Vehicles

Vehicles are essential tools for **Travellers**: they extend the ability of characters to move to other locations with both ease and relative safety.

The term vehicle is used for any independent device that can move passengers or freight from one location to another. Although starships and spacecraft are technically within this definition, they are handled separately.

UNDERSTANDING VEHICLES

Vehicles are a basic component of any technological society.

Each specific vehicle has a Longname which describes its function, and a Model which abbreviates the LongName.

With an understanding of Vehicles and Terrain (and Weapons, Armor, and Combat), players can generally make use of any available Vehicles.

Types of Vehicles

Vehicles are available in five basic types, each with its own importance and governing rules:

Ground Vehicles are civilian passenger and cargo ground transport. They include road and offroad vehicles, and wide-ranging exploratory vehicles.

Military Vehicles are troop and weapon ground transport. They are intended for use on the battlefield, and include armored fighting vehicles and tanks.

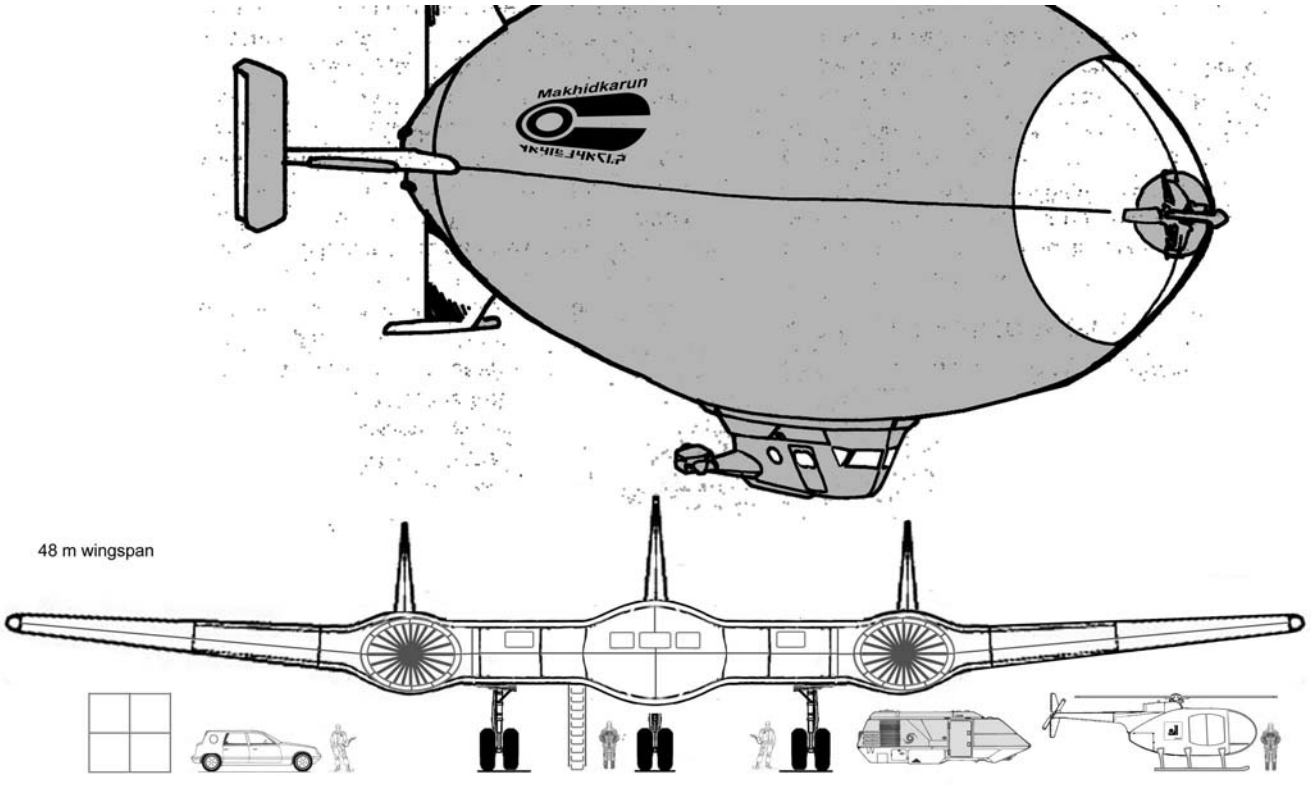
Flyers travel above world surfaces, generally in atmospheres and unimpeded by terrain. They include both civil and military vehicles.

Watercraft travel on and under oceans or bodies of water. They include surface craft and submersibles.

Small Craft travel out of atmosphere (or from world surface to beyond atmosphere). They may be civil or military,

Grav and Lifter Vehicles

Some vehicles within each of these types are based on Grav or Lifter technology. They are classified according to their primary use: Ground, Military, Flyer, or Watercraft.



Left to Right. Cargo Pod (shown end on = 3 meters wide by 3 meters high). Wheeled GroundCar-4. GCarrier-10. Helicopter-9. Transport Aircraft-8. Blimp-9.

VEHICLE DESCRIPTION

Model	LongName (Bulk - Motive - Mission - Type -User - TL)
VhWCF	Vheavy Winged Cargo Flyer-15

The basic information required to describe a vehicle.

Vx: VEHICLE EXTENSION

	Tons	Speed	Load	Stage	Environ	Endurance	QREBS	Options
Vx:	Tons=122	Speed=10	Load=16	Adv	Sealed	Continental		

The basic information required to use a weapon.

DESCRIBING VEHICLES

Vehicles can be described in many ways depending on the format and information required: any format which presents the required information is acceptable.

The Vehicle Description

Vehicles are described in a series of elements to form the LongName or abbreviated to form the Model. The LongName or Model contains enough information to allow a character to describe a Vehicle.

Elements of a LongName not necessary for a proper understanding may be omitted. The LongName consists of the following elements:

Bulk - Motive - Mission - Type - User - TL

Type identifies the basic function of the Vehicle. For example, Truck.
Mission elaborates on the activity the Vehicle is designed for. For example, Cargo or Explorer.
Motive details the Vehicles transport mechanism. For example, Wheeled, or Tracked.
Bulk describes the vehicles relative weight, mass, or bulk of the weapon. For example, Vlight, Light, Heavy, or Vheavy.
User identifies the intended or designed user. Blank assumes the user is Human or Man. For example, Man or Hiver.
Tech Level identifies the Technological Level at which the Weapon is commonly manufactured. TL is required.

Model. LongName elements have abbreviations which are used to create the Vehicle Model.

Model is a jargon-abbreviated Longname. Once a character is familiar with a specific Vehicle, references to it devolve to its abbreviation. Given the restrictions of the alphabet, element abbreviations are not necessarily unique.

The Vehicle Extension

The capabilities of a Vehicle are contained in the Vehicle Extension: a string of values detailed enough to allow a character to use a Vehicle. The Vehicle Extension is a variable length string: only required information should be included.

The Prefix. The Vehicle extension begins with the prefix Vx:

The Elements. Following the prefix, the Vehicle Extension includes

Vx: Tons - Speed - Load - Stage - Environ - Endurance - QREBS - Options

Tons is calculated Volume Tonnage.
Speed is calculated Speed of the Vehicle.
Load is calculated cargo or transport space for the Vehicle in tons.
Stage is the Vehicle's position in the spectrum of sophistication in the developmental life cycle.
Environ is the Vehicle's structural protection against hostile environments.
Endurance is the Vehicle's duration of operation before refueling or maintenance.
QREBS is the Vehicle's values on the QREBS scale.
Options is a statement of installed options for the Vehicle.

The Armor Extension

Most vehicles have some form of Armor. The Armor values for the Vehicle are shown with an Armor Extension. Because the Armor is integral to the Vehicle, note that values for Cost, Mass, and QREBS are not required.

Ax: ARMOR EXTENSION

	Cost	Mass	QREBS	Ar=	Ca=	Fl=	Ra=	So=	Ps=	In=	Se=
Ax:				Ar=43	Ca=04	Fl=26	Ra=40	So=24	Ps=00	In=90	Se=60

The basic information required to use armor.

USING VEHICLES

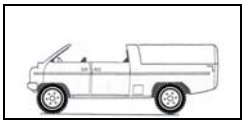
Vehicles transport passengers and cargo between locations.

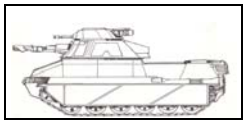
Vehicle operation is governed by skills and knowledges. Vehicle movement is constrained by terrain (including roads) for surface vehicles and watercraft, and by atmosphere for flyers. Vehicles can be damaged or destroyed by natural events, or by attacks.

The **Vehicle Operations Chart** details the tasks associated with vehicle operations.

The **Traveller Vehicle System** creates five distinct Types of Vehicles: Ground Vehicles, Military Vehicles, Flyers, Watercraft, and Small or Space Craft. Each has its own distinct uses and advantages; each has its own specific restrictions and shortcomings.

THE TYPES OF VEHICLES


Ground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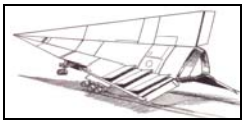
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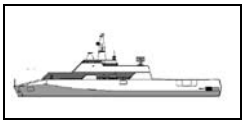
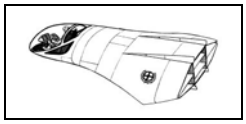

Water


Small Craft

CREATING VEHICLES

Vehicles can be designed and created (randomly or with purpose) using the Vehicle Design Tables.

The Vehicle Charts. Each Vehicle (one for each Type of Vehicle) provides the basic information about possible Vehicles, their Mission or Use, and their Motive Power. Selecting the details from the Chart produces a basic or common version of the Vehicle.

The Options. The Options Chart provides additional features for Vehicles to customize them for specific uses.

