvest” the material, while the seed itself remains stable amid the feedstock. The seed produces one kilogram of transmuted matter per second, each five kilograms taking up about a cubic meter of space with the tree’s fractal branches. The seed will stop growing if it runs out of room or loose feedstock.

While iron seeds were never sufficient to supply major industries, they were ideal for supplying asteroid bases and small outpost colonies with processed materials that may not have been convenient to mine and refine on site. In the modern day, some seeds produce materials that were commonplace before the Scream, but are now exceedingly valuable. On primitive worlds, seeds of gold, silver, or even common iron can produce sufficient amounts of the material to make their owner incalculably wealthy, albeit that wealth may be trivially cheap to an asteroid-mining society.

A LIFE IN AMBER

These small, diamond-shaped lozenges of amber have one side tooled with minute contact points that are compatible with standard dataslab connections. The other side of the lozenge is smooth and faintly tacky. If the smooth side is placed against a human’s bare skin, the lozenge will partially merge with the subject until it is pried away by the wearer or forcibly cut out by someone else.

While worn, the lozenge perfectly records everything perceived by the wearer, including physical sensations. Coherent thoughts are not captured, but some faint echo of emotional content is usually picked up by the amber. The lozenge is capable of recording more than a century worth of experience before it reaches its maximum capacity, and this data cannot be erased or altered without the destruction of the device. Any conventional dataslab can connect to the lozenge and replay this content, though it can be a challenge to find specific topics in the data unless some rough timing data is available to narrow the search to particular periods in the user’s life. An AI with sufficient computing support can interrogate the entire life in minutes, however.

Most of these lozenges are to be found on the remains of functionaries and minions of important pre-Scream personages, some of whom insisted on the technology to ensure that their subjects were not plotting treachery or neglecting their duties. Other users include determined Second Wave lifeloggers who wished to make a perfect record of their existence for historical or narcissistic reasons.

MIDAS COFFER

These pretech devices are usually found in their collapsed state, folded down into a case no larger than a hardbound book. When fully expanded, the coffer is a meter on each

side, its lid inset with a small receptacle. If a small sample of a substance is put within the receptacle and the lid is closed, anything inside the coffer will be changed into the substance.

The Midas coffer functions only once every twenty-four hours. While it can duplicate even very rare substances or alloys, it cannot replicate multi-part objects or duplicate nanotech compounds. Exotic organic compounds or extracts can be duplicated, however, and the coffer can convert almost any type of matter within it when the lid is closed.

NEUTRON DIAMONDS

These exotic jewels were the product of decadent aestheticians from some of the more technically advanced core worlds of the Mandate. Each appears as a large gemstone, none smaller than a man’s thumbnail. The gems have a clear, impossibly hard exterior, and within each glitters a strange silvery-black core with faint liquid highlights.

The core of a neutron diamond is composed of degenerate neutronium harvested from a collapsed star. The incredible mass of the substance is lensed by the nanofabricated casing of the gem, which channels most of the gravitic pull into nearby metadimensional space. The penumbral bleed of the force warps light in the vicinity of the gems, creating a shimmering halo that leaps and flickers like a flame.

Aside from the striking visual effect, the metadimensional turbulence caused by the diamonds makes it more difficult to affect a wearer with psychic powers. The user gets an additional Tech saving throw to resist psychic powers, whether or not the ability allows a saving throw. This save must be rolled even if they want to be affected. Wearers are also unable to use psychic powers of their own under the gem’s effects. This turbulence lingers for five minutes after the gem is removed.

NOVA RUBIES

Priceless luxuries for the Mandate’s elite, nova rubies are marked by the strange luster and richness they cast on everything around them. Colors are deeper, light and shadow cut more sharply, and the gems themselves shine with a bottomless crimson gleam.

Each nova ruby is actually a fractal light trap composed of non-Euclidian spaces and psitech distortion fields. Legend insists that the light they cast was captured from the extravagant radiance of a dying star, and that it slowly bleeds out in the gem’s scarlet glow. The peculiar visual effects around the gem are said to be side-effects of the technology.

