

APPROVED FOR USE WITH CLASSIC TRAVELLER



TRAVELLER[®]

Science-Fiction Adventure in the Far Future



TRAVELLER'S AIDE #6 AGAINST GRAVITY

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AGAINST GRAVITY

TRAVELLER'S AIDE #6

Based on the award winning TRAVELLER science fiction universe by Marc Miller

Against Gravity: Traveller's Aide #6

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ABOUT THIS SUPPLEMENT

This book is intended for use with Classic Traveller (CT) and T20 – Traveller for the D20 system. Background material is of course also fully compatible with other versions of Traveller.

This volume is the second in a series dealing with vehicle in use in the Traveller universe. It details the range of Grav vehicles available to travelers at various tech levels.

To produce this volume, QuikLink Interactive, LIC has joined forces with the well-respected Yarn Caardee Design Bureau and a team of freelance experts of interstellar renown. However, inaccuracies are possible, and QLI LIC cannot accept responsibility for any harm or injury incurred due to use or misuse of the vehicles described herein.

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YIARN CAARDEE DESIGN BUREAU

Yarn Caardee Design Bureau, LIC is a premiere designer of vehicles and equipment throughout the Trailing sectors of the Imperium. Founded on Terra in -192, Yarn Caardee supplies detailed work prints, prototypes, and provides consulting for manufacturing design. Our catalog provides a listing of local manufacturers and sales locations for your shopping needs. If you have a specific need your local supplier can not meet, please contact our helpful sales staff about custom design work.

TECHNOLOGY DISCUSSION

Grav technology is one of Traveller's breakthrough technologies, and is described as follows; "Anti-gravity is the second major [technological] breakthrough. The postulated technology produces both neutralization of weight and lateral thrust." Striker Book 3, pg. 5. The "sufficiently advanced technology" description works for most campaigns, however if you or your players want more detail, there are any number of pseudo-science explanations that you can utilize.

GRAV TECH IN THE IMPERIUM

The introduction of Grav technology is a world-altering event that has an impact upon every aspect of life in both overt and subtle ways. Academic studies of these changes have been going on since the first discovery of the technology and a few Imperial worlds still serve as living laboratories.

The most visible change caused by Grav technology is in architecture. In Grav friendly cities buildings are broadly divided into two types; open access and closed access. An open access tower contains landing platforms regularly spaced around the exterior at various heights, giving the tower a tree-like appearance. Closed access buildings, usually secure installations like military headquarters or starport administrative offices, have a slab sided or decorative appearance similar to buildings on low-tech worlds.

Grav technology also influences architectural layout. For pre-grav cities, buildings must have sufficient space between them to allow ground level access for both vehicles and pedestrians. In cities where Grav are common the requirement for ground traffic access is gone and buildings can be butted up against each other to form a ground level mall. The tower roof becomes the primary access point, the front door as it

were, and the elaborate rooftop designs are quite impressive. Building support systems like power plants, cooling and filtration systems or elevator mechanisms that would be placed on the inaccessible and otherwise unused rooftops are now placed at ground level.

Grav technology does not make structural material stronger but it does allow for construction of taller buildings. Elevator systems, which provide access to each floor in a tower, take up space within the building and in order to provide timely access to each floor the amount of space grows as the building gets taller. With Grav vehicles acting as exterior elevators and structures with multiple access points, buildings require fewer elevators. Grav lifts and acceleration compensation systems allow elevators to be smaller and faster than the mechanical versions. Freed of the constraints of the interior elevator, towers can grow to astounding heights.

The ultimate expression of compacting buildings is the arcology, a complete city in a single building. Grav powered transport systems, which move both horizontally and vertically, allow citizens and visitors quick access to the entire city. The best example are the arcologies on Dadegadi (Ley 1836 A443745-C) which are 10km or more in height and house several million people each.

Grav vehicles also allow people to move out of the cities. Roads are both expensive and form a bottleneck for travel. When housing does not require a road, people can build literally anywhere and frequently do so. Developers use a town plan, a number of houses connected by walkways or small vehicle roads with a town center for shopping and socializing, for rural developments. These small towns surrounded by farms or wilderness, look like isolated communities but connect by a short Grav vehicle flight.

About one third of the worlds in the Imperium do not have the infrastructure to support Grav technology adequately. These worlds, either by choice or by circumstance, rely upon an array of lower technology to maintain themselves. Technology including the ground vehicle roadways, the fuel distribution system for the internal or external combustion engines, airports and seaports, traffic monitoring and control systems and the maintenance infrastructure for all of these. Replacing the established infrastructure would be an expensive and time consuming undertaking, even assuming the population would accept the change. Make no mistake; every architect in Charted Space is aware of the existence of Grav vehicles and their impact. Buildings reflect the dominant available technology on the world, but even a stone castle on the lowest tech world will have defenses against the "magic flying carpet".

DESIGNERS TIP: ARMORED FIGHTING VEHICLE DESIGN.

The four essential elements of armored fighting vehicle design are firepower, armor, speed, and maneuverability. The challenge for designing armored fighting vehicles is balancing these elements.

Firepower is a measure of how much damage a weapon can do to an enemy force. Firepower is a combination of injury causing capability, weapon range, rate of fire, and support requirements (ammunition, power plant or both). Except in some very specific circumstances, one larger weapon has

better firepower than two (or more) smaller weapons. That is, the single larger weapon will have a longer range, greater destructive power and smaller support requirements than two smaller weapons. This is why most AFVs have only one main weapon system, usually a single large gun.

Armor protection is a matter of the thickness and strength of material used for the armor plating. These plates are heavy, and large amounts of armor reduce the performance of the AFV. Rather than trying to make the AFV invulnerable, the ideal AFV design balances the armor protection against the potential threats.

Speed determines how quickly the AFV can engage enemy forces. Very frequently, the speed of an AFV determines the flow of battle, with control of the situation going to the quickest.

Maneuverability is more than just pure speed; it also reflects the size of the craft, its ability to use cover to avoid enemy fire, and its responsiveness to a fluid situation. The ability of an AFV to maneuver into a more advantageous firing position or hide under more cover adds to its effective firepower and armor. Experienced tank commanders rate maneuverability as highly as either armor or firepower.

Thus, the modern armored fighting vehicle designs, a single large main weapon with a small crew, and a balanced design of armor, speed, and maneuverability.

An exception to these guidelines is the impressive size and firepower mounted on wet navy vessels built at middle tech levels, and space naval vessels. The specific circumstances of naval design is dictated by their environment; sensor ranges vastly exceed weapon ranges, the almost complete lack of cover or concealment, and the relatively low maneuverability of ships compared to the distances they travel. Under these conditions, bigger is better. Since neither speed nor maneuverability is of much assistance to these vessels, they rely entirely upon firepower and armor.

Another exception is the highly maneuverable fighters, both aircraft and spacecraft. Sacrificing armor for speed and maneuverability, they carry only enough armament to attack similar vehicles or other unarmored vehicles.

DESIGNERS TIP: ARMORED FIGHTING VEHICLE CREW SIZE

Crew size is an important design consideration for vehicles in general and military vehicles in particular; too many and the vehicle larger than it needs to be, too few and the overwhelmed and fatigued crew are ineffective in an engagement.

The list of tasks required for every AFV is Driver/Pilot, Sensor operations, Communications, Gunner, Loader, Navigation, and Commander. The Loader's job is to load a new round of ammunition into the gun after the Gunner has fired the weapon. If the round of ammunition is large, or the reloading process complicated, each weapon may need more than one Loader. The modern automatic weapon loaders or energy weapons like laser or plasma weapons eliminate the need for a Loader. Modern integrated electronics combine the sensor, communication and navigation data into one console, and these tasks are assigned to one person. A modern tank will have a crew size of four; Driver/Pilot, Gunner, Electronics Operator, and Commander.

The advent of computerized electronics and integrated

control systems eliminates the electronic operations position and splits the remaining tasks among the three crewmembers; Driver/Pilot does navigation, Gunner does sensor operations, Commander does communications. The tradeoff is the more complex control system that requires more training for each of the crew.

For craft not expected to be the front line attack units, crew sizes can be smaller. For the air/space superiority fighters crews of one or two are common. The state of robotic control systems in the Imperium has not yet advanced to the stage where an unmanned AFV can be a consistent threat, though some of the Hiver designs are very impressive.

The danger of having too few people is the crew, having to split their attention between too many tasks at once, becoming overwhelmed and fatigued, leading to mistakes and mission failures. While training can overcome these limitations, building and maintaining these skills is both cost and time intensive.

Thus, modern AFVs have a crew size between two and four. Generally, the AFVs with a smaller crew size require more training for the personnel. There are AFVs with crews larger than four, particularly on lower tech designs where more than one loader would be required for the weapons.

DESIGNERS TIP: COMBINATION VS. DEDICATED THRUSTERS.

One of the design decisions for buying (or building) a Grav vehicle is which style of Grav modules to use; dedicated thrusters or combination thrusters.

The dedicated thrusters provide unidirectional thrust, and are directed to provide either lift or thrust. The dedicated thrusters are smaller, more reliable, and usually cheaper. Control of the vehicle is less complex; many of these craft have simple fly-by-wire controls. The downside of dedicated thrusters is a craft requires more of them for safe operation. The failure of a forward thruster may mean a loss of the ability to stop the vehicle.

The more expensive combination thrusters provides both lift and thrust, requiring a sophisticated computer control system and finer manufacturing practices. A vehicle requires fewer Grav modules but the more complex modules are more prone to failure. The combined thrusters are safer because the loss of one module does not mean a partial or complete loss of control; the remaining modules are usually capable of stopping and landing the craft.

Which to select for your new Grav car is a matter of which missions you intend for it. Dedicated thrusters are ideal for well-populated areas, where emergency crews can quickly handle the rare case of Grav module failure. Combined thrusters are better suited for wilderness areas where the loss of a finicky module will not strand you some place beyond help.

NEW DESIGN ELEMENTS

HOW BIG IS MY VEHICLE

The volumes (vls) used by the vehicle design system in the Travellers Handbook represents both weight and volume. This is an abstraction to make the vehicle design process easier and faster. You can calculate the real world sizes for vehicles by doing the following. Calculate a vehicle's volume

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by multiplying the vls by 5 to get the size in liters, then divide by 1000 to get cubic meters, and again by 14 to get starship tons. A vehicle's loaded weight in kg is equal to its size in vls. To get an empty weight, subtract 100kg for each passenger and 1kg for each 1vl of cargo.

FRAMES

The airframe chassis configuration (THB pg. 237) allows a craft to fly safely at speeds up to Mach 1, the speed of sound in a standard atmosphere. The faster and more agile chassis configurations are more expensive because they require more design work and finer manufacturing tolerances. Chassis frames designed for vehicle speeds above Mach 1 require additional bracing and reinforcement to ensure they are strong enough to withstand the stresses placed upon them.

Supersonic: A supersonic chassis costs eight times the Basic Chassis cost and requires 1% (1 vl per 100vl of chassis volume) of the chassis volume to reinforce it against the stresses of high speed. The supersonic chassis has a maximum safe speed of 2500kph (Mach 2); the operator suffers a -1 control check penalty for every 50kph (or fraction thereof) of speed above 2500kph. Like the Airframe chassis, the supersonic chassis provides a +2 maximum Agility for aircraft and a +20% maximum speed and cruising range for all vehicles. This Agility bonus does not add to the Agility score itself; rather it increases the maximum possible Agility of a vehicle based upon the type of drive train installed.

Hypersonic: A Hypersonic chassis costs ten times the Basic Chassis cost and requires 5% (5 vl per 100vl of chassis volume) of the chassis volume to reinforce it against the stresses of high speed. The Hypersonic chassis has a maximum safe speed of 4800kph (Mach 4); the operator suffers a -1 control check penalty for every 50kph (or fraction thereof) of speed above 4800kph. Like the Airframe chassis, the hypersonic chassis provides a +2 maximum Agility for aircraft and a +20% maximum speed and cruising range for all vehicles. This Agility bonus does not add to the Agility score

itself; rather it increases the maximum possible Agility of a vehicle based upon the type of drive train installed.