The Fill Form. The Vehicle Fillform provides a standardized process for creating Vehicles. The final information it produces documents the capabilities and costs of the vehicle.

The Combat Chart. The Combat Chart provides a ready reference for the Vehicle and is supports use of the vehicle in combat or adverse situations.

VEHICLE TYPES

Vehicle type is a descriptive term identifying function.

Civil Vehicles

Civil vehicles are used in ordinary society for personal, commercial, and recreational purposes.

Car. A basic vehicle for transporting people and a small quantity of luggage.

Van. A utility vehicle with enclosed passenger space for 2-6 occupants and an enclosed cargo bed.

Truck. A basic vehicle for transporting cargo.

Mover. A vehicle design to pull cargo or passengers modules, but with no cargo capacity of its own..

Transport. A cargo vehicle generally larger or more powerful than a truck.

Vehicle. A means of transport not otherwise defined.

Military Vehicle Types

Military vehicles are specialized vehicles used by armed forces in their operations.

Tank. A military vehicle capable of powerful attacks, strong defense, and rapid movement over a variety of terrain types.

A Tank carries a turret or vehicle-mount weapon, strong or extensive armor and protections.

Carrier. An armored fighting vehicle with an available cargo space which can be used for a variety of purposes.

A Carrier features strong or extensive armor and protections. It is essentially a tank-like vehicle which replaces the tank's turret or vehicle-mount weapon with an available cargo (or other function) space.

Vehicle. A military fighting vehicle which does not qualify for the Tank or Carrier designation.

Watercraft Types

Watercraft may be based on four distinct types of locomotion.

Ship. The vehicle moves floating on water.

Sail. The vehicle moves on water and powered by wind.

Sub. The vehicle moves fully submerged within water.

Grav. The vehicle moves using the Gravitic Drive (G-Drive). Grav Watercraft operate near water surfaces and are governed by Watercraft skill.

Flyer Types

Flyers are available in six types:

Wings. Winged craft include airplanes and lifting bodies; they are the most common type of Flyers. Wings provide lift and allow aircraft to move efficiently in atmosphere.

Add-On Wings. Other Flyer types may have Add-On Wings; despite this addition, the Flyer retains its non-Wing character.

Rotorcraft. Rotorcraft include helicopters (and a variety of esoteric systems of no practical value: autogyros, gyrodynes). Rotors provide lift for aircraft and allow vertical takeoff and landing. The typical rotorcraft is a helicopter.

Flappers. Flappers are moving wings in imitation of bird wings. They provide lift through wing motion.

LTA. Lighter Than Atmosphere Craft use buoyant gases to provide lift.

Liftcraft. Aircraft with lifters create a cancelled or counteracted gravity effect which lifts them above a world surface.

Lifters do not require atmosphere.

Lifters provide very small horizontal or vectored thrust. Additional thrust is provided through the High Powered Option.

Grav. Grav vehicles use a Gravitic or G-Drive to provide lift. G-Drives are more powerful than Lifters and provide greater horizontal thrust.

MISSION

Mission is the differentiating descriptor for some Vehicles.

Ground Vehicles

Passenger. The vehicle carries passengers.

Cargo. The vehicle carries cargoes or freight.

Utility. The vehicle is capable of carrying passengers or cargo or both. It is designed for a wide range of work assignments.

Explorer. The vehicle is designed for exploratory duties.

Watercraft

Watercraft missions include:

Cargo. The vehicle carries cargoes or freight.

Patrol. The vehicle is designed for security or recon missions.

Explorer. The vehicle is designed for exploration.

Transport. The vehicle is designed to carry freight or cargo, especially bulky or oversized objects.

Military

Military Vehicle missions include:

Weapon. The vehicle is designed to carry a large Weapon.

Troop. The vehicle is designed to carry troops on the battlefield.

Supply. The vehicle is designed to transport goods and supplies on the battlefield.

Recon. The vehicle is designed for recon or security duties.

Flyers

Flyer missions include:

Attack (or Combat). A flyer designed for offensive military missions.

Bomber. A flyer designed to carry destructive power to targets.

Cargo. A flyer designed to carry freight or cargo.

Protector. A flyer designed for defensive military missions.

Scientific. A flyer designed for research or exploration.

Flyer. A flyer not otherwise defined.

MOTIVE

The foundation of vehicles is their system of locomotion. Locomotion types differ between ground vehicles, flyers, and watercraft.

Ground Vehicle Locomotion

Ground vehicles may be based on a variety of motive systems.

Wheeled. The vehicle moves on wheels.

Tracked. The vehicle moves on endless tracks.

Air Cushion. The vehicle moves on a bed of high pressure atmospheric gases.

Legged. The vehicle moves on articulated legs. Legged vehicles are Units created using the Armor rules.

Mole. The vehicle is equipped to burrow under a world surface. A Mole is equipped with Tracks.

Lifters. The vehicle moves on anti-gravity lifter plates. Lift Ground Vehicles operate close to the surface and are governed by Driver skill.

Grav. The vehicle moves using the Gravitic or G-Drive. Grav Ground Vehicles operate close to the surface and are governed by Driver skill.

Flyer Locomotion

Flyers may be based on five distinct locomotion types.

Winged. The flyer moves using lift generating by wings (or lifting body surfaces). An airplane is a winged flyer.

Rotor. The flyer moves using a rotary wing which generates lift. A helicopter is a rotary wing flyer.

Flapper. The flyer moves using flapping wings which generate lift. An ornithopter is a flapping wing flyer.

LTA Lighter Than Atmosphere. The flyer is constructed to be less dense than surrounding atmosphere. A blimp or dirigible is an LTA flyer.

Lifters. The vehicle moves on anti-gravity lifter plates. Lift Flyers operate at higher levels of the atmosphere and are governed by Flyer skill.

Grav. The vehicle moves using the Gravitic or G-Drive. Grav Flyers operate at higher levels of the atmosphere and are governed by Flyer skill.

Watercraft Locomotion

Watercraft do not add Motive to their Type.

Small Craft

Small craft are spacecraft powered by Gravitic Drives (G-Drives).

BULK

Vehicles may be identified by their bulk or relative size.

Vlight. The vehicle is small and light. Its performance and capabilities are at the low end of those available.

Light. The vehicle is smaller than standard.

Medium (or Blank). The vehicle size and capabilities are typical.

Heavy. The vehicle is built to carry larger than normal loads.

VHeavy. The vehicle is large and massive. Its capabilities are at the upper limits for this type of vehicle.

ENVIRONMENT

Vehicles are manufactured to cope with local environment.

Air. The vehicle depends on local air for ventilation and breathing gases. The vehicle provides environmental controls for heating and cooling. Interior Air equal Atm for the world. For example, if Atm= 4 Thin Tainted, then the air in the interior of the vehicle is also 4 Thin Tainted.

Air-N. The vehicle processes local atmosphere to produce Air-N. An Air-6 Standard vehicle on an Atm=4 world processes the local Atm=4 Thin Tainted to remove (filter) the Taint and compress it from Thin to Standard.

Enclosed. The vehicle is enclosed to protect against the elements: wind, rain, snow, and weather.

Sealed. The vehicle is Sealed against exterior air pressure. Internal Air can be programmed to any of the Atm levels (from 3 Thin to 9 Dense). For those sophonts who require it, Taint of common types can be added.

Sealed is a Protection; the standard level provided is =20.

Double Sealed. In addition to Sealed, the vehicle includes an Air Lock which enables occupants to enter or leave the vehicle without losing air pressure or exposing those inside to outside environment.

Protected. The vehicle has Protections against most environmental threats. Minimum Armor=12, Sealed =20. Insulated=18.

Insulated. Most vehicles with an enclosed passenger space are Insulated = 12.

STAGE

Stage is the spectrum of effects based on the technological product development cycle.

Standard or (blank). The vehicle has no modifications or effects based on Stage.

Fossil. The vehicle is powered by (more-or-less) readily available fossil fuels or petrochemicals.

Renewables. The vehicle is powered by renewable fuels. The most common renewable fuel is organically produced alcohol.

PowerCell. The vehicle is powered by electric storage batteries.

Advanced. The vehicle is significantly better than the standard version, and features additional features and efficiencies. The vehicle is powered by a Fusion Module.

Early. The vehicle is a preliminary design with the bugs not yet worked out. The vehicle is powered by a Fusion Module.

Improved. The vehicle features small improvements. The vehicle is powered by a Fusion Module.

Alternate. The vehicle uses an alternate technology for some or all of its functions. The vehicle is powered by a Fusion Module.

ENDURANCE TYPES

Vehicles are classified by the territory they cover. Endurance is calculated last in the design sequence.

Endurance

Vehicle Endurance is the time that a vehicle can operate before it needs refueling, resupply, or maintenance. For most vehicles, Endurance is measured in hours: the vehicle does not accommodate sleeping, meals, or general living.

Endurance is selected as a component of Vehicle Design.

Hours. The Vehicle can operate for Hours (varies from 1 to 24) but less than a Day.

Days. The Vehicle can operate for Days (varies from 1 to 7) but less than a Week.

Weeks. The Vehicle can operate for Weeks (varies from 1 to 4) but less than a Month.

Months. The Vehicle can operate for Months (varies from 1 to 12) but less than a Year.

Years. The Vehicle can operate for Years (varies from 1 to 3).

Range

Range is the expected distance that a Vehicle can travel based on its Endurance and its Speed.

The Endurance to Range Table converts Vehicle Endurance to Range.

Local. The vehicle can travel in and around a specific location and within a Terrain Hex. A car used for city driving or a delivery truck are Local. Such vehicles occasionally venture into adjacent Terrain Hexes.

Regional. The vehicle can travel within a Region (a World Hex). Many Cargo Trucks or Truck Trains are Regional. Such vehicles occasionally venture into adjacent World Hexes.

Continental. The vehicle can travel within a Continent (a World Triangle).