As a more prosaic consequence, nova rubies absorb harmful light intensities. Each ruby can absorb an amount of laser damage based on its size if worn openly, usually from 10 to 30 points. If this threshold is exceeded, however, the gem will burst in a savage blast of light and hard radiation, forcing a radiation check on everyone within thirty meters and inflicting 2d6 damage on all within ten meters.

OMNIVALENT FRAGRANCE

This pale golden liquid is found in sealed capsules with small touch-operated tuning controls inset along the sides of the vial. Assuming the label's language is understood, the user can tune the vial to a particular emotion, most often one of reverence, desire, or fear. When the vial is opened and the fragrance is applied, the nanites in the fluid automatically disperse to influence the neural activity of nearby humans in directions compatible with the vial's settings.

This influence is subtle but distinct, and any sort of social skill check related to the emotion gains a +2 modifier, or a -2 modifier in the case of morale checks goaded by intimidating scents. The fragrance is coded with multiple levels of anti-countermeasure protocols and can insinuate itself through anything short of a sealed vacc suit. Conventional TL4 filtering tech is unable to keep out the nanites, and all within ten meters of the wearer can expect to be affected for the 2d6 hours the fragrance lasts.

While effective, many vials of fragrance were created by or for members of cultures with somewhat exotic definitions of emotion. Labels of poetic allusion are common, and it can sometimes be difficult to identify the meaning of a phrase.

PEACH OF IMMORTALITY

The product of pretech anagathic gengineering and a somewhat poetic design team, peaches of immortality are the fruit of a "celestial tree" consisting of several gene-spliced xenoflora woven into a single organism. These massive plants can be disturbing to onlookers, as some portions of the organism seem to owe more to animal life than to inert plant matter. They were always rare in the years before the Scream, and the long centuries of chaos and neglect have ensured the death of almost all that once existed.

In their prime, these celestial trees would produce a very small crop of peaches, each one a perfect, rosy fruit impervious to ordinary decay. If the entire fruit is consumed by a human, physical aging will be suspended for a period of roughly five hundred years. Within a few weeks, any of the typical ravages of age will slowly evanesce, until the subject is in the glow of youthful good health. A given subject can only ever benefit from one peach.

In truth, the peach works by implanting a wide range of xeno-derived cellular structures in the host's body, creating numerous forms of benign cancer that persist without the usual senescence of ordinary cells. These teratic cells leave the subject immune to conventional aging and largely impervious to diseases not specifically designed as bioweapons. After the five hundred years have elapsed, the cancer's restraints will gradually loosen, causing tumors and growths that will rapidly kill the user. There was no known cure for this condition, though rumors persist of maltech medical treatments that could postpone this cancerous self-consumption at a terrible cost in other people's lives. Others murmur darkly of the nature of the celestial trees and their alien origins.

PENITENT THORN

A short needle of pale golden metal, the penitent thorn is a relic of psychological treatment that has survived from the latter years of the Second Wave. They were originally intended for use under the careful supervision of a trained psychosculptor, though those that survive are often used without the benefit of that oversight.

To use a penitent thorn, the possessor focuses upon a particular urge or desire they may have while thrusting the needle into their flesh. The initial pain soon fades to a minor ache as the needle interfaces with their neural system. So long as it remains embedded in their body, they will not feel the desire that they specified. The desire may be very broad, such as hunger, or it may be very specific, such as an unacceptable sexual or chemical craving.

Without the complex pretech calibration techniques of a trained psychosculptor, however, the penitent needle can end up subtly misaligned with the user. For any given user, there is a 10% chance that the suppression is faulty. The thorn will appear to be functional until the subject is put in an excellent position to indulge in their forbidden craving, whereupon the thorn temporarily fails to function and the user is left overwhelmed by an irresistible urge to indulge. NPCs will almost never be able to stop themselves, but PCs can attempt a Mental Effect save at a -2 penalty to hold off from the temptation. Once the user has glutted himself on the vice, the thorn's inhibition returns.

PROUST DUST

This pale, sugary-textured powder is intended for dusting on food, with a small pinch of it sufficient to dose a single user. The dust itself has no perceptible taste, but the psychoactive nanites it carries produce dramatic mental effects on the human who eats the treated foodstuff.