NEW COMPUTERS:

Fire Control Computer (Gunner Interact (5), Target (5), Select (5), Anti-missile (5), and Return fire (2))

TL 8 Fire control computer, linear hardwired, 17 cpu, Cr17,000, 22.95vl, 1.53EP

TL 10 Fire control computer, parallel hardwired. 15 cpu, Cr1500, 2.025vl, 0.18EP

TL12 Fire control computer, synaptic hardwired, 8 cpu, Cr1600, 1.08vl, 0.072EP

TL14 Fire control computer, synaptic hardwired, 6 cpu, Cr1200, 0.8vl, 0.054EP

GRAV VEHICLES IN A WIND

Grav vehicles are subject to the same weather effects as other vehicles and in some ways are more sensitive to winds while flying. If the pilot wishes to fly in a high wind, add the following modifier to any piloting check required based upon the wind speed. Wind speeds are described in the Wind Effect table (THB pg. 383-385).

Wind Speed	DC	(For CT: roll 4+ to maintain control while trying precision maneuvers. +DM: Pilot skill, -DM: -1 per 15kph of wind speed).
Light	+0	
Moderate	+0	
Strong	+10	
Severe	+15	
Windstorm	+18	
Hurricane	+20	
Tornado	+30	

NEW WEAPONS

In addition to the list of vehicle mounted weapons in THB (pg. 347), we present here an expanded list of weapons for the design of vehicles.

ARTILLERY

Name	Power	Min TL	Size	Cost	Damage	Area of Effect	Rate of Fire	Range	Ammo Volume	Ammo Cost
40mm cannon	-	5	160	12,000	1d12	-	1	400	3.3	8
50mm cannon	-	5	300	20,000	2d12	-	1	500	6.6	16
60mm cannon	-	5	420	28,000	3d12	-	1:2`	650	10	24
65mm cannon	-	5	480	34,000	4d12	2	1:2	700	13	32
75mm cannon	-	5	540	40,000	5d12	2	1:2	900	17	40
9cm cannon	-	5	1,000	68,000	6d12	4	1:3	1300	37	88
12cm cannon	-	5	2,100	120,000	7d12	7	1:5	1500	67	160
15cm cannon	-	5	4,000	200,000	8d12	11	1:10	1700	100	240
18cm cannon	-	5	7,500	320,000	9d12	16	1:10	2100	150	360
21cm cannon	-	5	13,000	440,000	10d12	22	1:10	2700	233	560

AUTOCANNON

Name	Power	Min TL	Size	Cost	Damage	Area of Effect	Rate of Fire	Range	Ammo Volume	Ammo Cost
30mm 4bbl AC	-	8	180	10,800	1d12	-	70	400	1.3	3.2
35mm 4bbl AC	-	8	195	13,500	2d12	-	60	500	2	4.8
45mm 4bbl AC	-	8	360	21,600	3d12	-	50	600	5	12
50mm 4bbl AC	-	8	450	27,000	4d12	-	40	700	6.6	16
60mm 4bbl AC	-	8	630	37,800	5d12	-	35	900	10	24
7.5cm AC	-	8	360	55,200	6d12	2	6	1300	20	48
9cm AC	-	8	600	81,600	7d12	4	4	1500	37	88
12cm AC	-	8	1,260	144,000	8d12	7	2	1700	67	160
15cm AC	-	8	2,400	240,000	9d12	11	1	2100	100	240
18cm AC	-	8	4,500	384,000	10d12	16	5:2	2700	150	360

MASS DRIVER CANNON

Name	Power	Min TL	Size	Cost	Damage	Area of Effect	Rate of Fire	Range	Ammo Volume	Ammo Cost
35mm MD	0.12	8	780	116,000	1d12	-	4	450	0.5	0.9
40mm MD	0.2	8	960	119,000	2d12	-	4	500	0.8	1.5
50mm MD	0.4	8	2,400	148,000	3d12	-	4	700	1.6	3
60mm MD	0.6	8	2,500	150,000	4d12	-	4	900	2.5	4.5
65mm MD	0.8	8	2,900	158,000	5d12	2	4	1100	5	6
75mm MD	1.2	8	3,600	172,000	6d12	2	4	1300	7.5	9
9cm MD	2.2	8	6,000	220,000	7d12	4	4	1500	14	16
12cm MD	4	8	12,600	352,000	8d12	7	4	1700	25	30
15cm MD	6	8	24,000	580,000	9d12	11	4	2100	38	45
18cm MD	9	8	45,000	1,000,000	10d12	16	4	2700	56	68

You may change the rate of fire on the mass driver cannon to any value between one and 100. Multiply the power requirement by the new rate of fire divided by four.

BEAM LASER

Name	Power	Min TL	Size	Cost	Damage	Area of Effect	Rate of Fire	Range
Beam Laser – 6Mw	0.6	8	198	24,000	1d8	-	1	2km
Beam Laser – 8.4Mw	0.8	8	277	33,600	2d8	-	1	2.8km
Beam Laser – 12Mw	1.2	8	393	47,600	3d8	-	1	3.9km
Beam Laser – 17Mw	1.7	8	555	67,280	4d8	-	1	5.6km
Beam Laser – 24Mw	2.4	8	785	95,200	5d8	-	1	7.9km
Beam Laser – 34Mw	3.4	8	1110	134,400	6d8	-	1	11.2km
Beam Laser – 44Mw	4.4	8	1440	174,400	7d8	-	1	14.5km
Beam Laser – 67Mw	6.7	8	2220	268,800	8d8	-	1	22.4km
Beam Laser – 95Mw	10	8	3140	380,800	9d8	-	1	32km
Beam Laser – 135Mw	14	8	4440	538,500	10d8	-	1	45km

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PULSE LASER

Name	Power	Min TL	Size	Cost	Damage	Area of Effect	Rate of Fire	Range
Pulse Laser – 1.5Mw	0.2	8	50	6,125	1d10	-	1	2.0km
Pulse Laser – 2.8Mw	0.3	8	90	11,000	2d10	-	1	3.7km
Pulse Laser – 5.1Mw	0.5	8	170	20,000	3d10	-	1	6.8km
Pulse Laser – 9.4Mw	0.9	8	310	37,750	4d10	-	1	12km
Pulse Laser – 17.3Mw	1.7	8	570	70,000	5d10	-	1	23km
Pulse Laser – 32Mw	3.2	8	1,050	125,000	6d10	-	1	42km
Pulse Laser – 58Mw	5.8	8	1,900	230,000	7d10	-	1	77km
Pulse Laser – 107Mw	11	8	3,500	425,000	8d10	-	1	142km
Pulse Laser – 195Mw	20	8	6,500	785,000	9d10	-	1	261km
Pulse Laser – 360Mw	36	8	12,000	1,440,000	10d10	-	1	480km

You may change the rate of fire on a pulse laser to any desired rate between one and 15. Multiply the Pulse Lasers power, size, and cost by the new rate of fire.

PLASMA AND FUSION GUNS

Name	Power	Min TL	Size	Cost	Damage	Area of Effect	Rate of Fire	Range
Plasma – 1	14	10	965	551,000	1d12	5.0m	1	0.5km
Plasma – 2	18	10	1,250	714,000	2d12	6m	1	0.6km
Plasma – 3	23	10	1,620	926,000	3d12	6m	1	0.7km
Plasma – 4	30	10	2,100	1,200,000	4d12	7m	1	0.8km
Plasma – 5	39	10	2,730	1,560,000	5d12	8m	1	0.9km
Plasma – 6	50	10	3,500	2,000,000	6d12	9m	1	1.0km
Plasma – 7	65	10	4,550	2,600,000	7d12	11m	1	1.1km
Plasma – 8	78	10	5,460	3,120,000	8d12	12m	1	1.2km
Plasma – 9	110	10	7,700	4,400,000	9d12	14m	1	1.5km
Plasma – 10	143	10	10,000	5,720,000	10d12	16m	1	1.7km
Fusion – 1	14	12	965	825,000	1d20	5m	1	0.8km
Fusion – 2	18	12	1,250	1,070,000	2d20	6m	1	0.9km
Fusion – 3	23	12	1,625	1,390,000	3d20	6m	1	1.0km
Fusion – 4	30	12	2,100	1,800,000	4d20	7m	1	1.2km
Fusion – 5	39	12	2,730	2,340,000	5d20	8m	1	1.3km
Fusion – 6	50	12	3,500	3,000,000	6d20	9m	1	1.5km
Fusion – 7	65	12	4,515	3,870,000	7d20	11m	1	1.7km
Fusion – 8	85	12	5,950	5,100,000	8d20	12m	1	1.9km
Fusion – 9	110	12	7,700	6,600,000	9d20	14m	1	2.2km
Fusion – 10	142	12	9,940	8,520,000	10d20	16m	1	2.5km

You may change the rate of fire on plasma and fusion weapons by multiplying the power requirement by the new rate of fire. Plasma weapons have a maximum ROF of 2 at TL11, 3 at TL12, 4 at TL13, 5 at TL14, and 10 at TL15. Fusion weapons have a maximum ROF of 2 at TL13, 3 at TL14 and 4 at TL15.

The TL listed for each of these weapons is the earliest TL they are available, however the size and power requirements are based upon the TL14 or higher versions of the weapon. For earlier TL models (where available), calculate the actual size and power; at TL10, x5 size and x2 power, at TL11, x4 size and x1.5 power, at TL12, x3 size and x1.5 power, and at TL13 x2 size.

Flying Low

Grav vehicles, like airplanes and helicopters, fly at maximum speed while above all congestion on the ground. However, there are times when flying low is essential. For example, when characters are trying to avoid detection by enemy forces or find cover while being shot at by the same enemy. There are two modes of flying low; Terrain Following or Nap of Earth. Terrain Following (TF) mode is flying a few meters above the highest terrain feature, over the tops of trees and buildings. Pilots use Terrain Following to avoid being spotted but still fly at very high speeds. Nap of Earth (NOE) mode is flying a few meters above the ground level, around trees, buildings or other obstructions. Pilots use NOE to find cover and avoid being spotted or fired upon. Flying NOE counts as hiding for purposes of an encounter (see hiding THB pg. 76). When flying in either mode, the pilot (or autopilot) must make an Avoid Collision check (THB pg. 160) each round. When flying in TF mode use a base DC 0, and NOE mode use a base DC 5. Failing the Avoid Collision check causes the vehicle to collide with a terrain feature, like a tree, building, or the ground (see collisions THB pg. 163/174).

(For CT: Roll 4+ for flying TF or 6+ for NOE. +DM: Pilot Skill, -DM: -1 per 15kph of vehicle speed).

Ram Plate

Ram plates are a reinforced front (or rear) mounting designed to absorb impacts, allowing the vehicle to do more damage in a collision without suffering additional damage itself. Military organizations like to mount ram plates on their urban assault vehicles, allowing them to overcome the frequent barriers in the city. Private security firms frequently have a ram plate mounted on their vehicles to avoid uncomfortable situations. Some police vehicles mount them, either as a specialized assault carrier or in places where lawless drivers have begun to take the upper hand.

Ram plates take space and cost as much as two points of armor, multiply the chassis armor factor by the Tech Level modifier and then by two to get the vl, Cost is Cr3,000 + Cr9 per vl. The ram plate adds 25% to the vehicles SI for collisions (THB p.xx), both for calculating damage done and taken by the vehicle. If the damage taken in the collision does not exceed the additional SI given by the ram plate, the vehicle takes no damage at all. Ram plates do not add to the AR or AC of the vehicle and adding a ram plate does not affect how much armor can be mounted.