World. The vehicle ican travel anywhere on the World.

A territory classification assumes the vehicle will venture occasionally into neighboring territories. For example, a Regional vehicle will sometimes or even often visit adjacent regions.

THE CALCULATED VALUES

During the Vehicle Creation process produces three calculated values: Tons, Speed, and Load.

Tons is the tonnage of the vehicle. This value is an approximate measure.

Speed is the Vehicle Speed Value. Its equivalent in Kph is provided by the Base Vehicle Speed Table.

Load is the available payload capacity of the vehicle.

QREBS

Any acquired vehicle is ordinarily assumed to be QREBS=00000 (no effects under QREBS system).

If the Vehicle Design System imposes any QREBS elements (for example, B= -2), that imposed element applies to the Vehicle.

As Issued. A Vehicle with only the imposed QREBS elements is considered **As Issued**. It is typical of the Vehicle as used. Most Vehicles are in this state, and any reasonable character can research and determine this information.

Used. Any character may ask for a **Used** Vehicle instead. The Referee then evaluates the weapon under QREBS and records this information.

THE CARGO MODULE

Commercial vehicles are built around the Cargo Module, a standardized container for goods.

VEHICLE FITTINGS

Vehicle Fittings are its controls and communications installations.

Controls

Vehicles are controlled by an operator through an established set of controls.

Manual. A system of controls (hand, manipulator, foot, head-movement, voice, and other) operate the unit. Manual controls are present on Vlite and Lite vehicles.

Powered Controls. A system of controls (hand, manipulator, foot, head-movement, voice, and other) operate the unit, assisted by power boosts and other enhancements. Power controls are the equivalent of Power Steering and Power Brakes (or Fly-By-Wire).

Power Controls are present on Medium, Heavy, and Vheavy vehicles (and are an option on Lite Vehicles).

.**AutoPilot Option.** Powered systems can be equipped with the AutoPilot option. The operator enters a destination and the system self-operates while the user sleeps or attends other functions. AutoPilot is distinct from Grid: AutoPilot is self-contained on the vehicle; Grid is a centralized traffic control system.

Requires Power Controls.

Grid Connection. Any vehicle at TL All vehicles include at least rudimentary manual controls.

Requires Power Controls and Grid Controller Channel.

Wafer. The user is directly connected to the operating controls via his wafer jack. Operation is transparent to the user.

Requires Power Controls and Vehicle TL 11+.

Communications

Vehicles may be fitted with a communications system.

Entertainment Channel. Reception of entertainment broadcasting.

Grid Controller Channel. Communication with the Central Traffic Control Grid (required on Hi Pop worlds). Connects the vehicle controls to the central Traffic Grid.

Net. Provides individual access to the local communications network. Operates within Range=6 of a commercial communications center/tower. Charges may apply.

Standard. Open channel radio broadcast system to Range=5.

LOS. Direct Line-Of-Sight (Laser or similar) system. Secure against eavesdropping. Self-directed (user direction not required). R=6.

LR LOS. Direct Long Range Line of Sight (Laser or similar) system for communication. R= 10.

Battlefield (Military Vehicles). Provides radio voice and data contact to Range= 6, with subchannels for individual communications.

Command (Military Vehicles). Enhanced Battlefield system to Range=8. Typically installed in Officer's systems for communications with higher levels.

Relay Option (Military Vehicles). Automatic capability to receive and retransmit Battlefield or LOS to the intended recipient.

Flyer Options

A variety of options are available for Flyers.

High Powered. The Flyer has greater than standard performance based on improved engines or thrusters.

Slave. The Flyer is intelligently piloted by computer. It flies in formation with the Master aircraft and reproduces its maneuvers and operations.

Remote. The Flyer is remotely operated by a pilot or operator on the ground or on another aircraft.

VTOL Mod. The Flyer (usually Winged) is modified to allow Vertical Takeoff and Landing. The Flyer can use any Landing Ground.

STOL. The Flyer (usually Winged) is modified to enable it to use shorter runways. The Flyer can use an Airport one size smaller than that normally required. Available on Heavy or smaller Flyers.

Wilderness Kit. The Flyer (usually Winged) is adapted to landing on open flat ground and does not require a runway. This kit includes STOL capability. Available on Heavy or smaller Flyers.

Weapon Mount. The Flyer is fitted with a weapons mount.

Floats. The Flyer has flotation landing gear allowing landing on water.

Hybrid VTOL. The Hybrid Vertical Take-Off and Landing option allows a winged aircraft to eliminate the need for an Airport by installing additional mechanisms (vectored thrust jets, tilt-rotors, lifters, or G-drives).

Add-On Wings. Some non-winged aircraft may add Wings to provide greater lift.

Floats. Aircraft may have seaplane landing floats to allow landing on bodies of water.

Parasite Nipple. Provision for an in-flight connection by a flyer to a larger Mother Flyer in flight.

On-Board Brain

A Vehicle with Power Controls and TL 11+ may be equipped with an On-Board Brain. The installation transforms the vehicle into a Strangeform Robot capable of self-directed movement.
on.

The Vehicle's Hobby. PB and SOCB require a Hobby (an outside interest) to maintain sanity. Select the Hobby from the Citizen Life Table.

Beginning and Final Intelligence. Brains are purchased based on their tested C4 Int as they leave the factory. Actual C4 Int gradually settles in over the course of the first year.

At the one-year anniversary of the brain construction, apply Flux to each D.

PASSENGERS AND CREW

The number of persons a Vehicle can carry is determined by a variety of factors.

A Vlite can carry one operator.

A Lite can carry two operators.

Standard or larger can carry operators and passengers equal to tonnage.

But,

A Tank has a crew equal to its tonnage divided by 2.

Supply vehicles can carry passengers equal to five times cargo capacity.

Non-Human Passengers. If a passenger is substantially larger than a human, adjust capacity on the basis of one per two humans or one per three humans.

THE VEHICLE CHARTS

Vehicles travel on world surfaces and their activity is constrained by terrain.

The **Vehicle Operators Chart** details how drivers, flyers, and seafarers actually operate their veicles.

The **Vehicle Chart Altitudes** shows the available altitudes at which flyers and grav vehicles may operate.

The **Vehicle Chart Depths** shows the depths of oceans and lakes and the expected pressures at depths.

The **Vehicle Chart Terrain** shows the types of terrain vehicles may encounter and the limits which terrain imposes.

The **Vehicle Chart Beastpower** shows the relative values of Beastpower (a more universal form of Horsepower) for the comparison of vehicle performance.

The **Vehicle Chart Design Box allows** an estimate of the tonnage of a vehicle from its dimensions or from a drawing.

FLYER RANGE BAND MOVEMENT

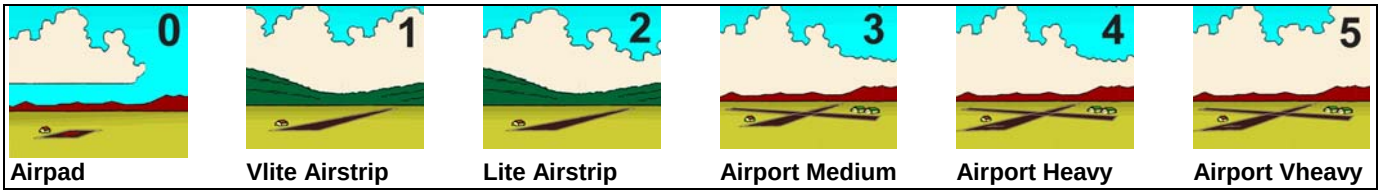
Flyers can move one surface Range Band per Round.

The actual Range to a Flyer with Altitude and Range is the greater of the two: a Flyer at Vlong Range R=5 and Altitude= NOP = 2 is at Range=5 for combat purposes.

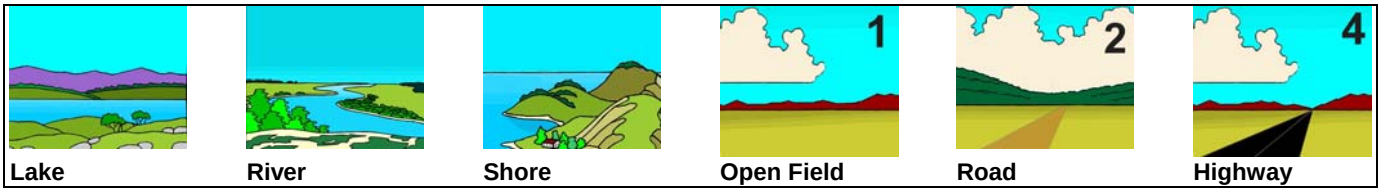
Flyers may maintain Range unchanged (the equivalent of Hover or Circling).

Flyers move at their designed Speed unless a deliberate change is made. A Winged Flyer must maintain a minimum Speed = 6 to remain airborne.

LANDING GROUNDS



ALTERNATIVE LANDING GROUNDS



LANDING GROUNDS

Size	Type	Length	Facilities	Which Flyers?	Where?
0	Airpad	50 m	Fuel	Non Wing. Non LTA.	City. Suburb. Town. Archology. Starport.
1	Vlite Airstrip	1000 m	None	Vlite Winged	
2	Light Airstrip	2000 m	Sparse	Light Winged	Town.
3	Medium Airport	3000 m	Standard	Standard Winged	Suburb.
4	Heavy Airport	4000 m	Very Good	Heavy Winged	Archology.
5	Vheavy Airport	5000 m	Excellent	All Flyers	City
1	Open Field	200 m	None	Non-Winged	Clear Single Hex
2	Road	2000 m	None		
4	Highway	4000 m	None		
	Lake				
	River				
	Shore				

Most flyers require a specified or dedicated landing ground.