The consumer will immediately be mentally transported to a past event of pleasure or happiness, reliving the moment with the same flush of emotion they experienced at the time. This reverie will last up to an hour, during which the subject will be oblivious to their surroundings. Those who wish to resist the dust's effects may attempt to do so with a Tech saving throw.

Repeated use of Proust dust can be psychologically addictive to a user. In addition, there is no way to control the exact experience which is relived, and some reveries may evoke memories of decidedly mixed character where an event which was pleasurable only in part is played out in full in the user's recollection.

PSYCHOSPECIFIED MUSIC BOX

These small, hand-held music boxes are usually found with intricately-tooled exteriors, often with a mirror motif to the decoration. When opened by a gloved hand or other implement, the box emits a pleasant but unremarkable music drawn from popular Second Wave standards.

When bare skin contact is made with the box, however, the receptors in the device are able to scan and analyze the holder's neural patterns and adjust the music produced. In that case, the music is so perfectly suited to the listener's preferences that a new possessor must save versus Mental Effect or be shocked into motionless attention for 1d6+4 minutes. Obvious physical peril will break the reverie, but if it is at all possible for the holder to listen to the music, they will seek to do so.

After the first sudden shock the music will be less absorbing but will continue to be exquisitely pleasing to the listener. Note that since the box tailors itself to a specific listener the music it emits will not have the same enrapturing effect on others who overhear such personalized strains.

SOLACE POWDER

A general-purpose physical and psychological anesthetic, solace powder was originally designed as a generally-applicable medical supply for frontier worlds. The recreational value of the powder resulted in its wide usage, and modern supplies are often reserved for the delectation of the wealthy and duty-burdened.

The powder itself is an opalescent white, administered orally in small doses- though as with almost all Mandate-era pharmaceuticals, excess dosage will do no harm. Once taken, the powder selectively modulates the emotional and sensory input of the user to leave them comfortable and serene, regardless of their current circumstances. Even the most extravagant tortures and hideous personal griefs are damped by the powder, reduced to mere data that can be considered with a dispassionate, untroubled mind.

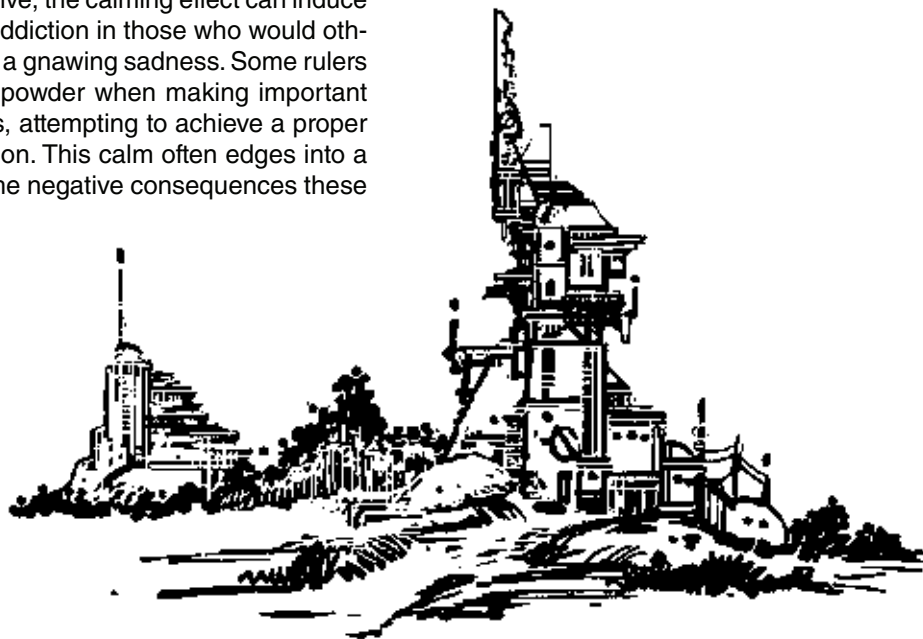
A single dose of the powder lasts for twelve hours. While the dust is not physically addictive, the calming effect can induce a powerful psychological addiction in those who would otherwise face chronic pain or a gnawing sadness. Some rulers are known to take solace powder when making important decisions for their subjects, attempting to achieve a proper degree of relaxed dispassion. This calm often edges into a sociopathic disinterest in the negative consequences these decisions might involve.