COMPANIES

- **Delgado Trading, LIC** is the youngest megacorporation, founded in 997 from the merger of several smaller Imperium wide companies. Divisions of Delgado include military hardware manufacture, heavy metal mining and refining, publishing, antiquities trade and toys. Delgado Trading is still undergoing growing pains from its recent merger.
- **Instellarms LIC**, an Imperial Megacorporation, is a specialty supplier of all sizes and types of mercenary units. It manufactures, buys, and sells military equipment and provides military training, advisors, and personnel for military units. Interstellarms dominates the mercenary arms trade throughout the Imperium. Interstellarms

vehicles are of excellent quality and generally respectable pricing.

- **Ling-Standard Products** is another Imperial megacorporation with offices throughout Ley sector and the entire Imperium. LSP manufactures electronic equipment of all sorts, ground and air vehicles, starships and starship armaments systems, drive systems, power systems, computer systems and software, small arms, and a variety of other items.
- **Nova Bright-Star Nest** is the local manufacturing concern for the Hiver colony on Gashuki (Ley 2232 A401431-F) and sells excess inventory to support the colony. Nova Bright-Star Nest manufactures goods needed by a small but growing colony, including grav vehicles, electronic equipment, life support systems, and a wide variety of tools. Like all Hiver equipment, Nova Bright-Star Nest's products are very high tech and excellent quality.
- **Gvedueksaez Aengue Goek** is a large Vargr trade corporation and the primary long-distance hauler between Ley sector and the Vargr Extents. Goek does not manufacture its own equipment, but frequently re-labels items. Vehicles are of moderate quality and somewhat more expensive, but Goek is the only reliable source of vehicles designed for the Vargr physiology.
- **Hagajaya Sarana, LIC**, a subsidiary of Ling-Standard Products, is LSP's primary vehicle manufacturer within Ley sector. Hagajaya Sarana concentrates upon the smaller private Grav vehicles, and offers excellent maintenance and warranty packages.
- **Finmeccanica** specializes in cargo lifters and heavy transport craft. Finmeccanica's recent series of mergers and acquisitions throughout Ley sector has placed them in a position to dominate the Grav transport market. Customers admire Finmeccanica's vehicles for their ease of use and maintenance.
- **Intergrav Logistics** is a joint venture between several smaller manufacturers to supply Grav vehicles to the Ley sector Imperial Army. Usually the domain of the larger Megacorporations, Intergrav Logistics continually manages to underbid their larger competitors. However, the smaller size of Intergrav means their products are only available on the open market through Imperial Army surplus sales.
- **Dinabarib, LIC** was one of the arms suppliers for the Sydymic Empire, and after the fall of the empire the company turned to producing civilian vehicles. Recent acquisitions indicate Dinabarib may be returning to military vehicle manufacturing. Dinabarib supplies vehicles and spare parts to most of the worlds in the former Sydymic empire.
- **Raakugaageniram Adiikhak** is a large vehicle designer and manufacturer, supplying to worlds in the Gateway sector and has begun an aggressive marketing campaign to worlds in the Outworld and Sydymic Empire subsectors. RA's vehicles demonstrate some innovative applications using lower tech equipment. RA's aggressive moves into the former Sydymic empire are causing disruptions in Dinabarib's market.
- **Ballistica Maximas, LIC** is the primary supplier to the Huangfeng (Ley 0813 B110889-C) colonial defense force.

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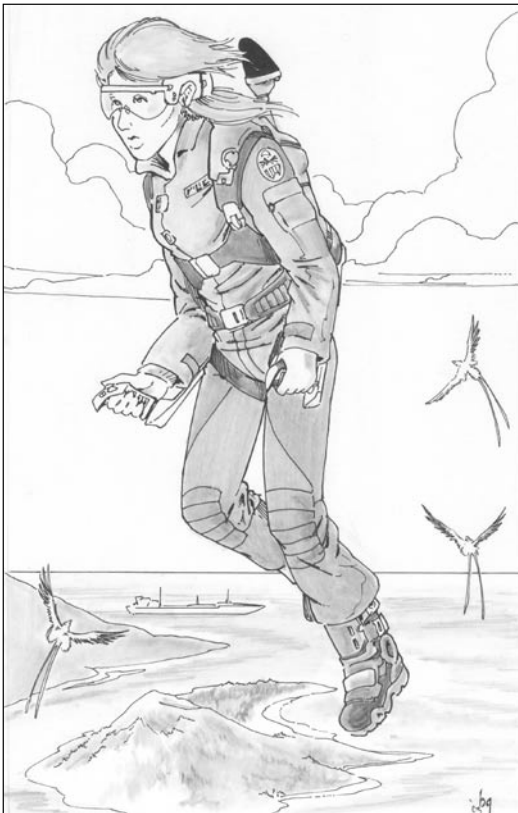
Previously, when the Huangfeng government adjusted the CDF budget, they would sell large quantities of Ballistica's equipment at auction. Taking advantage of this situation, Ballistica Maximas now sells new equipment to interested and approved customers.

- **Hiishirenaa Mekhii** provides military support vehicles to COACC forces on Sharpe (Ley 1023 B4379BD-D). Interstellar Mercenary Review Board reviews of Hiishirenaa Mekhii's vehicles describe them as overpriced and of only medium quality. Hiishirenaa Mekhii has gained a reputation for being very indiscriminating about whom they sell to and consequently their vehicles are throughout Ley sector.

VEHICLES

The Yarn Caardee Design Bureau catalog presents a mélange of Grav vehicles to demonstrate the variety of available designs. This is merely a teaser to spark interest. Specialized catalogs for each category of Grav vehicle are available if the example design presented doesn't quite meet your requirements.

We have divided the vehicles in this catalog into four sections. First section covers purely civilian Grav vehicles that are on many worlds. The second section describes lower tech military Grav vehicles used as the backbone of planetary defense and mercenary forces throughout Ley sector. The third section covers the current state of the art military Grav vehicles used by the Imperial armed forces. The fourth section presents two new, cutting-edge Grav tanks under developed for the Imperial Army.



GRAV BELT

TL12, Cr9,192, 100vl. A personal anti-gravity transportation system uses a single null-gravity module and a personal harness to transport a single person and a small amount of cargo. The advanced fuel cell, rechargeable from a ship's power plant, powers the harness for four weeks. The cruising speed of 60kph and a 672-hour duration fuel tank give the Grav belt a 40,000-km range. Because many people find the Grav Belt harness uncomfortable or the manner of flight unnerving, Grav belts are not as ubiquitous as the air/raft.

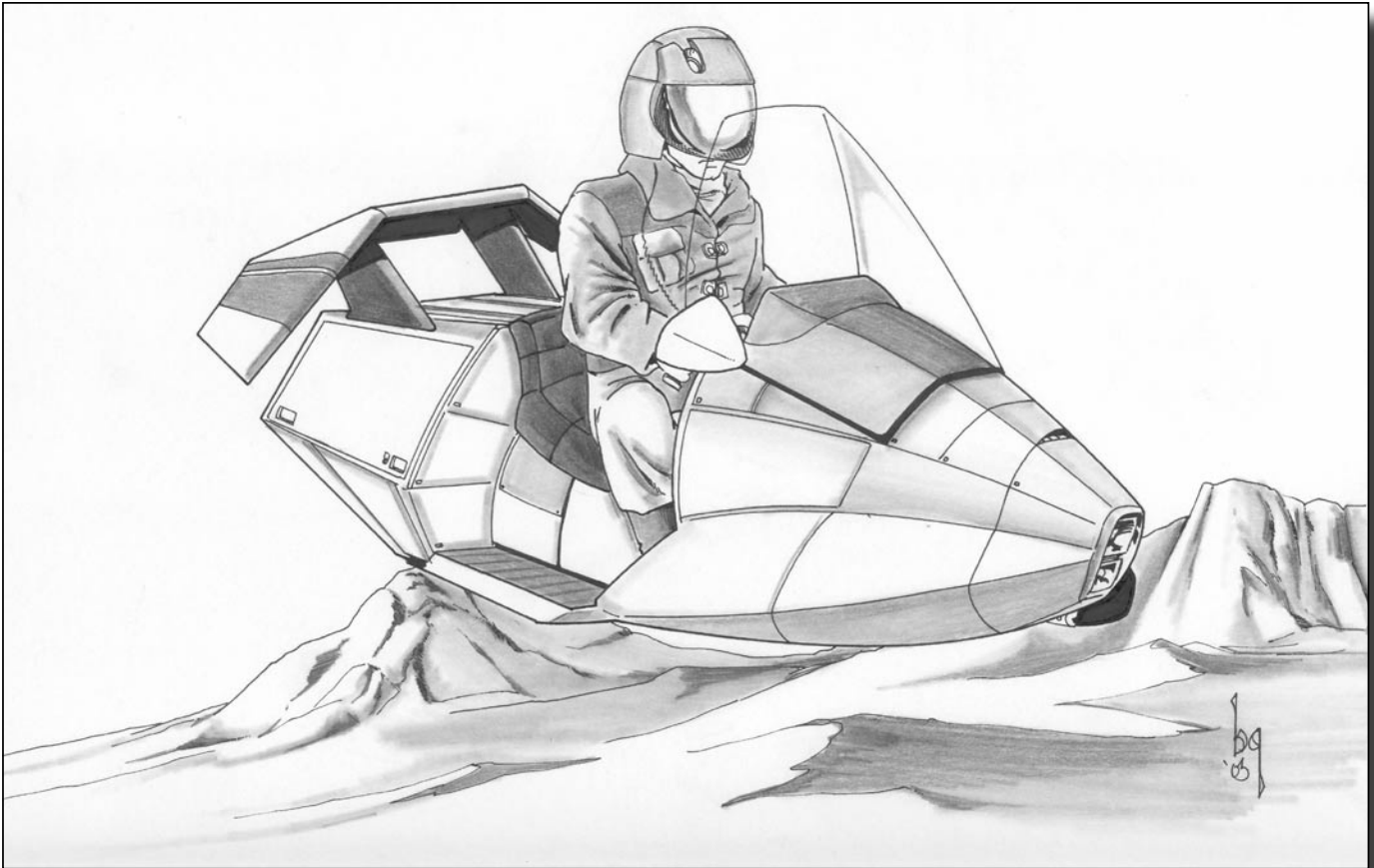
Ling-Standard Products Grav belt is the best known Grav Belt throughout the Imperium. Fast, reliable and safe, the Grav Belt makes and is excellent for short-range exploration or commuting. LSP's latest model uses a more seat like approach for the harness with a new "Auto-Strap" system.

Ballistica Maximas produces the AMV Grav belt, designed with a larger cargo capacity to support a soldier with a full kit, allowing better mobility for ground troops. Elite strike force teams on several worlds have adopted the stealthy and low-emissions AMV Grav Belt.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
200 vl Chassis	-200	200	-
Controls	20	50	-
Grav Drivetrain	0.96	11,040	-0.24
Adv. Fuel Cell	1.5	100	1
Fuel	33.6	-	-
Crew	110	100	-
Cargo	33.94	-	-

Subtotals	0	Cr11,490 (Cr9,192 with 20% production model discount)
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GRAV BIKE

TL12, Cr38,188, 130vl. A two-person grav transport, the driver and passenger sit on open saddle seats. Grav bikes have little or no cargo space and generally only carry one passenger. The cruising speed of 300kph and a 504-hour (three-week) duration fuel tank gives the bike a 150,000 km range.