A Landing Ground can accept any Flyer equal or less than it s Bulk (a Standard Landing Ground can accept Standard, Light, or Vlite flyers).

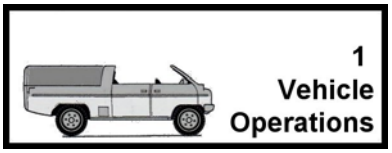
A Flyer with Floats can land on Lake, River, or calm Ocean.

What is the proper role for aircraft?

When compared to anti-gravity technology, aircraft are always cheaper. Anti-gravity can be imported to low tech worlds, but it becomes extremely expensive, considering that they cannot be repaired locally, and even skilled technicians must be imported to maintain them.

Vehicles Operations

Vehicles operations (Driver, Flyer, Seafarer) are very similar, using skills and characteristics in much the same way, regardless of the environment.



TASKS FOR VEHICLE OPERATIONS

Vehicle operation is governed by Characteristics, Skills, and Knowledges. Vehicles may be operated by characters, by the Grid, or by an On-Board Brain.

VEHICLE SKILLS AND KNOWLEDGES

Skill	Knowledge
Driver	Wheeled
Driver	Tracked
Driver	Legged
Driver	ACV
Driver	Grav
Driver	Mole
Flyer	Winged
Flyer	Rotor
Flyer	Flapper
Flyer	Grav
Flyer	LTA
Seafarer	Ship
Seafarer	Sub
Seafarer	Boat
Seafarer	Grav
Pilot	Small Craft
Pilot	ACS
Pilot	BCS

THE GRID

Vehicles operating on the Grid are under centralized Grid Computer control. Operations are automatic.

Centralized controls allow all vehicles to operate at optimum speed in the same traffic flow.

VEHICLE OPERATION TASKS

Vehicle Operation is based on a standard set of tasks.

Routine Vehicle Operations present little danger or difficulty; the vehicle is operating within its design parameters.

Routine Operations are resolved per World Hex; they are automatic if C+S for the Operator is 12 or greater.

Special Operations (marked with an asterisk *) are resolved per Terrain Hex (or per Local Hex if operating at that level).

Terrain

Terrain marked Yes on the Terrain Chart is **Allowed Terrain:** operations are routine.

Terrain marked No on the Terrain Chart is **Prohibited Terrain:** a vehicle cannot enter that terrain.

Terrain not marked Yes or No is **Disallowed Terrain**: vehicle operation is possible but more difficult.

Vehicle Operations Failure

Failure of a Vehicle Operation Task generates an **Emergency**: roll 1D for level.

Emergency-1	Easy 1D	C2
Emergency-2	Average2D	C2
Emergency-3	Difficult 3D	C2
Emergency-4	Formidable 4D	C2
Emergency-5	Staggering 5D	C2
Emergency-6	Hopeless 6D	C2

Vehicle Emergency Failure generates a Malfunction: roll 1D for level and consult Malfunctions.

BUT:

Immediate Action may forestall the emergency.

PREPARATIONS

Task	Difficulty	Char	C+S
Pre-Journey Checks	Average 2D	C5	12
Begin	Average 2D	C5	12

DRIVING

Routine Road	Easy 1D	C2	6
Allowed Terrain	Average 2D	C2	12
*Disallowed Terrain	Staggering 5D	C2	
*Speed +1	= Difficulty +1		
*Speed - 1	= Difficulty - 1		
*Evasive	= Difficulty +1		

FLYING

Routine Flight	Average 2D	C2	6
Air Corridor	Easy 1D	C2	6
*Disallowed Terrain	Staggering 5D	C2	
*Speed +1	= Difficulty +1		
*Speed - 1	= Difficulty - 1		
*Evasive	= Difficulty +1		
*Landing	Difficult 3D	C2	

SEAFARING

Routine Sailing	Easy 1D	C2	6
*Disallowed Terrain	Staggering 5D	C2	
*Speed +1	= Difficulty +1		
*Evasive	= Difficulty +1		
*Rough Seas	= Difficulty +1		

SPACEFLIGHT

Routine Flight	Easy 1D	C2	6
Climb To Orbit	Difficult 3D	C2	
*Disallowed Terrain	Staggering 5D	C2	
*Speed +1	= Difficulty +1		
*Evasive	= Difficulty +1		
*Hit Jump Point	Difficult 3D	C5	
*Enter Atmosphere	Difficult 3D	C2	
*GG Level Change	Difficult 3D	C2	

CONCLUSION

Shutdown	Easy 1D	C2	6

COMPUTER CONTROLLED VEHICLES

A Vehicle with an On-Board Brain may be computer-controlled.

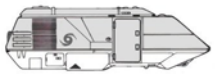
Vehicle operation is based on the Computer's C+S. C is any required Characteristic; S is any required skill.

An On-Board Brain essentially transforms the Vehicle into a Strangeform Robot.

Be sure to note the On-Board Brain's Hobby (if applicable).

Altitudes

Atmospheres have levels corresponding to Range Bands. UWP Atmosphere varies by Altitude, which in turn dictates which levels are available to Flyers.



2 Vehicle Altitudes

Levels of the Atmospheres — Ellipsoid

Altitude	R=	Level	Vacc 0	Vthin 2	Thin 4	Standard 6	Dense 8	Exotic A	Corrosive B	Insidious C	Dense High D	Polar E1	Arctic E2	Tropical E3	Equatorial E4	Thin Low F	Comments
250,000 km	11	Satellite	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Luna= 384,000 km
50,000 km	10	Geo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	For Terra= 36,000 km
5,000 km	9	Far Orbit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	MEO = Medium Earth Orbit
500 km	8	Orbit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	LEO = Low Earth Orbit
50 km	7	Upper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30 km	6.8	Mid8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20 km	6.6	Mid6	0	0	0	0	1	1	1	1	1	0	0	0	0	0	
12 km	6.4	Mid4	0	0	0	1	2	2	2	2	2	1	0	0	0	0	
8 km	6.2	Mid2	0	0	1	2	4	4	4	4	4	2	1	0	0	0	
5 km	6	Mid	0	1	2	4	4	4	4	4	4	4	2	1	0	1	
1000 m	5	Airspace5	0	1	2	4	6	6	6	6	6	4	4	2	0	2	
500 m	4	Airspace4	0	2	4	6	8	A	A	A	A	6	4	2	1	2	
150 m	3	Airspace3	0	2	4	6	8	A	A	A	A	6	4	2	1	2	
50 m	2	NOP	0	2	4	6	8	A	A	A	A	6	4	2	1	2	
5 m	1	Near Surface	0	2	4	6	8	A	A	A	A	6	4	2	1	2	Typical Grav Altitude
1.5 m	T		0	2	4	6	8	A	A	A	A	6	4	2	1	2	
0.5 m	R		0	2	4	6	8	A	A	A	A	6	4	2	1	2	Typical Lifter Altitude
Surface	0	Surface	0	2	4	6	8	A	A	A	A	6	4	2	1	2	
500 m	-4	Chasm Rim	0	2	4	6	8	A	A	A	A	6	4	2	1	2	
1000 m	-5	Chasm Wall	1	4	6	8	A	A	A	A	A	8	6	4	2	4	
5 km	-6	Chasm Floor	2	4	6	8	A	A	A	A	A	8	6	4	2	4	

On This Table: 2= Very Thin. 4= Thin. 6= Standard (=Earth. =Terra). 8= Dense (regardless of Taint). Treat A as Very Dense.

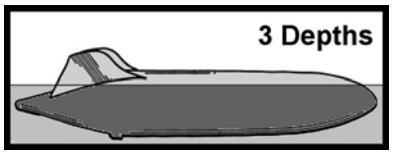
Vehicles and Levels of the Atmospheres

Altitude	R=	Level	Winged	Rotor	Flapper	LTA	Lifter	Grav	HePLaR	Comments
			Atm not Required							
50,000 km	10	Geo	No	No	No	No	No	No	Yes	For Terra= 36,000 km
5,000 km	9	Far Orbit	No	No	No	No	No	Yes	Yes	MEO = Medium Earth Orbit
500 km	8	Orbit	No	No	No	No	Yes	Yes	Yes	LEO = Low Earth Orbit
200 km	7.4	Upper4	No	No	No	No	Yes	Yes	Yes	
100 km	7.2	Upper2	Yes	No	No	No	Yes	Yes	Yes	Distinct sublevels within Range=7.
50 km	7	Upper	Yes	No	No	No	Yes	Yes	Yes	
5 km	6	Mid	Yes	No	No	Yes	Yes	Yes	Yes	
1000 m	5	Airspace5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
500 m	4	Airspace4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
150 m	3	Airspace3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
50 m	2	NOP	**	Yes	Yes	Yes	Yes	Yes	Yes	Typical Grav Flyer Altitude
5 m	1	Near Surface	**	Yes	Yes	Yes	Yes	Yes	Yes	
1.5 m			**	Yes	Yes	Yes	Yes	Yes	Yes	
0.5 m			**	Yes	**	Yes	Yes	Yes	Yes	Typical Lifter Flyer Altitude
Surface		Surface	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Landing Grounds

Entries on this table show Atmosphere Levels available to Flyers based on Motive. No= Not accessible. Yes= Accessible as shown. ** Winged Flyers pass through these levels when landing or taking off.

Depths

Oceans (and lakes) have depths corresponding to Range Bands. Various depths have increased pressure.