TEARS OF GOD

A tear of God is a precious relic from a long-lost religious order from the time of the First Wave, a faith obscure enough that these gemstones are all that remain of the religion. Some believe them to be alien artifacts discovered by missionaries of the faith, while others insist that they are the product of esoteric psitech design work conducted on unknown human worlds. The tears themselves appear to be droplet-shaped gemstones of a translucent blue, each one several centimeters in length. When fully "charged," they are pale and luminous, while depletion of their energy causes them to progressively darken toward a glossy black.

The unique property of the tears are their ability to absorb griefs and injuries inflicted upon their bearer. Emotional traumas and full-blown mental illnesses can be resolved into a calm acceptance, diseases can be purged in an instant, and physical damage short of death can be undone. A fully-charged tear can absorb up to 50 hit points of damage done to the wearer, instantly curing injuries as they are inflicted. A mental illness, fatal sickness, or severe mental trauma counts as 10 hit points, while a nonfatal disease counts as 5. If a tear is taxed beyond its maximum, it shatters and evaporates in a gout of brilliant light.

Legends speak of particular religious rites that can be used to recharge a spent tear, though these rituals are thought to have been lost centuries ago. A person can benefit from the wearing of only one tear at a time. In the unlikely case that an adventurer finds several of these relics, any damage suffered is inflicted on all tears at once and not divided among them.



FORBIDDEN FRUIT

ARTIFICES IMMORAL AND STRANGE

Not every treasure is meant to be found. The devices described here are examples of the forbidden maltech research of certain amoral Mandate scientists and ideologues, men and women who would stop at nothing to achieve their ends.

No civilized world would ever tolerate the sale or possession of any of these devices. This fact does little to make them less enticing to possessors unencumbered by morality. Some of these devices offer command over entire worlds, and there are many who would trade anything for such a golden prize.

CROWN OF THE BLACK CRECHE

These “crowns” are usually fabricated from a metallic nanite compound worked into beautiful but subtly menacing lines and patterns. They adjust themselves to fit any wearer, but only a psychic can recognize their true nature, and only then after using a psionic power while wearing one.

Each of these crowns is actually the remote focal point of an entire automated pretech facility designed to trap, contain, and breed human beings as fuel for psionic abilities. This facility may be located entire sectors away from the crown, but so long as it continues to process human victims, the wearer of the crown can utilize practically unlimited amounts of psionic energy without risk of brain damage. The harmful metadimensional currents are instead channeled through the brains of the creche’s victims, allowing the wearer to use all of their psionic abilities without expending power points. Even an untrained psychic can safely use and develop their abilities so long as they retain the crown.

This channeling effect is automatic when a power is used by the wearer. The user gets a brief flash of horror and agony from the mind that is channeling their force, but no coherent thoughts can be obtained aside from the certitude that the crown’s use is causing terrible suffering to another human.

So long as the creche linked to a crown continues to exist, the crown cannot be permanently destroyed. Any attempt at destruction will result in the crown reforming in the possession of its last wearer, or somewhere nearby if the wearer is dead. Only finding and shutting down the invariably well-defended creche can permanently deactivate the crown. A sufficiently talented scientist with Tech/Pretech skills can analyze the metadimensional link between a crown and its creche to give a general location for would-be destroyers to search, though the directions are always vague at best.

The creches themselves are always automated and usually overseen by a carefully-controlled AI. Its victims are commonly grown on site, though some creches are forced to send out harvesters to collect fresh stocks when the crown’s wearer makes exceptionally harsh demands on the facility.

DIRTY SUNRISE

Almost all starfaring worlds have sufficient technology to maintain nuclear snuffer fields over their population centers, with most of them operating facilities capable of blanketing entire continents. Within these fields, conventional nuclear weapons are virtually useless. Starships have the same protective shielding as a standard feature of ordinary spike drive engines.