Hagajaya Sarana manufactures the LightFlit, and like their other bikes, designs it for ease of use by the first time rider. All of the controls are brightly backlit, easy to find, and simple to use. The center display has a user-friendly help system that can be voice activated through the intercom system. Safety features included by the LightFlit are safety harnesses for driver and passenger, a powerful inertial gyroscope, and computerized performance limitation options. Hagajaya's safety record with the LightFlit is outstanding, and the LightFlit has received highest recommendation marks from independent reviewers throughout Ley sector.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
330vl Chassis	-330	330	-
Controls	33	165	-
Grav Drivetrain	3.96	45,540	-0.99
Adv. Fuel Cells	7.575	1,515	+5.05
Fuel	42.42	-	-
Passenger Saddle (2)	220	25	-
Headlight (6m beam)	0.4	10	-0.02
Two way Radio	1	150	-0.04
Cargo	21.645	-	-
Subtotals	0	Cr47,735 (Cr38,188 with 20% production model discount)	

AGAINST GRAVITY

6

HIVER FLOATER

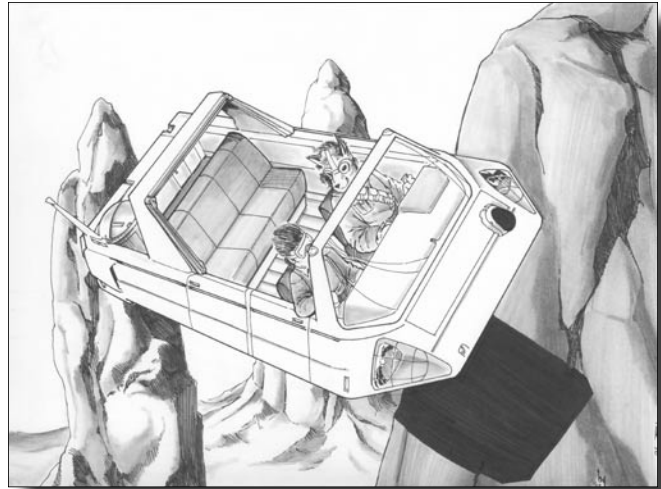
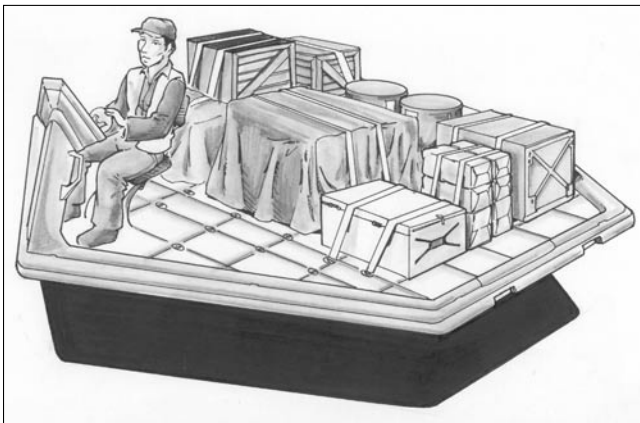
TL 15, Cr50,368, 1,500vl. The floater is a large square, rectangular, or hexagonal platform with a control column on one side and a number of cargo tie down points around the top surface. Hiver's use this simple floating platform where Imperial citizens would use an air/raft, as a light duty passenger or cargo craft. The Floater can cruise at 37kph and has a top speed of 75kph.

Nova Bright-Star Nest manufactures a number of Floater models. This floater, called "One", is for one person and can haul 1,000vl of cargo. Nova Bright-Star also produces the "Six," a six-person carrier platform and a larger cargo platform called "Twelve".

Our review team was very impressed with this vehicle. The dynamic control system contains a biometric sensor that reconfigures to your personal settings, or for an unknown person to a layout designed for their species. The Autopilot is responsive and configured to understand all of the most common planetary navigation nets in the Imperium. An advanced micro-fusion plant with an impressive one year fuel supply redefines "unlimited range".

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
1,500 vl Chassis	-1,500	1,500	-
Controls	300	750	-
Grav Drivetrain	4.5	51,750	-1.125
Advanced Fusion	3	660	+2
Fuel	36	-	-
NavComp-3	8.1	6,000	-0.72
Dynamic Control Panel	1.35	2,000	-
Long Range Radio	2	300	-0.08
Cargo	1,145	-	-
Subtotals	0	Cr62,960 (Cr50,368 with 20% production model discount)	



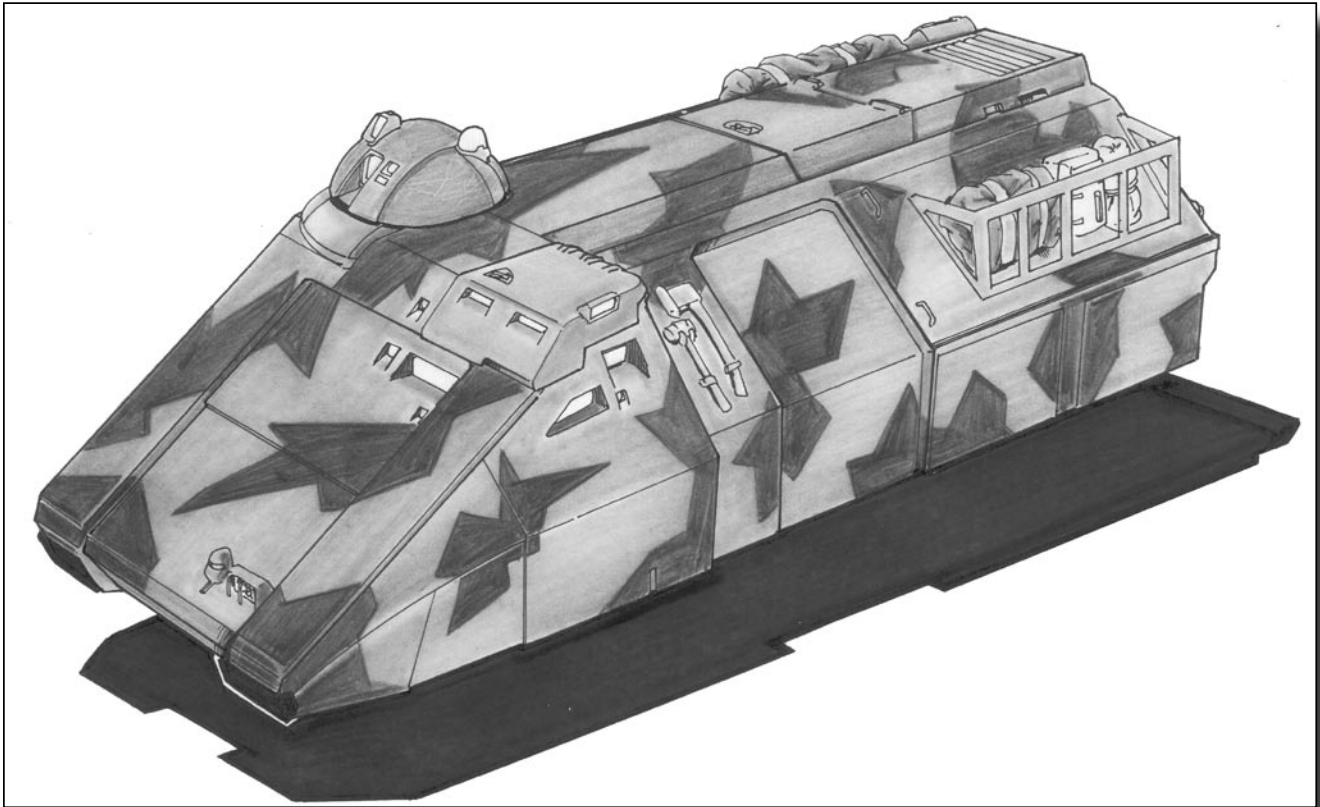
AIR/RAFT

TL 8 Cr265,920, 6,000vl. A light Grav vehicle using null-gravity modules to counter act gravity for lift and propulsion to carry a few passengers and their cargo. An air/raft can cruise at 60 kph and reach a maximum of 120 kph. An air/raft can reach orbit in a number of hours equal to the planet's UWP, but passengers must wear vacc suits. Interplanetary travel is impossible in an air/raft. The craft can carry a driver and 3 passengers plus over 4000 vl of cargo. Air/rafts come in a variety of configurations at various tech levels. The example here is the lowest tech level model with a gas-turbine engine, open-topped and unpressurized. Higher tech versions often have fuel cell or fusion engines with longer ranges and better agility.

This design is from the Ling-Standard Products catalog. LSP has been manufacturing these craft throughout its entire history, and the air/raft has been copied so extensively the term air/raft has become a generic term for a light Grav vehicle throughout Charted Space. LSP continues to make minor modifications to the air/raft but the basic design has remained unchanged for almost a thousand years.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
6,000 vl Chassis	-6,000	6,000	-
Controls	1,200	3,000	-
Grav Drive Train	28	322,000	-7
Turbine Power Plant	16	800	+8
Fuel	336	-	-
Passenger Seats (3)	300	300	-
2-way radio (long range)	2	300	-0.8
Cargo	4118	-	-
Subtotals	0	Cr332,400 (Cr265,920 with 20% production model discount)	



GCARRIER

TL8, Cr576,432, 10,000vl. An enclosed military or quasi-military grav vehicle. The GCarrier is an armored air/raft intended originally for troop carrier duties. Performance is similar to that of the air/raft, but the vehicle generally has a gun mount and is armored. It requires a crew of one (with driving skill and the Vessel/grav feat), plus a gunner for the craft's weapon, if any. It can carry 14 persons (including the driver and gunner), plus roughly half a metric ton of cargo.

Like the air/raft, the Grav Carrier as a light armored personnel carrier has become a generic term and applied to a wide range of very similar craft. Ballistica Maximus markets the Armatura Volucer, a classic example of a Gcarrier, to planetary security forces. The armor will stop most small arms fire and the turreted rapid pulse 2.8Mw laser canon will quickly disable most civilian vehicles with minimal collateral damage. Military designers consider the Armatura Volucer to be slow and undergunned, but it has a combination of armor, speed, and cost the GCarrriers's users prefer.

Ballistica Maximus produces an array of weaponry that will fit within the Armatura Volucer's turret, including more powerful laser weapon systems or light autocannons depending upon requirements. One popular variant replaces the passenger seats with a sickbay, for an armed ambulance.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
10,000 vl Chassis	-10,000	10,000	-
Controls	2,000	5,000	-
TL8 Armor (AR 6)	2,800	28,200	-
Grav Drive Train	48	552,000	-12
Turbine Power Plant	84	4,200	+42
Fuel	1764	-	-
Climate Control	100	5,000	-1
Pressurized Interior	500	12,500	-12.5
Passenger Seats (14)	1540	1400	-
4km visual sensor+LI	40	24,500	-12
2-way radio (long range)	2	300	-0.8
Fire Control Computer	22.95	17,000	-1.53
Lights (2 beam, 2 area)	2	40	-0.08
Standard Turret	540	5,400	-0.54
Pulse Laser-2.8,ROF 5	(450)	55,000	-1.5
Cargo	557.05	-	-
Subtotals	0	Cr720,540 (Cr576,432 with 20% production model discount)	