DEPTHS OF THE OCEANS

Altitude	R=	Level	Pond	Stream	Lake	River	Large Lake	Harbor	Bay	Sea	Ocean	World Ocean		Pressure	Comments
50 m	2	Tsunami	-	-	-	-	-	-	-	-	a	a	a		
5 m	1	Vbig Waves	-	-	-	-	-	-	-	-	a	a	a		
1.5 m		Big Waves	-	-	-	-	a	-	-	a	a	a	a		
.5 m		Waves	a	a	a	a	a	a	a	a	a	a	a		
Surface	0	Surface	a	a	a	a	a	a	a	a	a	a	a		Lake, Sea, Ocean Surface
.5 m		Turbulent	a	a	a	a	a	a	a	a	a	a	a		
1.5 m		Vturbulent	a	a	a	a	a	a	a	a	a	a	a		
5 m	1	Pond	a	a	a	a	a	a		a	a	a	a	1	Pond
50 m	2	Thermocline	-	a	a	a	a	a	a	a	a	a	a	5	Pond Bottom
150 m	3	Shelf	-	-	a	a	a	a	a	a	a	a	a	15	Continental Shelf
500 m	4	Lake Bottom	-	-	a	a	a	a	a	a	a	a	a	50	Lake Bottom
1,000 m	5	Deep Lake	-	-	a	-	a	a	-	-	a	a	a	100	Deep Lake
5,000 m	6	Sea Bottom	-	-	-	-	-	-	-	-	a	a	a	500	Ocean Bottom
50 km	7	Deep Ocean	-	-	-	-	-	-	-	-	-	a	a	5,000	Maximum depth non-Ocean World
500 km	8	Abyss	-	-	-	-	-	-	-	-	-	a	a	50,000	Ocean World Abyss
5,000 km	9		-	-	-	-	-	-	-	-	-	a	a	500,000	

Entries on this table show available levels: those marked “a” (available) and may exist in water terrain on a world; those shaded and marked: “-“ are unavailable.

Pressure in Bar (= one Atmosphere). Pressure-1 inflicts 1D hits per minute.

Vehicles and Terrain

The capabilities of vehicles in terrain are detailed in this chart.

SURFACE TERRAIN		Cars		ACV	Wheel	Track	Legged	Lifters	G-Drive
Terrain	People	Trucks	OffRoad	STV	MTV	ATV	Units	Grav	Grav
Air Corridor	No	No	No	No	No	No	No	Yes1	Yes1
Grid	No	Yes1	Yes1	**	**	**	No	Yes1	**
Highway	**	Yes	Yes	**	Yes	**	No	Yes	**
Road	**	Yes	Yes	**	Yes	Yes	Yes	Yes	**
Trail	Yes	**	**	**	**	**	Yes	**	**
Clear	Yes	**	Yes	Yes	Yes	Yes	Yes	**	**
Clear Wooded	Yes	**	**	**	**	Yes	Yes	**	**
Wetland	Yes	**	**	Yes	**	**	Yes	**	**
Wetland Wooded	Yes	**	**	**	**	**	Yes	**	**
Rough	Yes	**	**	**	Yes	Yes	Yes	**	**
Rough Wooded	Yes	**	**	**	**	Yes	Yes	**	**
Mountain	Yes	**	**	**	**	Yes	Yes	**	**
River, Canal	**	**	**	Yes	Yes	Yes	**	**	**
Lake	No	No	No	Yes	Yes	**	**	**	**
Ocean	No	No	No	Yes	No	No	No	**	**

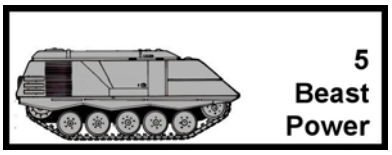
FLYERS TERRAIN						Lifters	G-Drive	M-Drive	
Terrain	People	Wing	Flap	Rotor	LTA	Grav	Grav	Grav	HePLar
Orbit	No	No	No	No	No	Yes	Yes	Yes	Yes
Upper Atm = 7	No	No	No	No	No	Yes	Yes	Yes	Yes
Mid Atm=6	No		No	No	No	Yes	Yes	Yes	
Low Atm= 3-4-5-	No					Yes	Yes	Yes	
NOP =2	No	Yes	Yes	Yes		Yes			
< 5 meter	Yes			Temp	Temp	Yes	Temp	Temp	
Atm=0 Vacuum	No	No	No	No	No	Yes	Yes	Yes	Yes
Atm=1 Trace	No	No	No	No	No	Yes	Yes	Yes	
Atm=2 Vthin	No	Yes	No	No	No	Yes	Yes	Yes	
Atm=3 Vthin	No	Yes	No	No	No	Yes	Yes	Yes	
Atm=4 Thin	No	Yes	No	No	No	Yes	Yes	Yes	
Atm=5 Thin	No	Yes	No	No	No	Yes	Yes	Yes	
Atm=6 Standard	No	Yes	No	Yes	Yes	Yes	Yes	Yes	
Atm=7 Standard	No	Yes	No	Yes	Yes	Yes	Yes	Yes	
Atm=8 Dense	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Atm=9 Dense	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Atm=A Exotic	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Atm=B Corrosive	No	Yes		Yes	Yes	Yes	Yes	Yes	
Atm=C Insidious	No	Yes			Yes	Yes	Yes	Yes	
Atm=D Dense-Hi	No	----- Dependent on other details -----				Yes	Yes	Yes	
Atm=E Ellipsoid	No	----- Dependent on other details -----				Yes	Yes	Yes	
Atm=F Thin-Low	No	----- Dependent on other details -----				Yes	Yes	Yes	

SEAFARING TERRAIN					
Terrain	People	Boat	Ship	H-Foil	Sub
Ocean	No	**	Yes	Yes	Yes
Islands	No	Yes	**	Yes	**
Shore	No	Yes	**	Yes	**
River	No	Yes	**	**	**
Sea Port	No	Yes	Yes	Yes	Yes

Entries on these tables show accessible terrain for vehicles. **No** = Prohibited terrain. **Yes** = Accessible terrain. **Yes1** = Accessible if equipped for the Grid. ****** Disallowed Terrain (accessible with some difficulty; see Vehicle Operations).

Beastpower

Beastpower is a measure of relative work or power when comparing vehicles.



BP BEASTPOWER

Tons	Kph= / Speed=	5 1	10 2	20 3	30 4	50 5	100 6	300 7	500 8	700 9	1000 10	2000 11	3000 12	5000 13
Half-lan			.01	.2	.3	.6	1							
1 lan		.01	.1	.3	.6	1.2	2	3	5	7	10	13	17	22
1 emthree		.08	.6	2	5	9	16	26	38	54	75	99	129	164
1 roup		.1	.8	3	6	12	20	30	50	70	100	133	172	220
1 cube		0.3	2	7	16	31	54	85	128	182	250	332	432	549
1 sq		0.5	4	13.4	32	62	108	171	256	364	500	666	864	1098
1 ton		1	8	27	64	125	216	343	512	729	1000	1331	1728	2197
2		2	16	54	128	250	432	686	1024	1458	2000	2662	3456	4394
3		3	24	81	192	375	648	1029	1536	2187	3000	3993	5184	6591
4		4	32	108	256	500	864	1372	2048	2916	4000	5324	6912	8788
5		5	40	135	320	625	1080	1715	2560	3645	5000	6655	8640	10985
6		6	48	162	384	750	1296	2058	3072	4374	6000	7986	10368	13182
7		7	56	189	448	875	1512	2401	3584	5103	7000	9317	12096	15379
8		8	64	216	512	1000	1728	2744	4096	5832	8000	10648	13824	17576
9		9	72	243	576	1125	1944	3087	4608	6561	9000	11979	15552	19773
10		10	80	270	640	1250	2160	3430	5120	7290	10000	13310	17280	21970
11		11	88	297	704	1375	2376	3773	5632	8019	11000	14641	19008	24167
12		12	96	324	768	1500	2592	4116	6144	8748	12000	15972	20736	26364
13		13	104	351	832	1625	2808	4459	6656	9477	13000	17303	22464	28561
14		14	112	378	896	1750	3024	4802	7168	10206	14000	18634	24192	30758
15		15	120	405	960	1875	3240	5145	7680	10935	15000	19965	25920	32955

Column Shift:

Vheavy	Speed +1
Vlite	Speed - 1
High Power	Speed +1
Protected	Speed +1
Armored	Speed +2
Watercraft Ship	Speed +3
Watercraft Sub	Speed +2
Watercraft Boat	Speed +1
Hydrofoil	Speed - 1

For example, a Speed-3 Vheavy ATV reads Beastpower on the Speed 4 (= Speed-3 +1) column.

BEASTPOWER

Beastpower is a standardized evaluation of the power of the engine or motor in a vehicle.

ONE BEASTPOWER=

BP = Tons x (Speed ^3)

Beastpower is used to compare the relative power of different vehicles.

UNITS OF MEASURE

Tons are 13.5 cubic meters for vehicles.

For beasts and beast-drawn vehicles, 1 ton (normally a measure of volume) is also = 1000 kg in a wheeled cart on level ground.

Half-Lan= 1 person/ human = 50 liters = 0.005 tons.

1 Lan = 0.01 ton = 1 centiton.

1 Emthree = 0.075 ton = 1 cubic meter.

1 Roup = 0.1 ton = 1 deciton.

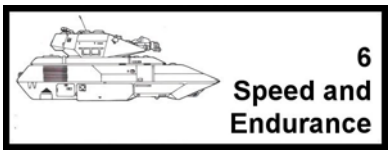
1 Cube = 0.25 ton = 1 quarter ton.

1 Sq = 0.5 ton = half-ton.

One Human = 0.25 BP

Speed And Endurance

Vehicles have Speeds, which determine ability to travel, and collision damage values. Speed and Endurance are used to determine Range.