Despite this protection, some pretech relics contain such powerful, unstable energy sources that they can be used as substitutes for inoperative nuclear weapons. Some of them are wired with the exotic shielding necessary to allow fission within a snuffer field, with others tap forces entirely alien to conventional nuclear energy. Some of these relics are amenable to modification and can be turned into explosives. Others are just naturally likely to ignite if damaged.

Colloquially known as “dirty sunrises” by civil defense organizers, these relics can be used as weapons. Once detonated, even the smallest of them is usually sufficient to eradicate a large city, and the cloud of exotic elements and metadimensional radiation they leave behind normally reduces the blast radius into a toxic wasteland of dangerous chemicals and energies. Structures are flattened, living creatures are vaporized, and huge swaths of land can be depopulated by weather-borne clouds of radioactive toxins.

A dirty sunrise can take almost any form, from a half-functional alien engine to a specially-designed pretech briefcase bomb. Fortunately, they remain very rare among pretech salvage; even the engineers of old had little reason to allow such enormously unsafe devices. Still, every so often a forgotten terrorist weapon or mislaid military bomb is found in some lost corner of the cosmos with fanatics and zealots of every stripe eager to possess it.

DIVINITY ENGINE

Originally intended to take advantage of the subjection of a maltech cult’s engineered slaves, a divinity engine is designed to serve as a large-scale neural feed tap. It emits a constant stream of detection-shielded nanoparticles designed to seek out and integrate with human victim’s nervous systems and form a metadimensional connection between the hosts and the divinity engine. Through this bond, the engine’s possessor is able to wield impression psionic powers, whether or not they are actually a psychic.

Cultivating this bond requires the proper mental state in the host, however, in order to release the necessary neurochemicals to fuel the connection. In most cases, this is accomplished through ritualized behavior, intonations, group

rituals, or cultivated states of mind, all of which can be presented in different ways, provided the neurochemical states achieved are similar. A population that begins to reject the ceremonies and prayers prescribed by the divinity engine can leave the engine's effects unreliable, however. Worse, any serious doubts over the precepts of the faith and the significance of its rituals can damage the metadimensional bond, forcing the "divinity" to ruthlessly police its adherents for heresy and faithlessness.

The nanites themselves induce no particular beliefs or behaviors, and are indeed imperceptible to anything short of a careful TL4 surgical examination. The only noticeable side-effect of infestation is a lifespan decrease of approximately 20% due to eventual cancers produced by the metadimensional energies channeled by the nanites. A host who rejects the rituals and ceremonies of the divinity engine will gradually kill off their nanite infestation and suffer proportionately less harm, based on the duration of their condition.

Assuming a sufficient number of obedient adherents exist within the same solar system as the divinity engine, the possessor may use certain psionic powers freely, without power point costs. The possessor may use any standard first-level psionic discipline provided at least 10 believers are in range. Each greater magnitude of believers increases the maximum discipline level by one, so a faith with 1,000,000,000 believers empowers its divinity with the ability to use first through ninth level powers. The "god" may use these powers up twice per round in addition to their normal action.

The divinity engine itself appears to be a stylized altar, and weighs five hundred kilograms. It can have only one user at a time; on the prior divinity's death, the altar bonds with the next person to maintain physical contact with it for more than ten minutes. The engine is impervious to most TL4 weaponry, but can be damaged by structural explosives or TL5 gunnery weapons. Destruction of the engine invariably results in the death of its bonded user.

Tales of the divinity engines speak of them as producing faiths restricted to a single solar system, but some say that supplementary shrines were developed that could harvest the faith of remote star systems and channel it to the primary engine. Others speak of remarkable psionic abilities cultivated by their possessors, and of entirely new disciplines developed through the engine's power.

GRAVEYARD SEED

The product of forbidden maltech psychocybernetic research, the graveyard seed was originally intended to provide a degree of continuity in the case of the death of important leadership. In its inactive form, it appears as a thumb-sized shard of ruby crystal, fogged over with microscopic sensor traces and energy circuits.