AGAINST GRAVITY

6

SPEEDER

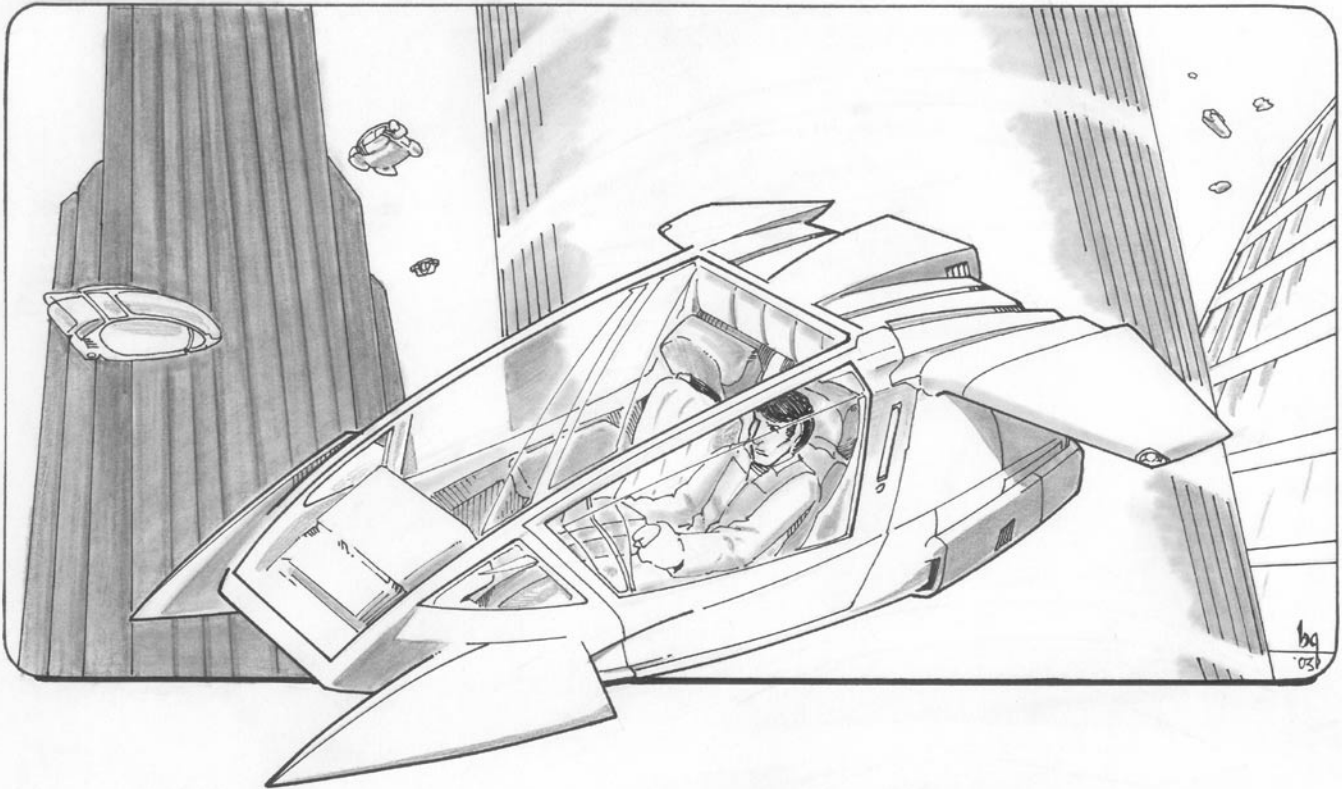
TL10, Cr629,728, 2,000vl. A small four-person Grav vehicle, sealed against the weather. Speeders are for high-speed travel around a planet, and while the speeder can make it to orbital height, the air-breathing engine is not designed to allow flight outside the atmosphere. The Speeder has a cruising speed of 500kph and a top speed of 1,000kph, hence its name. The 26-hour fuel tank gives the Speeder a 15,600km range.

The speeder, like the Hrovean Eagle imported by Raakugaageniram Adiikhak, is a category of Grav vehicles that has been around a long time and with many variants. The Hrovean Eagle is more agile than most speeders, thanks to its innovative use of aerodynamic styling. Most designers consider the use of wings to be redundant on a Grav vehicle, but the Hrovean Eagle has a full set of canard wings. These small wings allow the Hrovean Eagle to maintain stability and improve maneuverability while reducing stress on the Grav modules.

Speeders are some of the most expensive personal Grav vehicles generally available, making them infrequently seen. Planetary governments discourage their citizens from flying a Mach speed capable craft, particularly within urban areas. Speeders are most popular on less inhabited planets or uninhabited areas of worlds where there are long distances and little traffic.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
2,000 vl Chassis	-2,000	2,000	-
Controls	400	1,000	-
Airframe chassis	-	6,000	-
Grav Drive Train	66.64	766,360	-16.66
Fuel Cell Power Plant	68	10,200	+34
Fuel	132.6	-	-
Climate Control	20	1,000	-0.2
Passenger Seats (3)	300	300	-
2-way radio (long range)	2	300	-0.8
Lights (2 beam, 2 area)	2	40	-0.08
Video+LI	4.1	5500	-0.14
Cargo	1004	-	-
Subtotals	0	Cr787,160 (Cr629,728 with 20% production model discount)	



SUB-ORBITAL TRANSPORT

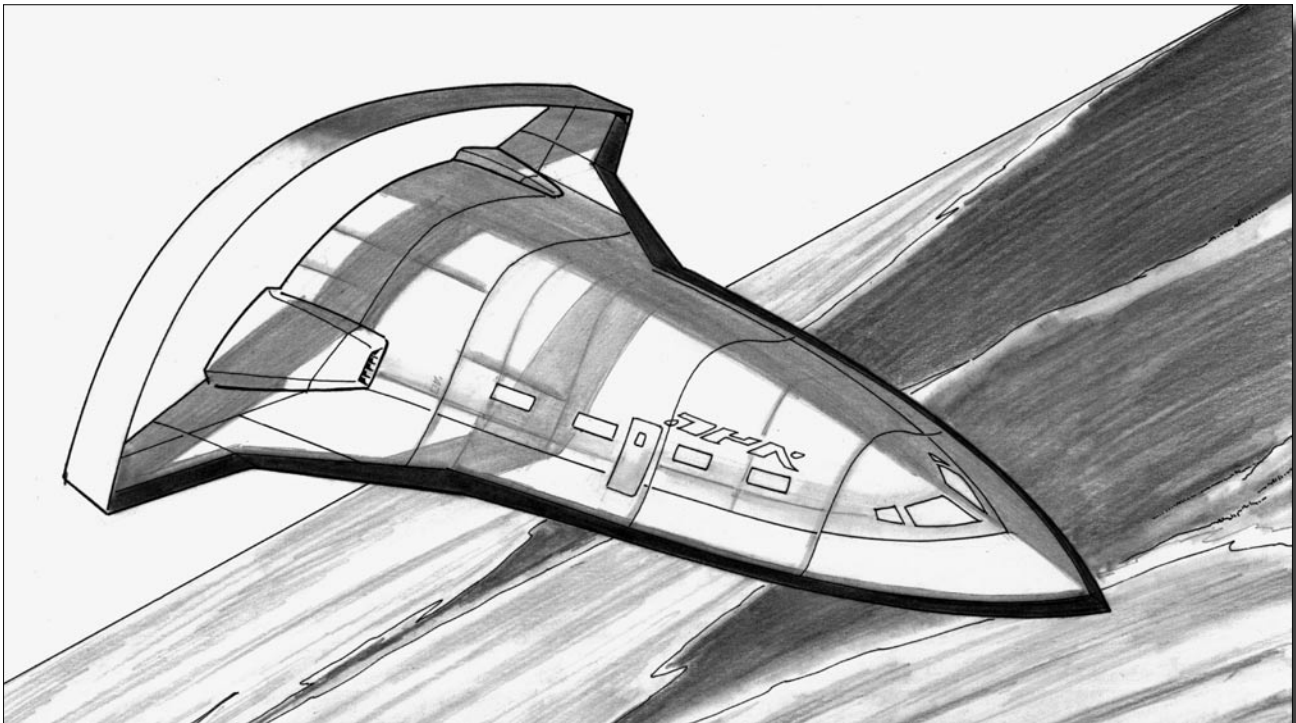
TL13, Mcr8.45, 20,000vl. A large grav transport for high-speed long-range transport. The transport carries ten passengers in roomy comfort plus 1,300 vl of cargo. The craft has a top speed of 1,200 kph, with a 2-month fuel supply for the fusion power plant. The transport requires a crew of two; a pilot and a navigator.

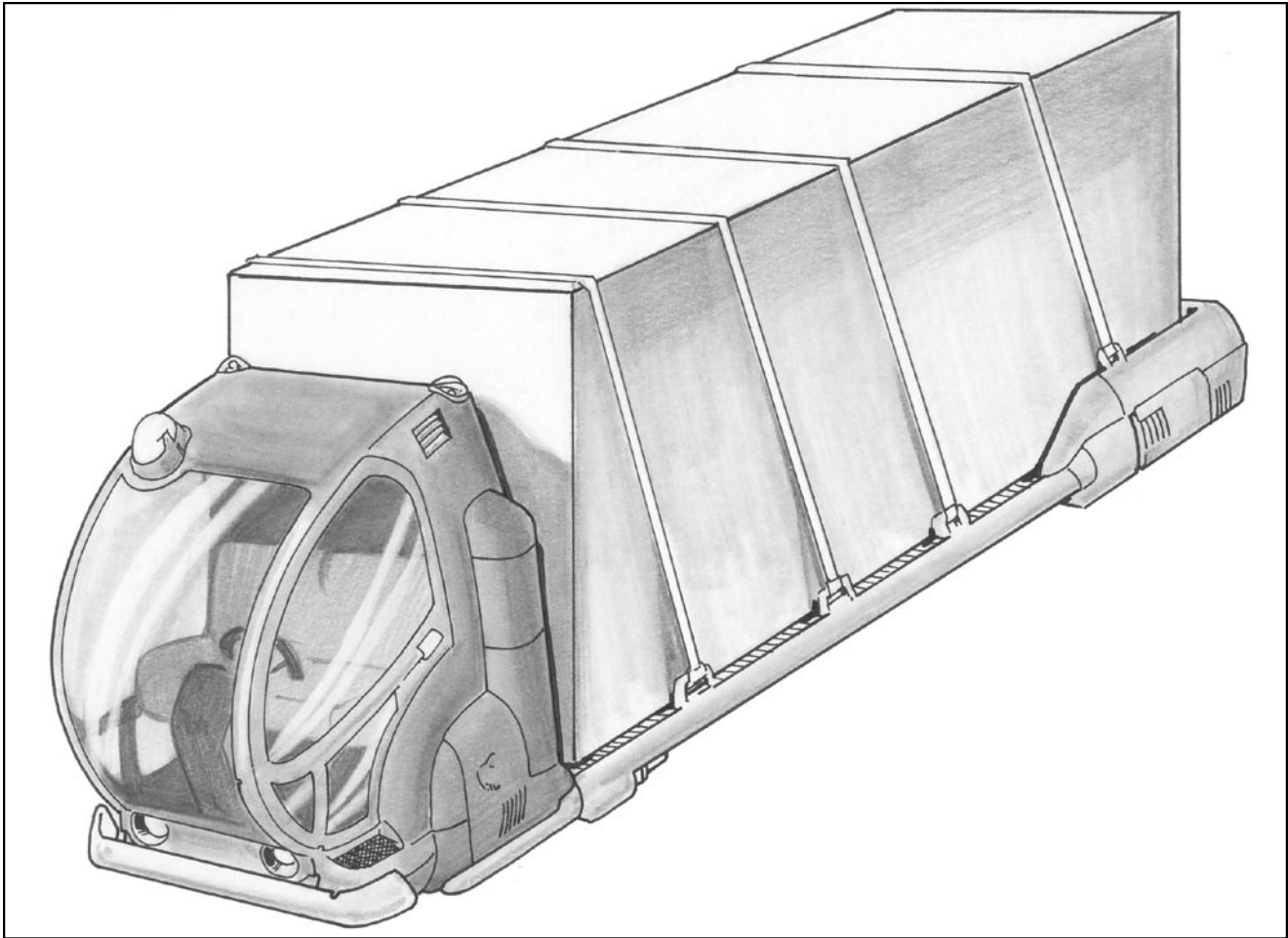
The TopSail is an orbit capable Grav vehicle manufactured by Hagajaya Sarana. The outer hull meets the Imperial Starship Design Review (ISDR) standards for micrometeorite and radiation resistance. The TopSail is capable of reaching orbital height in less than an hour, but takes 5 hours or more to reach orbital velocity. The ISDR does not recommend using the TopSail for interplanetary voyages. The life support system of the TopSail is not designed to maintain passengers for the days or weeks such a journey would take and the communications and sensor systems are not up to ISDR standards. Still, the TopSail has found a market with travel companies providing quick trips from one side of a planet to another.