VEHICLE SPEEDS

Speed	Flux	Speed	Alt Speed	kph	Air	Water	Land	Land	Gravitics	Damage	Speed
0		Not Moving	Still								0
1	6	Creep	Walk	5			Person	Mole		1 D	1
2	- 5	Crawl	Run	10			Legged			4 D	2
3	- 4	Xslow		20			OffRoad		Lifters	9 D	3
4	- 3	Vslow		30		Boat	ATV	Tracked		16 D	4
5	- 2	Slow		50	LTA	Ship	MTV	Wheeled	G-Drive	25 D	5
6	- 1	Standard		100	Flapper	Sub	STV	Air Cushion		36 D	6
7	0	Cruise		300	Rotor			Road	M-Drive	49 D	7
8	+1	Fast		500	Wing					64 D	8
9	+2	Vfast		700						81 D	9
10	+3	Sonic		1000						100 D	10
11	+4	Ssonic		2000						121 D	11
12	+5	Hsonic		3000						144 D	12
13	+6	Xhsonic		5000						169 D	13
14	+7			10,000						196 D	14
15	+8			20,000						225 D	15
16	+9	Meteroric	Meteor	40,000						256 D	16

An impact by an object at Speed inflicts Damage at the level shown per ton. The damage inflicted is Blow.

Relative Speed. A Collision between two Vehicles uses the sum of their two speeds (if they are travelling in the same direction, uses the difference between the two speeds).

Reciprocal Damage. Each Vehicle in the collision receives Damage x Opposite Vehicle.

ENDURANCE AND RANGE

Vehicle Range is the expected distance that a Vehicle can travel before it needs maintenance, resupply, or refueling. Range is based on Vehicle Speed and Endurance.

CONVERT ENDURANCE TO RANGE

Kph=	5	10	20	30	50	100	300	500	700	1000	2000	3000	5000
Speed=	1	2	3	4	5	6	7	8	9	10	11	12	13
Hours=	Local				Regional		Continental				World		
Days=	Regional			Continental			World						
Weeks=	Continental		World										
Months=	Continental	World											
Year=	World												

VEHICLE OCCUPANTS

For Time=	Vlite	Lite	Std, Hvy Vhvy
Hours	1	2	1 per 1 ton
Days	no	1	1 per 2 tons
Weeks	no	no	1 per 3 tons
Months	no	no	1 per 4 tons
Year	no	no	1 per 5 tons

Assumes Human (Size=100) occupants.

OCCUPANT SIZE

Size		Human-Equivalents
50	Small	C1 C2 C3 = 1D each
100	Standard	C1 C2 C3 = 2D each
200	Oversize	C1 C2 C3 = 3D each
300	Titan	C1 C2 C3 = 4D or 5D each

Average Size

To determine the average size for a Sophont,

Total the number of dice used to generate the Physical Characteristics (halving Grace, Agility, and Vigor; doubling Stamina). Divide the total by 6 and multiply by 100. The result is typical size for the sophont.

Calculating Species or Sophont Size

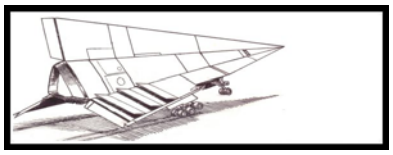
C1 Strength	Dice	
C2 Dexterity	Dice	
C2 Grace	Dice / 2	makes it lighter or smaller
C2 Agility	Dice / 2	makes it lighter or smaller
C3 Endurance	Dice	
C3 Stamina	Dice * 2	makes it heavier or larger
C3 Vigor	Dice /2	makes it lighter or smaller

Dice= Number of dice rolled for the characteristic (for example, if Str = 2D, Dice = 2).

Total= C1 + C2 + C3
Typical Size = 100 * (Total / 6).

The Design Box

The Tonnage Design Box allows a rough calculation of the (displacement) tonnage of vehicles as they are designed.



THE TONNAGE DESIGN BOX

Vehicle dimensions can be estimated using known vehicle tonnage and the Vehicle Design Box.

Tonnage can be estimated using known vehicle dimensions and the Vehicle Design Box.

Vehicle Dimensions

If the tonnage of a vehicle is known, select a tonnage row and determine the Length, Width, and Height dimensions for the vehicle.

Vehicle Tonnage

If the dimensions of a vehicle are known, select a row with the appropriate dimensions and determine the tonnage for the vehicle.

Adjustments

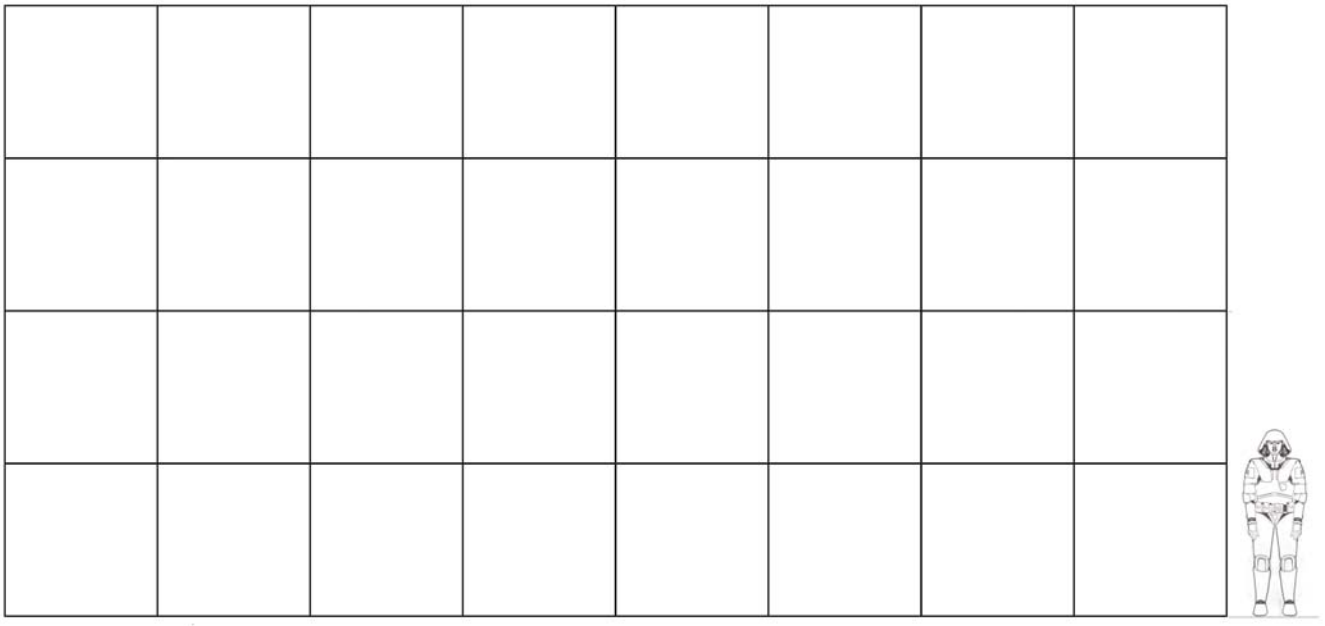
Dimensions should be reasonably compact; adjust them as necessary.

Ignore wings and wing tonnage.

VEHICLE SIZE

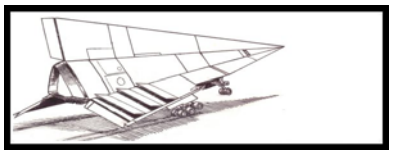
	---------- Meters ----------			-------- Squares --------		
Tons	Length	Width	Height	Length	Width	Height
1	3	3	1.5	2	2	1
1	6	1.5	1.5	4	1	1
2	6	3	1.5	4	2	1
3	9	3	1.5	6	2	1
4	12	3	1.5	8	2	1
5	7.5	3	3	5	2	2
6	9	3	3	6	2	2
7	10.5	3	3	7	2	2
8	12	3	3	8	2	2
9	9	4.5	3	6	3	2
9	13.5	3	3	9	2	2
10	15	3	3	10	2	2
11	10.5	4.5	3	7	3	2
12	12	4.5	3	8	3	2
13	13.5	4.5	3	9	3	2
15	15	4.5	3	10	3	2
16	16.5	4.5	3	11	3	2

THE DESIGN BOX



Charts Overview

This is an overview of the charts which govern the use and creation of vehicles.



VEHICLE CHARTS OVERVIEW

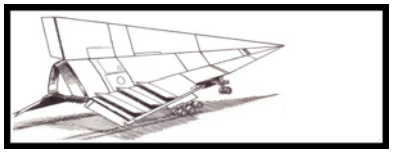
- **0 Vehicle Charts Overview**
- **1 Vehicle Operations.** Typical tasks for operation of vehicles. Required Skills and Knowledges.
- **2 Altitudes**
  - **Altitudes of the Atmosphere.** Altitudes and Ranges for Flyers.
  - **Vehicles and Levels of the Atmospheres.** Altitude Capabilities by Vehicle Type.
- **3 Depths**
  - **Depths of the Oceans.** Depths and Ranges for Submersibles.
- **4 Vehicles and Terrain.**
  - **Surface Vehicle Terrain.** Accessible and Inaccessible Terrain Types by Vehicle.
  - **Flyer Terrain.** Accessible and Inaccessible Atmospheric Terrain by Flyer Motive.
  - **Seafaring Terrain.** Accessible and Inaccessible Water Terrain by Watercraft Type.
- **5 Beastpower.** Calculation of Beastpower BP ratings for Vehicles.
- **6 Speed and Endurance.**
  - **Vehicle Speeds.** Equivalent kph values for Speeds. Collision Damage Values.
  - **Convert Endurance to Range.** Expected Range values based on Endurance.
  - **Vehicle Occupants.** Calculation of Vehicle Occupant Capacity. Non-Human Occupants.

VEHICLE CREATION CHARTS

- **0 Vehicle Creation Checklists.**
- **1 Creation Chart- Surface Vehicles**
  - **Civil Ground Vehicles.** Type. Mission. Motive.
  - **Military Vehicles.** Type. Mission. Motive.
- **2 Creation Chart- Flyers and Watercraft**
  - **Flyers.** Type. Mission. Motive.
  - **Watercraft.** Type. Mission. Motive.
- **3 Creation Chart- Small Craft**
  - **Small Craft.** Type. Mission. Motive.
- **4 Creation Chart- Vehicle Options**
  - **Standard Options.** Bulk. Stage. Environ. Available Options. Endurance.
- **5 Vehicle Fillform.**
- **6 Vehicle Fillform Example.**

Vehicle Creation Checklist

Use this checklist to create individual vehicles.