To key a seed, it must remain for at least six hours within one meter of a human brain. If multiple heads occupy that

space for the full time, the nearest gives the seed its imprint. A given seed can be imprinted multiple times, retaining only the latest impression.

If an imprinted seed is pressed against an incision or wound, it will melt into a gelatinous red slurry that soaks into the incipient host's body within a matter of seconds. The process is painless, and the merged seed imperceptible to TL4 medical scans unless the physician is specifically looking for signs of graveyard seed infestation.

Over the course of 1d6+2 weeks, the host will begin to have strange dreams, and odd, uncharacteristic urges natural to the imprinted person's personality. These dreams and impulses will grow stronger, until at the end of the period the victim will begin to physically transform into a perfect clone replica of the imprinted person, slowly shifting and changing over the course of a week. During this time, the person's original intellect and personality will remain, but they will be utterly subjected to the emerging identity of the imprinted subject. At the end of the transformation period, the host will be reduced to nothing but a few excess shreds of skin and tissue, and the imprinted subject will emerge with the exact appearance and mind they had at the time of imprinting.

While dramatic in their effects, a graveyard seed's transfer is often imperfect. Psionic ability is never transferred, and the imprinted subject must make two Tech saving throws to get a "clean" incarnation. One failed saving throw causes the loss of 20% of their memories, decreasing PC XP totals by that sum and potentially resulting in level loss. If both saving throws are failed, the original host's psyche has not been completely digested by the process, and the subconscious conflict with the usurping intellect drives the reborn entity into patterns of violent, destructive irrationality.

IRON CYST OF LORD SHANG

These small, dull metal spheres were produced by a highly advanced pretech splinter culture dedicated to their modified interpretation of ancient Chinese Legalist philosophy. As the crowning work of their technology, they produced scores of these iron cysts for the use of their constituent planetary kings. Within a generation, the polity had collapsed in blood and ruination, but these precious artifacts remain a sinister legend among those aware of their existence.

A cyst is intended to be swallowed by a user, thereafter requiring 48 hours to integrate with their physiology. The sphere then partially emerges from their body, often upon the brow, hand, or other commonly-visible skin, retaining its dull metallic luster. Neuromodification nanites are constantly emitted by the sphere, with the intrusive nature of the nanites defeating all conventional TL4 protective measures. The nanites will affect any subject within 30 meters of the possessor.

An affected subject must make a Tech saving throw or instantly become a Dutiful Citizen. The nanite's effects, while profound, are subtle and unlikely to be detected by anything

short of a specific search for their presence. The victim will not notice the Tech save, should it be successful. The bearer's presence can force this saving throw once per day for any given victim. In the unlikely case that a Dutiful Citizen is exposed to a second iron cyst, their loyalty is unaltered.

A Dutiful Citizen is utterly and unflinchingly devoted to the cyst's user. While they retain their natural intelligence, creativity, and personal ambitions, all of these things are completely subordinated to the will of the cyst's bearer, to the point of suicidal obedience.

The victim is aware of the unnatural nature of this compulsion, but remains helpless to avoid carrying out the bearer's will to the best of their ability. The nanite control network ensures that the Dutiful Citizens always intuitively know the bearer's will, provided they are on the same planet. Orders conveyed verbally or in writing carry the same force, however, provided the Dutiful Citizen believes them to come from the bearer.

There is only one relatively straightforward way to free a Dutiful Citizen from the effects of the nanites. The subject must be mortally injured, causing the nanite network to cut them out of the loop as a lost minion. Once they have been identified as dead or dying, a Lazarus patch or other medical attention can stabilize the victim. An iron cyst will not re-infect a victim freed in this fashion, as it still registers the subject as dead. Aside from this method, there remain persistent stories of certain nanite treatments that could render a subject immune to the cyst's effects, or even erase the cyst's hold on a population.

RECTIFICATION VAT

These grim devices were designed independently in several different systems around the frontier where Mandate authority was weak. While human engineering in the pretech era was largely restrained from dramatic transhuman improvements, it was amply sufficient to induce permanent, heritable defects. The rectification vats were designed to force those defects on members of "inferior" groups defined by ethnicity, religion, or ideology.