Hagajaya Sarana has several configurations of the TopSail, the two most popular are an all cargo variant with a 10,000 vl cargo hold and large loading door and a 25 passenger short hop carrier.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
20,000 vl Chassis	-20,000	20,000	-
Controls	4,000	10,000	-
Airframe Chassis	-	60,000	-
Armor -5	2,400	24,600	-
Grav Drive Train	800	9,200,000	-200
Modern Fusion Power Plant	930	204,600	+310
Fuel	930	-	-
Climate Control	200	10,000	-2
Pressurized Interior	1,000	25,000	-25
Navigator	200	100	-
Passenger Seats (10 roomy)	8,000	4,000	-
Fresher	200	750	-
2-way radio (long range)	2	300	-0.8
Radar (Long Range)	20	1,000,000	-1
AutoPilot/3 (Synaptic)	6	4,500	-0.405
Cargo	1,312	-	-
Subtotals	0	Cr10,563,850 (Mcr8.45 with 20% production model discount)	





CARGO HAULER, LIGHT

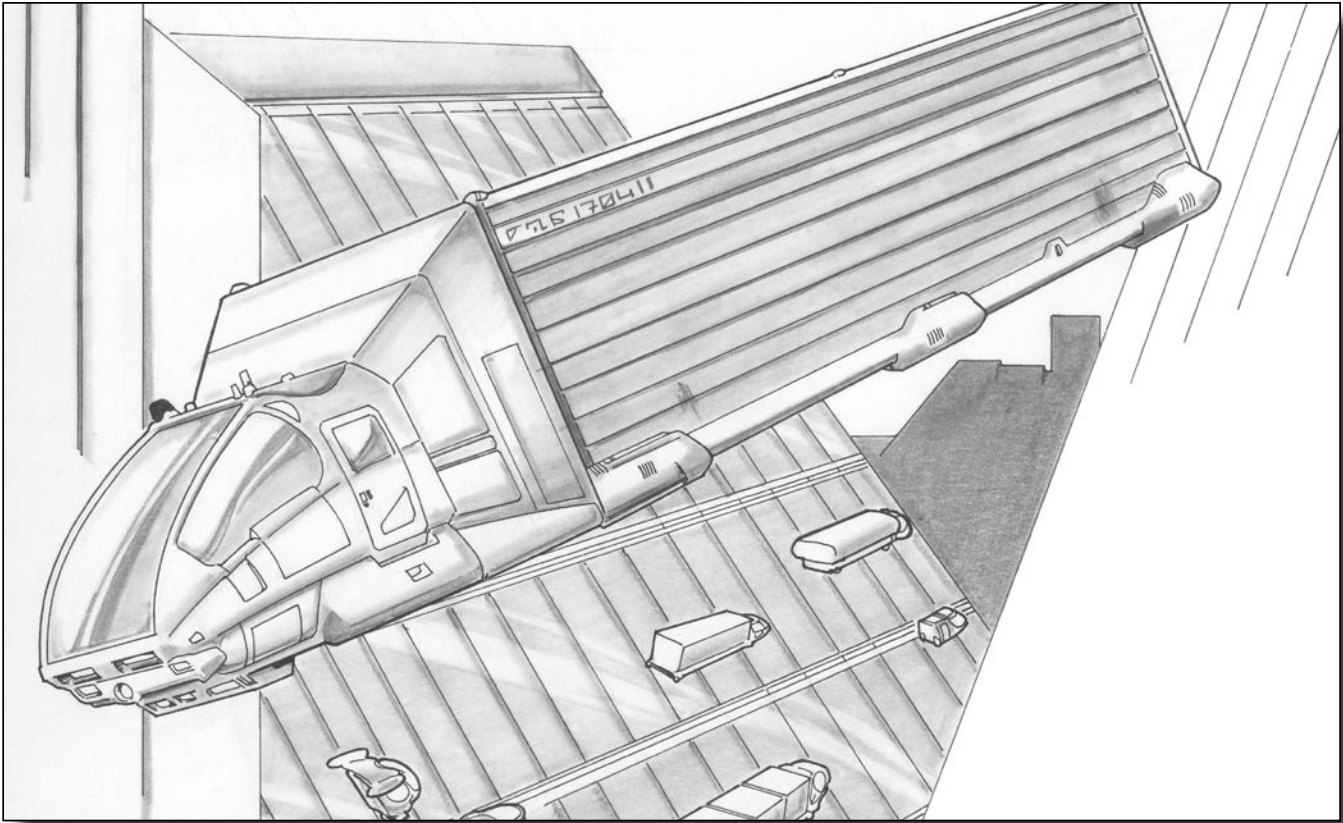
TL9, Cr657,040, 7,000vl. The light cargo hauler is for short range hauling of break bulk (small boxes or loose items) cargo. The cargo hauler can hold up to 5,000vl of cargo. It has a top speed of 250kph, and a cruising speed of 125kph. The 46-hour duration fuel tank gives the Grav truck a 5,750-km range. The Grav truck requires a crew of 1, the pilot, although there is space for a single passenger.

The 25 series manufactured by Finmeccanica is a prime example of a short range Grav powered cargo hauler. The hydraulically powered large rear door gives quick access to the cargo space and acts as an access ramp. The controls, done over with an ergonomic fine toothed comb, are comfortable, well laid out, and ideally suited for the short range delivery of small packages and light cargo. Many of 25 series are adapted for mobile repair duties, the cargo space filled with tools and materials, for use in rural areas.

Finmeccanica offers the 25 series with a variety of cargo space options. The standard climate control system included with the base model is capable of providing moderate cooling for cargo. As optional equipment, Finmeccanica can outfit the 25 series with a large tank, a freezer cargo space, or a flatbed with cargo tie down points.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
7,000 vl Chassis	-7,000	7,000	-
Controls	1,400	3,500	-
Climate Control	70	3,500	0.7
Grav Drive Train	70	805,000	-17.5
Turbine Power Plant	38	1,900	+19
Fuel	218	-	-
Passenger Seats (1)	200	100	-
2-way radio (long range)	2	300	-0.8
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	5,000	-	-
Subtotals	0	Cr821,340 (Cr657,072 with 20% production model discount)	



CARGO HAULER, HEAVY

TL9, Mcr 7.2, 31,500vl. A large cargo hauling truck designed for high-speed delivery of large cargo loads. The cargo hauler has a cruising speed of 300kph and a top speed of 600kph. The liquid hydrogen fuel supply for the early fusion plant lasts a month. The large cargo space can hold up to 22,400 vl of cargo or passengers.

The Finmeccanica 112 series is a prime example of how cargo hauling has evolved from wheeled trucks. The 112 series provides a high-speed delivery option over moderate distances. Responsive control systems on the 112 series give the large truck much more agility and allow moving cargo directly from shipboard to destination. The 112 series is for larger worlds where shipping companies do not use the starport customs warehouse as a final distribution point. The autopilot and communications systems allow the 112 series to work with ground traffic control, a big selling point for worlds where the costs for using space traffic control may be much higher.

Finmeccanica manufactures a wide range of options for the cargo space on the 112 series. The 112-A is an open frame with attachment points for standard size shipping containers. The 112-B has a permanently attached large cargo box, with optional refrigeration or heating systems. The 112-G replaces the large box with a 34,500-liter tank capable of hauling water, Lhyd fuel, or just about any other liquid.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
31,500 vl Chassis	-31,500	31,500	-
Controls	6,300	15,750	-
Partly Streamlining	-	31,500	-
Climate Control	315	15,750	3.15
Grav Drive Train	756	8,694,000	189
Early Fusion Power Plant	900	200,000	+200
Fuel	300	-	-
Passenger Seats (2)	400	200	-
2-way radio (long range)	2	300	-0.8
Autopilot/0	5.06	3,750	-0.45
Video + LI	4.1	5,500	-0.14
Lights (2 beam, 2 area)	2	40	-0.08
Cabin Space	115.84	-	-
Cargo	22,400	-	-
Subtotals	0	Cr8,998,290 (Mcr7.2 with 20% production model discount)	

AGAINST GRAVITY

6

AMBULANCE

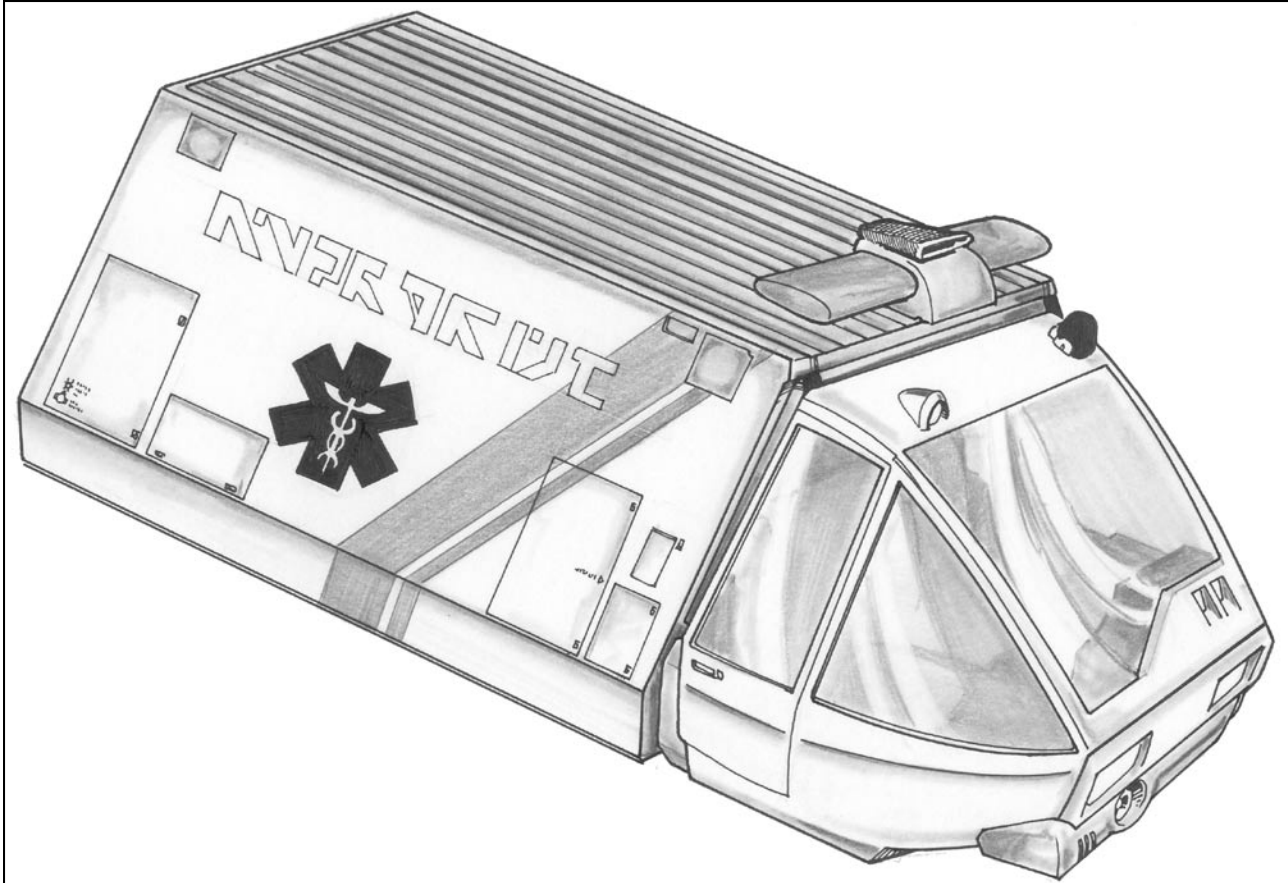
TL9, Mcr 1.13, 5,000vl. A vehicle designed to transport the sick or injured. The Ambulance has room for two patients, plus two doctors to monitor the patient condition and 156 vl of cargo for emergency medical supplies. The ambulance has a cruising speed of 250kph and a top speed of 500kph.