Prepare a blank Vehicle Fillform. This form is the documentation for the Vehicle's capabilities.
Prepare a blank Vehicle HitForm. This form locates and records damage to a Vehicle.

VEHICLE DESIGN CHECKLIST

1. Vehicle Category.

Type-Mission-Motive Chart

2. Type.
3. Mission.
4. Motive.

Vehicle Enhancers Chart

5. Bulk
6. Stage.
7. Environ.
8. Options.
9. Endurance.

Additional Steps

10. Create weapons for Vehicle Weapons Mounts (using Weapons Creation).
11. If desired, install an On-Board Brain (using Vehicle Operations).
12. Calculate Range (using Speed and Endurance).
13. Calculate Vehicle Occupants (using Speed and Endurance).

Vehicle Hitform Data

14. Create the Vehicle Identification (Model. Bulk-Mission-Motive-Type) and transfer it to the Vehicle Hitform.
15. Create the Vehicle Extension and transfer it to the Vehicle Hitform.
16. Transfer Weapon information to the Vehicle Hitform.
17. Record Armor/ Protection on the Vehicle Hitform.

Vehicle Design Fillform

As the Vehicle is designed, insert the design values and details into this Fillform. Values may be inserted in any order as the design is considered: the ultimate requirement is that the values balance and properly reflect the charts and tables.

Vehicle Fillform

BUILDING VEHICLES

This Fillform allows an interactive design process which ultimately produces a final vehicle design.

Tech Level. Tech Level for a vehicle is the minimum level required for manufacture.

VEHICLE TYPE

☐ Ground	☐ Military	☐ Watercraft
☐ Flyer	☐ Small Craft	☐

(identifies the chart used to create the vehicle)

Item	Code	Q	R	E	B	S	Tech Level	Tons	Speed	Load	Armor Ar	Cage Ca	FlashProof Fl	RadProof Ra	SoundProof So	PsiShield Ps	Insulated In	Sealed Se	KCr
Vehicle																			
Mission																			
Motive																			
Bulk																			
Stage																			
Environ																			
Option1																			
Option2																			
Option3																			
Option4																			
Option5																			
Range																			
Totals																			

VEHICLE IDENTIFICATION

Model	Bulk	Mission	Motive	Vehicle		TL
					-	

VEHICLE EXTENSION

	Bulk	Stage	Environ	Range	Tons	Speed	Load	
(					Tons=	Speed=	Load=	)

Ground Vehicles

Ground vehicles (civil or military) operate on or near world surfaces.

GROUND VEHICLES

	Code	Type	TL	Tons	Speed	Load		Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	KCr
Type	C	Car	-	2	-	1	-	-	-	-	-	-	-	-	-	-	20
	-	Van	-	3	-	2	-	-	-	-	-	-	-	-	-	-	30
	T	Truck	-	4	-	3	-	-	-	-	-	-	-	-	-	-	50
	V	Vehicle	-	5	-	3	-	-	-	-	-	-	-	-	-	-	60
	M	Mover	-	3	-	-	-	-	-	-	-	-	-	-	-	-	50
	T	Transport	-	5	-	4	-	-	-	-	-	-	-	-	-	-	40
Mission	-	(blank	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	P	Passenger	-	-	-	-	-	5	-	-	-	-	-	12	-	-	10
	C	Cargo	-	-	-	-	-	5	-	-	-	-	-	6	-	-	10
	U	Utility	-	-	-	-	-	5	-	-	-	-	-	6	-	-	10
	X	Explorer	-	-	-	-	-	20	10	10	10	10	-	20	20	-	100
Motive	ACV	Air Cushion	8	+2	6	-	-	-	-	-	-	-	-	-	-	-	x2
	W	Wheeled	6	0	5	-	-	-	-	-	-	-	-	-	-	-	
	L	Lifter	9	+1	3	-	-	-	-	-	-	-	-	-	-	-	x2
	G	Grav	10	-1	5	-	-	-	-	-	-	-	-	-	-	-	x3
	T	Tracked	7	+2	4	-	-	-	-	-	-	-	-	-	-	-	x2

An ACV Explorer Vehicle is an STV Some Terrain Vehicle.
A Wheeled Explorer Vehicle is an MTV Most Terrain Vehicle.
A Tracked Explorer Vehicle is an ATV All Terrain Vehicle.

MILITARY VEHICLES

	Code	Type	TL	Tons	Speed	Load		Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	KCr
Type	T	Tank	9	5	3	-	-	50	10	10	10	20	0	20	20	NoteT	700
	C	Carrier	8	4	4	2	-	40	10	10	10	20	0	20	20	NoteC	500
	V	Vehicle	7	2	5	1	-	30	10	10	10	20	0	20	20	NoteV	300
Mission	-	(blank)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	W	Weapon	-	+2	- -	-	-	-	-	-	-	-	-	-	-	NoteV	100
	T	Troop	-	+1	- -	-	-	-	-	-	-	-	-	-	-	-	- -
	S	Supply	-	+3	- 1	+1	-	-10	-	-	-	-	-	-	-	-	- -
	R	Recon	-	-1	+1	-	-	-10	-	-	-	-	-	-	-	-	100
Motive	ACV	Air Cushion	8	+2	6	-	-	-	-	-	-	-	-	-	-	-	x2
	W	Wheeled	6	0	5	-	-	-	-	-	-	-	-	-	-	-	
	L	Lifter	9	+1	3	-	-	-	-	-	-	-	-	-	-	-	x2
	G	Grav	10	-1	5	-	-	-	-	-	-	-	-	-	-	-	x3
	T	Tracked	7	+2	4	-	-	-	-	-	-	-	-	-	-	-	x2

Quality = Motive TL minus Actual TL.

A Military vehicle automatically has weapons mount capabilities.
NoteT. Install TWO weapons: one Vehicle-Mount and one Turret-Mount.
NoteC. Install ONE turret mount weapon.
NoteV. Install ONE fixed mount weapon (supercedes NoteT or NoteC).

FLYERS

Code		Type	TL	Tons	Speed	Load	Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	KCr
Type	F	Flyer														
Mission	A	Attack, Combat	+2	x2	+1	x2	20	0	20	0	20	0	10	1		x3
	B	Bomber	+1	x3		x3	10	0	20	0	20	0	10	1		x2
	C	Cargo	0	x4	0	x2	5	0	20	0	20	0	10	1		x1
	P	Protector	+1	x2	+1	x1	10	0	20	0	20	0	10	1		x3
	S	Scientific	- 1	x4	0	x2	5	0	20	0	20	0	10	1		x2
	U	Utility				x3	0	0	20	0	20	0	10	1		x1
Motive	W	Winged	7	10	8	2										300
	R	Rotor	8	10	7	0.5										400
	F	Flapper	10	10	6	0.5										500
	Lta	LTA	6	40	5	10										600
	L	Lifter	9	8	2	1										600
	G	Grav	10	9	4	3										700

Quality = Motive TL minus Actual TL. **Light-Than-Atmosphere.** LTA final tonnage equals 10x the calculated tonnage.

WATERCRAFT

Code	Type	TL	Tons	Speed	Load	Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	KCr
Type	Ship	5	1000		600	10	0	0	0	0	0	0	0		1,000
	Sub	6	100		60	20	0	0	0	0	0	0	20		1,000
	Boat	5	10		6	5	0	0	0	0	0	0	0		100
	Grav	10	/5		n/c										x2
Mission	Cargo			-1											
	Patrol	+2		+1		x2									
	Explorer	+2										x2			
	Transport														

Quality = Motive TL minus Actual TL. n/c = NoChange.

VEHICLE OPTIONS

	Use or Code	Type	TL	Tons	Speed	Load	Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	KCr
Bulk	Vl	Vlight	-1	/3	+1	- 2	/3			/3			/3	/3		/3
	L	Light	-1	/2	+1	-1	/2			/2			/2	/2		/2
	M	Medium (blank)	-	-	- -	-								- -		
	H	Heavy	+1	x2	- 1	+2	x2			x2	x2		x2	x2		x3
	Vh	VHeavy	+2	x3	- 2	+3	x3			x2	x2		x3	x3		x9
Stage		Fossil	-2	+2			-10				-10				Note1	
		PowerCell	-1	+1	-2	-2	-5				-5				Note1	10
		Renewable	-1	+1	-1	-1									Note1	20
		Vearly	-2	+1	-1	-1										20
		Early	-1	+1			-10				-10					10
		Standard	0	0												
		Improved	+2	-1			+10				+10					20
		Advanced	+4	-2	+1	+1	+20				+20					40
Environ		Air (Open)	-2	0												
		Enclosed	-1				4		4		4		12			
		Sealed	-	0			6	2	6	0	8	0	16	20		2
		DoubleSealed	-	+1			8	4	6	0	12	0	30	20		5
		Insulated	-				8	4	6		12		30	20		10
		Protected	+1	+1			10	10	10	10	12	0	10	20		20
		Armored	+2	+1			20	10	10	10	12	0	20	20		30
		UpArmored	+3	+2			30	20	20	20	20	0	30	20		40
		AltArmored	+3	+2			60	20	30	30	30	0	30	30		50
Options		High Powered	+1	+1	+1	-1										100
		Slave	+1	-1												10
		Remote	+1	-2												20
		Weapon Mount	-			- 1										
		Luxury	-												Q= 4	x 2
ground		OffRoad	-													30
		Fast	+1	+1	+1	-2										30
water		HydroFoils	+1	+1	+1											30
flyer		Stubs	-												Grav or Lifter	20
ground		Mole	+1	x3	=1										Note 2.	400
flyer	VTOL	Mod	-		- 1	-2									Medium or less	100
flyer	STOL	Mod	-			-1									Heavy or less	50
	Passenger	Module	-		- 3										20 passengers	100
	Cargo	Module	-	+1	-1	+1									one ton	20
flyer	Lifting	Body Hull	-	+4	+1	x2										200
flyer	Add-On	Wings-1	-	x2	+1	x1									B= +1	100
flyer	Add-On	Wings-2	-	x3	+2	x2									B= +1	200
flyer	Add On	Wings-3	-	x4	+3	x3									B= +1	300
flyer	Float	Landing Gear	-	- 1	- 1											100
flyer	Parasite	Nipple	+1			-1										100
	Redundancy		+1	+1												60

Note1. May not be Grav or Lifter. Note 2. Only if Ground Vehicle, Explorer, not ACV.