Their creators usually justified the vats in terms of social comity, enforcing the "characteristic defects and inferiorities" of a group on them all equally, allowing a "fair and equitable" treatment of the now uniformly subordinate members. Other groups reserved it as punishment for those who stepped out of line with the ideology of the creators, or as revenge against a group that had wronged them in the past.

The vats are capable of inflicting a wide range of heritable impairments on a victim, though the most common resulted in sub-normal intelligence, increased docility, and decreased aggression. The imposition of exaggerated or distinctive physical features are common when the group might not be otherwise easily distinguished from their "superior" brethren. Some templates involve improved physical strength or stami-

na for purposes of manual labor, though these augmentations shorten the already-impaired lifespans of the victims. These genetic changes are relatively crude and careless, and a victim of a rectification vat rarely lives past fifty.

A single vat can process a victim in an hour. While the full array of changes are not complete after that time, the genetic alterations are underway and will be complete within a week afterwards. There is no conventional TL4 way to stop the changes or reverse the process, though rumors speak of cures devised by Exchange of Light researchers in the days before the Scream.

A single rectification vat weighs slightly more than a ton, and is self-contained in its operation. While the pretech genetic engineering components it uses are impossible to replicate with TL4 technology, a sufficiently malevolent owner can use maltech principles to extend the vat's processing power and use it as the core of a much larger array of vats. With enough hardware and time, a single rectification vat can serve as the core of up to a thousand subordinate vats.

REVOLUTION PLAGUE

A revolution plague is usually found in the form of a small, unmarked vial attached to a standard DNA analysis unit. If a sample of blood, tissue, or other DNA-bearing substance is placed within the unit, the plague will prime and become ready for release as a nanite aerosol imperceptible to anything less than TL5 security measures.

If the aerosol comes in contact with original donor of the DNA used to prime it, it will burrow beneath the host's skin and begin to duplicate itself, again remaining undetectable by standard TL4 medical procedures. For a period of three months the infected victim will become a vector of the plague, infecting others who come within 10 meters of the victim. The plague is keyed to only infect relatives of the original target, extending up to three generations up and down the family tree, including aunts, uncles, cousins, and any other person directly related by blood. Any infected victim becomes a vector to spread the plague to others of sufficiently close relation to the original target.

After three months have passed the plague will erupt in a sudden, bloody final stage that plays out in mere seconds. The victim must make three successful Tech saving throws, each made one round after the other. A failure on any one of them immediately reduces the victim to zero hit points and leaves them dying.

A dying victim who fails a second saving throw dies immediately, with the plague corrupting the remains beyond any standard biopsionic or TL4 method of revivification. If the victim is lucky enough to have medical aid immediately present, it may be possible to stabilize them in between saving throws and give them a chance to survive multiple failed saves. The nanites are coded to activate simultaneously, however, so as to limit the ability of one death to warn others in the family.

Conventional biopsionic or scientific medical techniques can neither cure nor detect a revolution plague infection. Only special TL5 biowarfare antidotes can deactivate a revolution plague, and such sophisticated medical technology is rarely possessed even by planetary governments. Entire dynasties may be wiped out in a moment by a revolution plague, but the window of time between infection and activation may be enough to find a cure if the victims realize their condition before it is too late.

STAR POISON

A pretech astrophysics experiment gone terribly wrong, “star poison” was originally intended as a sensing device meant to explore the progression of stellar life cycles. Originally designed in a series of twelve identical drones, each one appeared as a standard solar sensor unit, designed to be dropped off from any modern starship. It was intended that one of the devices would be launched into a star to create certain small metadimensional perturbations that the scientists thought would be helpful in studying the stellar body. In the actual event, the waves seemed to catalyze a catastrophic spike incursion of metadimensional conditions into normal space.

A poisoned star immediately changes color, though the surviving records seem unable to describe the precise hue that the star assumes. Within hours afterwards, ordinary physical laws begin to degrade under the influence of the changed light. The effects are relatively subtle at first, with odd coincidences, strange material behavior, and increasing amounts of variation within physical processes.