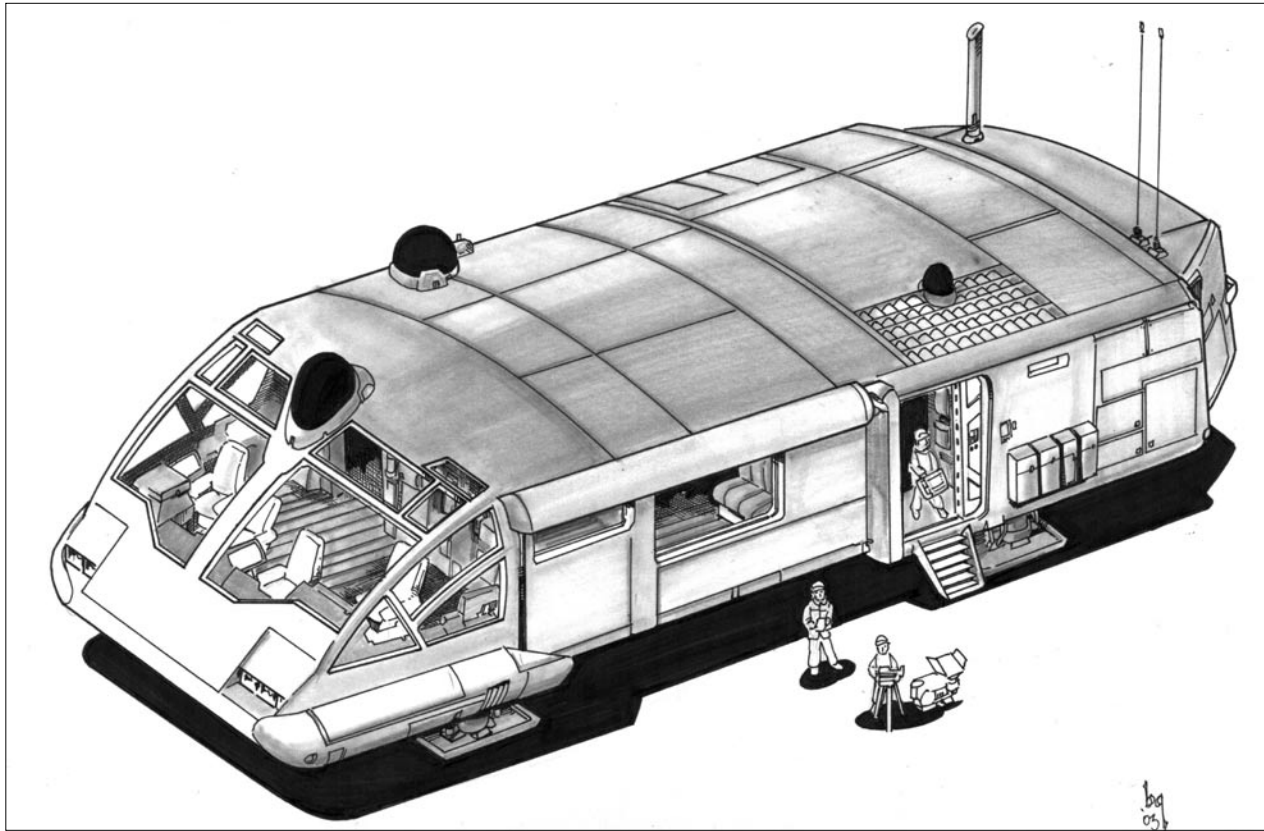
Dinabarb manufactures the Ambulance Type II, a top of the line model designed for starport emergency services. The Type II has a separately grounded electrical system and a coating on all surfaces to prevent sparking. Interior construction of the Type II from high-grade lightweight materials to meet or exceed every medical care organization design recommendations. Dinabarb's marketing department makes frequent reference to the Type II as one of the fastest and certainly the most agile production ambulance, a fact that seems to attract the daredevil ambulance pilots.

The Type II has become a big favorite with a number of mercenary companies throughout Ley sector. The quick and agile Type II is ideal for battlefield extraction of casualties. A field modification seen occasionally is the addition of several layers of armor plate over the passenger compartment.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
5,000 vl Chassis	-5,000	5,000	-
Controls	1,000	2,500	-
Partial streamlining	-	5,000	-
Climate Control	50	2,500	-0.5
Grav Drive Train	100	1,150,000	-25
Fuel Cell Power Plant	180	27,000	+90
Fuel	1296	-	-
Passenger Seats (1)	200	100	-
2-way radio (long range)	2	300	-0.8
Autopilot/0	5.06	3,750	-0.45
Medical Computer (+1)	4.9	8,750	-0.045
Video + LI	4.1	5,500	-0.14
Lights (2 beam, 2 area)	2	40	-0.08
2 Sickbays	2,000	200,000	-
Cargo	156	-	-
Subtotals	0	Cr1,410,440 (Mcr1.13 with 20% production model discount)	





GRAV ATV

TL14, Mcr1.16, 10,000vi. The Grav All Terrain Vehicle is a Grav powered counterpart to the wheeled and tracked ATVs. The GATV has passenger and sleeping space for 8, including galley space for food and a fresher. The GATV can reach speeds of 400kph, with a normal cruising speed of 200kph. The modern fusion plant has a 3-month fuel supply.

Hagajaya Sarana's LongSearch is a rugged vehicle designed to carry a load of passengers and gear into the remotest location on the roughest planet in comfort. For less hospitable worlds, the large two-person air lock allows quick access for the passengers and the large rear cargo space is sealed and pressurized separately from the crew compartment. On hospitable worlds, the large side doors allow roll-on access to both the crew and cargo compartment. Borrowing from Hagajaya's very successful line of recreational vehicles, the LongSearch has four extendable tent sides creating a large protected space around the vehicle for crew and passengers. In addition to vacuum testing, the LongSearch has been tested at up to seven atmospheres or 50m depth making it ideal for shallow water exploration.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
10,000 vi Chassis	-10,000	10,000	-
Controls	2,000	5,000	-
Partial streamlining	-	10,000	-
Armor: AR2	300	5,700	-
Climate Control	100	5,000	-1
Pressurized Interior	500	12,500	-12.5
Grav Drive Train	160	1,840,000	-40
Fusion Power Plant	285	62,700	+95
Fuel	427.5	-	-
Passenger Seats (8)	1600	800	-
Passenger Bunks (8)	1200	2,000	-
Galley (2)	500	2,000	-
Fresher/shower	350	850	-
2-way radio (long range)	2	300	-0.8
Autopilot/0	5.06	3,750	-0.45
Video + LI	4.1	5,500	-0.14
Lights (2 beam, 2 area)	2	40	-0.08
Laboratory	800	50,000	-
Cargo	1764.4	-	-

Subtotals 0 Cr2,016,140 (Mcr1.61 with 20% production model discount)

AGAINST GRAVITY

6

GRAV BUS

TL12, Mcr1.14, 10,000vi. A large vehicle designed for transporting commuters over short to medium distances. The bus is capable of a top speed of 300kph, and a cruising speed of 150kph. The 1-week fuel supply for the advanced fuel cell power plant gives a range 25,200km.

The Arurack, named for a large beast of burden found on a number of worlds in the Gateway sector, is Raakugaageniram Adiikhak short-range commuter bus designed to serve both urban bus routes and replace light rail passenger service. Ergonomic passenger seating and corrosion resistant oversized hand railings make an attractive interior. The Arurack's overpowered internal grav compensation system ensures no flailing passengers even at maximum acceleration. The RA designs and markets the Arurack for more inhospitable worlds, giving the bus a sealed air system and irising air-lock door with an adaptable attachment system for most habitats.

RA's guarantees a 100-year operating life span for the Arurack, making it an attractive investment. In addition, many of the components are modular, requiring no maintenance and module replacements require only a few tools. An example is the change box, the Arurack can accept cash, credit, or identity cards, identify passengers with a radio id tag or biometric sensor, and usually in some combination.

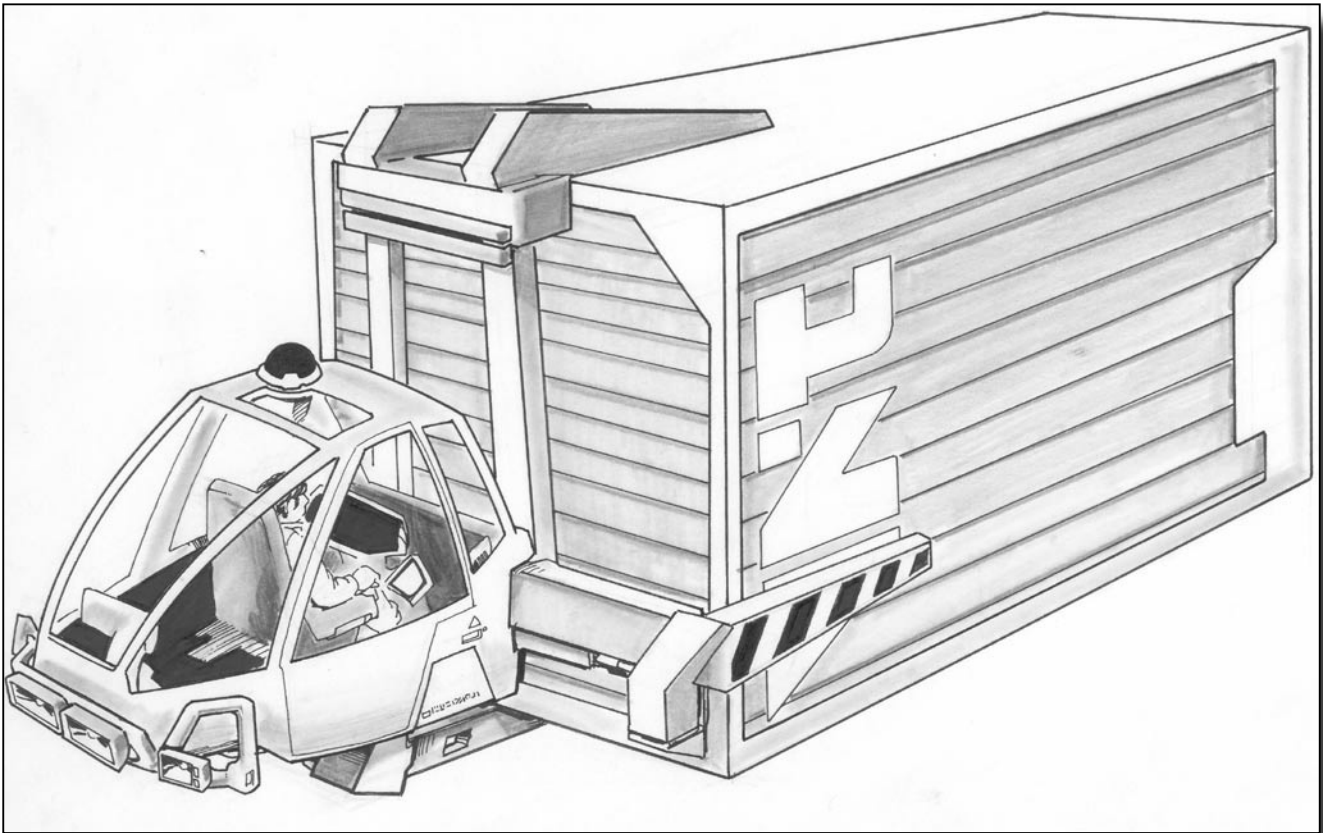
On poor worlds, one of the first markets for many grav vehicles is mass transit. The only agencies that can afford expensive Grav vehicles are governments or large industries and can do so by spreading the cost over a large number of

people.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
10,000 vi Chassis	-10,000	10,000	-
Controls	2,000	5,000	-
Climate Control	100	5,000	-1
Pressurized Interior	500	12,500	-12.5
Grav Drive Train	120	1,380,000	-30
Adv Fuel Cell Power Plant	66	4,400	+44
Fuel	370	-	-
Passenger Seats (20)	4000	2000	-
Passenger Stands (4/24)	2420	44	-
2-way radio (long range)	1	150	-0.4
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	421	-	-
Subtotals	0	Cr1,419,134 (Mcr1.14 with 20% production model discount)	





CARGO LIFTER

TL9, Mcr0.73, 7,600vl. A large Grav drive cargo lifter, for loading and unloading starships both on the ground and in orbit. Sealed life support systems allows working in either a shirtsleeve or a hostile environment.