Endurance		Hours	-	0*												
converts		Days	+1	1*												20
to		Weeks	+2	2*												50
Range	LR	Months	+3	3*												100
	VLR	Year	+4	4*												400

* this value times Vehicle Speed.

SMALL CRAFT

	Code	Type	TL	Tons	Accel (G)	Load	Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Notes	MCr
Type		Pod	13	5	2	1	20	10	20	20	10		20	20		5
		Fighter	11	10	6	1	40	10	10	10	10		10	10		9
		Launch	12	20	3	10	20	10	10	10	10		10	10		8
		Boat	12	30	5	19	30	10	10	10	10		10	10		7
		Pinnace	14	40	4	25	30	10	10	10	10		10	10		9
		Cutter	12	50	4	31	40	10	10	20	10		10	10		13
		Lander	10	60	1	24	20	20	20	20	10		20	20		10
		Shuttle	11	70	4	42	20	10	10	20	10		20	10		11
		Picket	13	80	6	20	30	10	10	10	10		10	20		10
Mission		Utility	-1	+5	-1	+5										
		Long Range				-10										+1
		Life	-1		-1	+3										-1
		Fast	+1		+1	-5										+1
		Slow	-1		-2	+5										-1
		Passenger		+20		+15									**P**	+4
		Cargo	-1	+25	-1	+25	-10						-10		**C**	+5
		Tanker	-1	x2	-1	x2	-10						-10			x2
		Attack	+1	+10	+1		50	10	10	20	10		10	10		x4
		Recon	+1		+1	/2	20	10	10	20	10		10	10		x2
Options		Flotation Mod				-1										+1
		Modular	+1													+1
		Passenger Mod				-30										
		Vehicle Mod				-30										
		Weapon Mount				-1										+1
		Redundancy				-1										+1
		Stubs (Wings)			+1											
		Wings		+1	+1											+1
Motive		G-drive (standard)														x1
		M-drive				+5									**M**	**x2**
Bulk	Vl	Vlight	-1	/3	+1	/3	/3			/3			/3	/3		/3
	L	Light	-1	/2	+1	/2	/2			/2			/2	/2		/2
	M	Medium (blank)	-	-	- -	-								- -		
	H	Heavy	+1	x2	- 1	x2	x2			x2	x2		x2	x2		x3
	Vh	VHeavy	+2	x3	- 2	x3	x3			x2	x2		x3	x3		x9
Endurance converts to Range		Hours		-1												
		Days														
		Weeks		+2												+5
	LR	Months	+1	+5												+20
	VLR	Year	+2	+15												+40

Notes. C= Load is dedicated to cargo space. M= Small Craft operation requires skill in M-drive. P= Load is at least **1/2** passenger space.

Vehicle Examples

The following weapon examples demonstrate the output of the armor generation system.

VEHICLES

Code	Type	TL	Tons	Speed	Load (tons)	Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	KCr
Cargo Hauler Aircraft		4	25	9	17	9	0	24	0	24	0	22	1	A	305
GroundCar		5	2	5	1	9	0	4	0	4	0	24	0	C	35
Agent's GroundCar		7	2	6	0	30	10	10	10	20	0	20	20		2505
Enclosed Air/Raft		8	7	3	5	9	0	4	0	4	0	24	0		145
Light Grav Speeder		9	3.5	7	4	9	0	4	0	4	0	24	0		245
Tracked AT		9	5	4	1	50	20	20	20	32	0	40	40		625
GCarrier		12	8	4	4	100	30	40	40	50	0	50	50	G	1555
Torgee-1 Grav Tank		12	8	5	3	110	30	40	40	50	0	50	50	T	2455

Notes:
A: Similar to a DC-3.
C: High-powered, offroad-capable, weapon mount included.
G: Turret weapon sold separately.
T: Vehicle mount weapon and Turret weapon sold separately.

SMALL CRAFT

Code	Type	TL	Tons	**Accel (G)**	Load (tons)	Armor	Cage	FlashProof	RadProof	SoundProof	PsiShield	Insulated	Sealed	Note	MCr
Light Lifepod		11	3	2	2	10	10	20	10	10		10	10		2
Std Fighter		11	10	6	1	40	10	10	10	10		10	10		9
Fast Launch		13	20	4	5	20	10	10	10	10		10	10		9
Slow Launch		11	20	1	15	20	10	10	10	10		10	10		7
Fast Boat		13	30	6	14	30	10	10	10	10		10	10		8
Slow Boat		11	30	3	24	30	10	10	10	10		10	10		6
Fast Pinnace		15	40	5	20	30	10	10	10	10		10	10		10
Slow Pinnace		13	40	2	30	30	10	10	10	10		10	10		8
Modular Cutter		13	50	4	31	40	10	10	20	10		10	10		13
Std Shuttle		11	70	4	42	20	10	10	20	10		20	10		11
Cargo Shuttle		10	95	3	67	10	10	10	20	10		10	10		16
Interplanetary Cargo Shuttle		10	95	3	72	10	10	10	20	10		10	10	IP	32
Passenger Shuttle		11	90	4	57	20	10	10	20	10		20	10		15
Interplanetary Passenger Shuttle		11	90	4	62	20	10	10	20	10		20	10	IP	30
Fast Shuttle		12	70	5	37	20	10	10	20	10		20	10		12
Interplanetary Fast Shuttle		12	70	5	42	20	10	10	20	10		20	10	IP	24
Light Shuttle		10	35	5	21	10	10	10	10	10		10	5		5.5
Gig		12	20	7	15	40	10	10	15	10		10	10		28

Notes:
IP = Equipped with M-Drive (in place of the standard G-Drive). These craft require M-drive skill to operate, and weekly refueling and maintenance.

Model LongName (Bulk - Motive - Mission - Type -User - TL)

Vx: VEHICLE EXTENSION

Tons	Speed	Load	Stage	Environ	Endurance	QREBS	Options
Vx: Tons=	Speed=	Load=					

The basic information required to use a weapon.

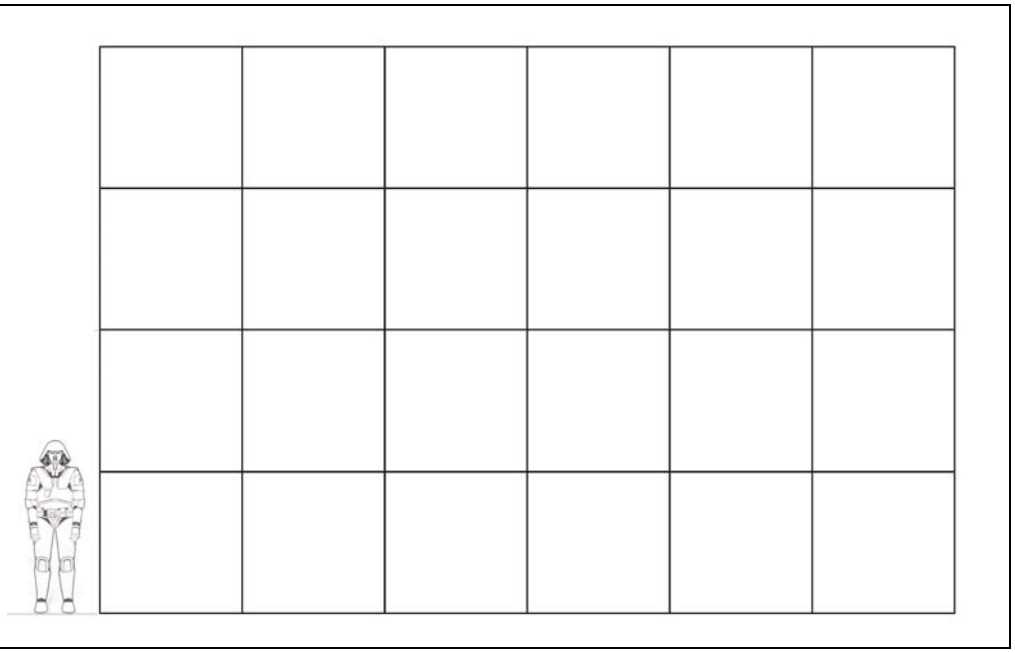
Wx: WEAPON EXTENSION

	Range	Cost	Mass	QREBS	Effects
Wx:	R=	Cr	kg		

The basic information required to use a weapon.

HIT LOCATIONS

Comms	**2**
Cargo	**3**
Sensors	**4**
Protections	**5**
Life Support	**6**
Body Panel	**7**
Power Source	**8**
Locomotion	**9**
Weaponry	**10**
Navigation	**11**
Computer	**12**



Paste any **Traveller** vehicle image here. Include a human figure for scale.

ARMOR / PROTECTION

Armor	
Cage	
FlashProof	
RadProof	
SoundProof	
PsiShield	
Insulated	
Sealed	

COMMENTS