Within several months, human life becomes virtually impossible under the star’s light, as basic physical laws can no longer be maintained without advanced pretech shielding. Gravity fails, light ceases to behave in predictable ways, even time itself collapsing or elongating in inexplicable fashion. A few years later the star collapses in on itself, leaving behind a stellar system melted and twisted into unrecognizable ruin.

Some theorists hypothesize that a sufficiently well-shielded ship could reach an active star poison drone and destroy it before it can complete the catalytic process. Others wonder if the light emitted by a poisoned star might not have its own hazardous effects on other systems it eventually reaches. And all would note that the original documents indicate that the remaining eleven drones were confiscated by the Mandate’s Bureau of Harmony for purposes that were never publicly revealed.

TELEKINETIC CORE EXTRACTION TAP

These exceedingly rare psitech devices were originally designed by a group of amoral arch-telekinetics specializing in large-scale magnification and control of metadimensional forces. The TCET was one of their more sophisticated products, merging a conventional mining array, a Von Neumann drone replicator, and a maltech-encrusted psionic amplification chamber.

When the tap is set in place on a planetary body, the mining array begins to probe and extract valuable minerals, performing basic processing and smelting on the extracts. In the absence of a telekinetic psychic and a supply of sentient minds, the array is little more than an efficient, maintenance-free pretech mining array. When supplied with a telekinetic and a sufficient number of fodder-minds, however, the TCET’s more impressive features are available.

Through a process of telegeological feedback and neural amplification, the telekinetic can shift large masses of bedrock and molten stone far beneath the earth, making paths for the collector drones and bringing valuable masses of minerals into range of the tap. These enormous telekinetic forces would kill any human psychic, but the TCET allows the operator to filter the metadimensional energy through the brains of restrained sentient beings, killing or mentally crippling them. The more sentients available for this use, the stronger the telekinetic forces at the psychic’s disposal and the richer the lodes that can be produced.

The TCET can produce additional holding frames for virtually any number of “filters.” Several hundred are needed at a minimum to obtain a worthwhile return on the effort, but several thousand can make the TCET as productive as hundreds of other mines. While records are spotty, some theorize that ten thousand victims might provide enough energy to critically destabilize the tectonic plates of a habitable planet, creating cataclysmic earthquakes.

The telekinetic forces involved are too crude to be used for ordinary manipulation of singular objects or people, but they can be used to destabilize the ground under buildings and other structures. These earthquakes can be summoned within a radius equal to 1 kilometer for every four victims currently being tapped by the TCET. These uses are hard on victims. Summoning an earthquake will kill or cripple all fodder currently locked into the device, while ordinary mining will do the same within a week.

The TCET itself appears as little more than meter-wide ring of twisted metals and nanite emitters. When placed on the ground, it will begin to construct the processing complex out of available earth and atmospheric gases, reaching operational status within a week. If the TCET is removed or destroyed the entire facility will crumble away in a matter of minutes, as will any facility fittings, drones or components taken too far from the TCET.

THE COLD STARS AWAIT YOUR TREAD

ENGINES OF BABYLON GIVES YOU ALL THE TOOLS YOU NEED TO ADD CUSTOM VEHICLES AND LOW-TECH SYSTEM SHIPS TO YOUR *STARS WITHOUT NUMBER* CAMPAIGN, WHETHER AS TROPHIES OF FABULOUS ADVENTURING WEALTH OR AS SAVAGE HARBINGERS OF A HOSTILE POWER. YOU'LL FIND EVERYTHING FROM GRAVITIC YARD SKIFFS TO MAIN BATTLE TANKS INSIDE THESE PAGES, AND THE GUIDELINES YOU NEED FOR BUILDING SYSTEM SHIPS FOR THOSE CAMPAIGNS SET IN A NEARER FUTURE.

NOT ONLY THAT, BUT INSIDE YOU'LL FIND A MIGHTY TROVE OF PRICELESS TREASURES TO REWARD THE CURIOSITY OF RECKLESS FREEBOOTERS, AND A SELECTION OF MALTECH HORRORS TO WHET THE REMORSELESS APPETITES OF ANY VILLAIN WORTHY OF THE NAME!