Finmeccanica manufactures the FC-112, a standard cargo box carrier for starport use. Unlike ground based forklifts, the FC-112 has no lift capability, relying upon the Grav drive to provide lift. Instead the adaptable grabbling system and variable center-of-gravity drive system allows the craft to move the standard 8-dton cargo containers with ease. The exterior of the craft, other than the grappling system, is smaller than the cargo containers it hauls about, allowing it quick access to the cramped cargo spaces of most freighters.

Versions of these cargo lifters are found at every single starport throughout the Imperium.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
30,000 vl Chassis	-30,000	30,000	-
Controls	6,000	15,000	-
Climate Control	76	3,800	-0.76
Pressurized Interior	380	9,500	-9.5
Grav Drive Train	72	828,000	-18
Fuel Cell Power Plant	84	12,600	+42
Fuel	605	-	-
Passenger Seats (1)	200	100	-
Arms (2/112 tons: Str 64)	64	12,800	-12.8
2-way radio (long range)	1	150	-0.4
Lights (2 beam, 2 area)	2	40	-0.08
Towing Volume	22,400	-	-
Cargo	116	-	-
Subtotals	0	Cr911,990 (Mcr0.73 with 20% production model discount)	

LIGHT TANK

TL10, Mcr1.34, 7200vl. Interstellar Arms standard light tank MBTLPL (Main Battle Tank, Light, Pulse Laser), a design first created for the Imperial Army in 625 as part of the IA's modernization effort after the end of the Civil War. The Imperial Army rejected the tank, but Interstellar Arms has found a wide market for the Light Tank with numerous planetary armed forces and mercenary groups. The main armament laser system and Grav drive systems have remained unchanged from the original designs.

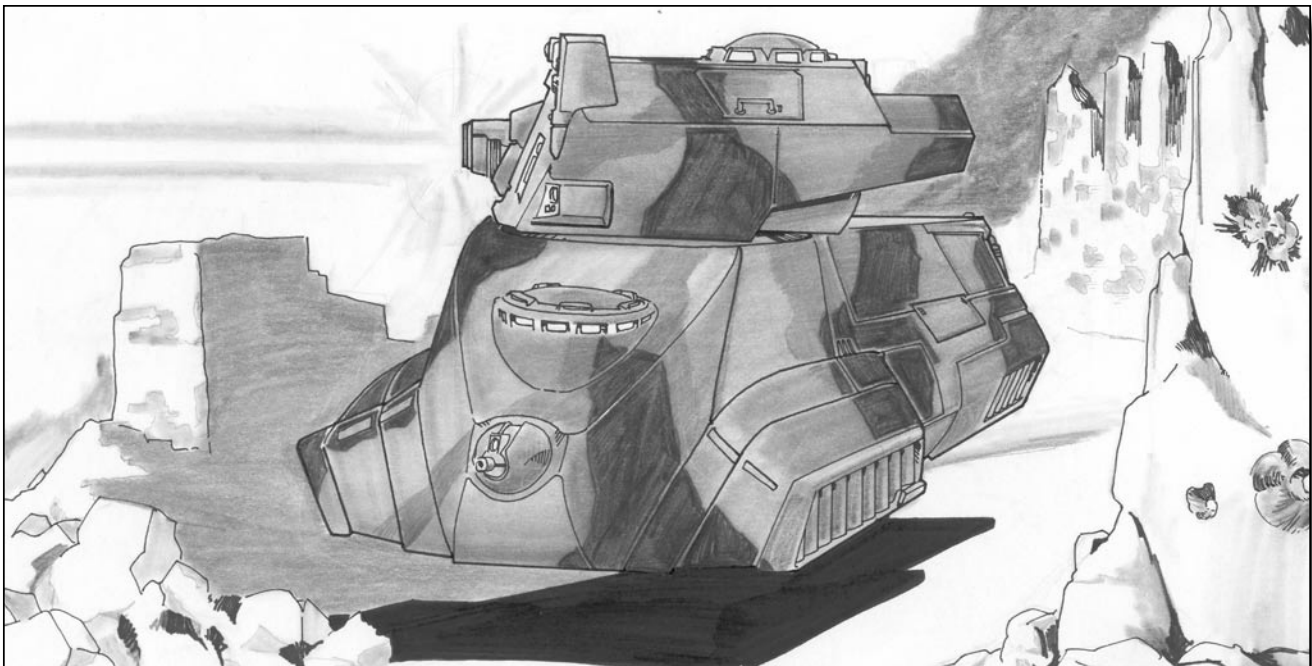
Crew layout is a standard for Interstellar Arms vehicle; pilot sits forward in the main hull with the Electronic Operations Officer (EOO) behind him, the commander is seated on the left side of the turret and the gunner on the right side. Main armament is a 32 Mw single lens pulse laser with an effective atmospheric range of 630km. Secondary armament consists of a single light machine gun mounted in the main hull and fired by the EOO. The main passive sensor array is mounted on the leading edge of the turret, where it performs its primary duty as the targeting array for the gunner. Additional sensor arrays are mounted on the main body front nose and the rear corner of the body.

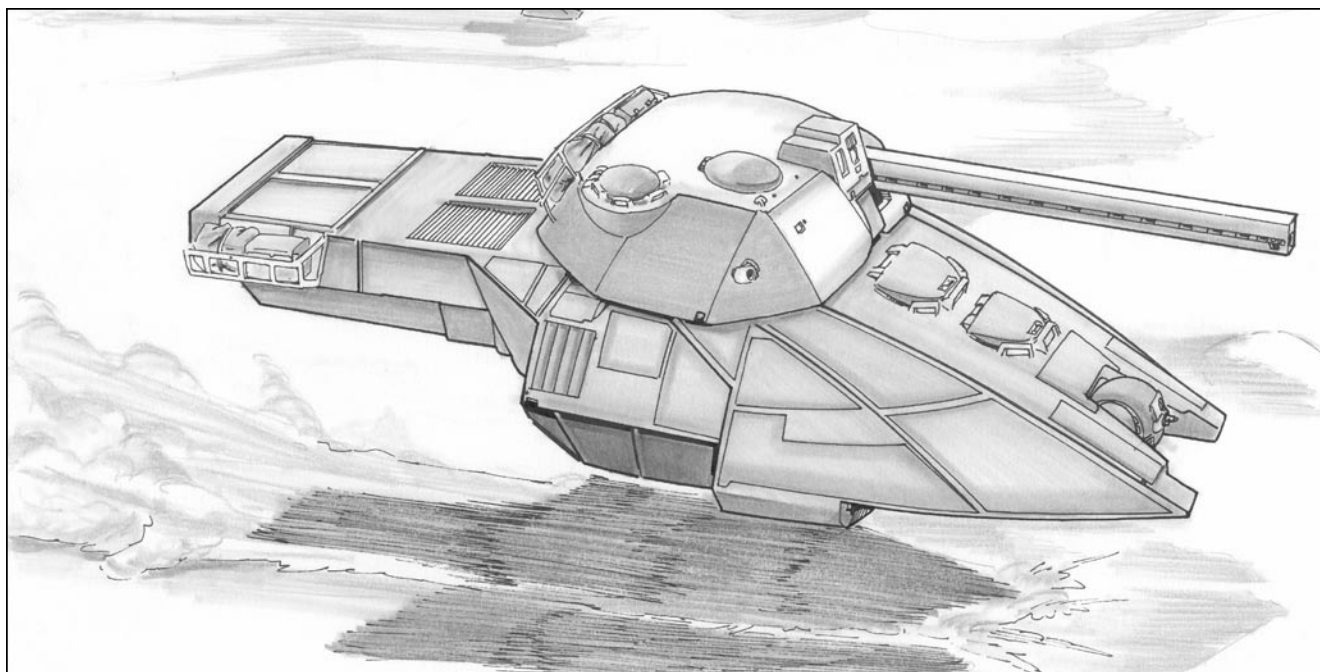
A common variation is a point defense design, PDSLPL (Point Defense Sled, Light, Pulse Laser) replacing the primary laser weapon with two ROF 10 1.5Mw pulse lasers (Damage: 1d10) and adding a short-range spread-frequency radar targeting system.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
7,200 vl Chassis	-7,200	7,200	-
Controls	1,440	3,600	-
Partly Streamlined	-	7,200	-
Armor : AR10	2,376	24,384	-
Climate Control	72	3,600	-0.72
Pressurized Interior	360	9,000	-9
Grav Drive Train	115.2	1,324,800	-28.8
Fuel Cell Power Plant	276	41,400	138
Fuel	212	-	-
Heavy Turret	2128	21,280	-4.256
Pulse Laser – 32Mw	(1050)	125,000	-3.2
4km visual sensor+LI+IR	(64)	104,000	-2.8
Crew Seats (2)	(400)	200	-
Fire Control Computer	(2.025)	1,500	-0.18
Cargo	(3.975)	-	-
Crew Seats (1)	200	100	-
Lt Machine Gun/Cupola	6.05	1230	-
200 rnds Ammo	5	240	-
2-way radio (long range)	4	600	-1.6
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	3.75	-	-

Subtotals 0 Cr1,675,374 (Mcr1.34 with 20% production model discount)





MEDIUM TANK

TL10, Mcr4.43, 21,500vl. The Interstellar Arms Medium Tank, the MBTMG (Main Battle Tank, Medium, Gauss). Grav tank design using a gauss cannon as a main weapon dates back to the Long Night. Interstellar Arms first produced MBTMG in 821 for clients in the Old Expanses sector and since then has offered the MBTMG as their standard Medium Tank.

The MBTMGs primary armament is a 65mm mass driver cannon, with a 2,150m/s-muzzle velocity. Ammunition supply is split between the primary supply in the turret and the secondary supply in the body. In order to engage the automatic ammunition handing system to move ammunition from the secondary storage in the hull requires fixing the turret in its forward position. Secondary armament is a single light machinegun, fix mounted on the forward hull. Crew layout places the electronic operations officer behind the pilot in the hull, while the commander and the gunner sit in the turret, on the left and right side respectively.

For clients requesting a tank with less logistical support, Interstellar Arms supplies the MBTMBL (Main Battle Tank, Medium, Beam Laser) replacing the mass driver cannon with a 67Mw beam laser (Damage: 8d8) and a battery capable of supplying 500 shots. Recharging the drained power cell requires more than 8 hours at full power plant output and is not possible while the tank in operation.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
21,500 vl Chassis	-21,500	21,500	-
Controls	4,300	10,750	-
Partly Streamlined	-	21,500	-
Armor : AR10	7095	66,855	-
Climate Control	215	10,750	-2.15
Pressurized Interior	1075	26,875	-26.875
Grav Drive Train	430	4,945,000	-107.5
Fuel Cell Power Plant	820	123,000	410
Fuel	1741	-	-
Heavy Turret	5000	50,000	-10
Mass Driver – 5	(2,900)	158,000	-0.8
40 rnds Ammo	(200)	240	-
4km visual sensor+LI+IR	(64)	104,000	-2.8
Crew Seats (2)	(400)	200	-
Fire Control Computer	(2.025)	1,500	-0.18
Cargo	(5.4)	-	-
120 rnds MD Ammo	600	720	-
Crew Seats (1)	200	100	-
Lt Machine Gun/Cupola	6.05	1230	-
200 rnds ammo	5	240	-
2-way radio (long range)	4	600	-1.6
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	6.95	-	-
Subtotals	0	Cr5,543,100	(Mcr4.43 with 20% production model discount)

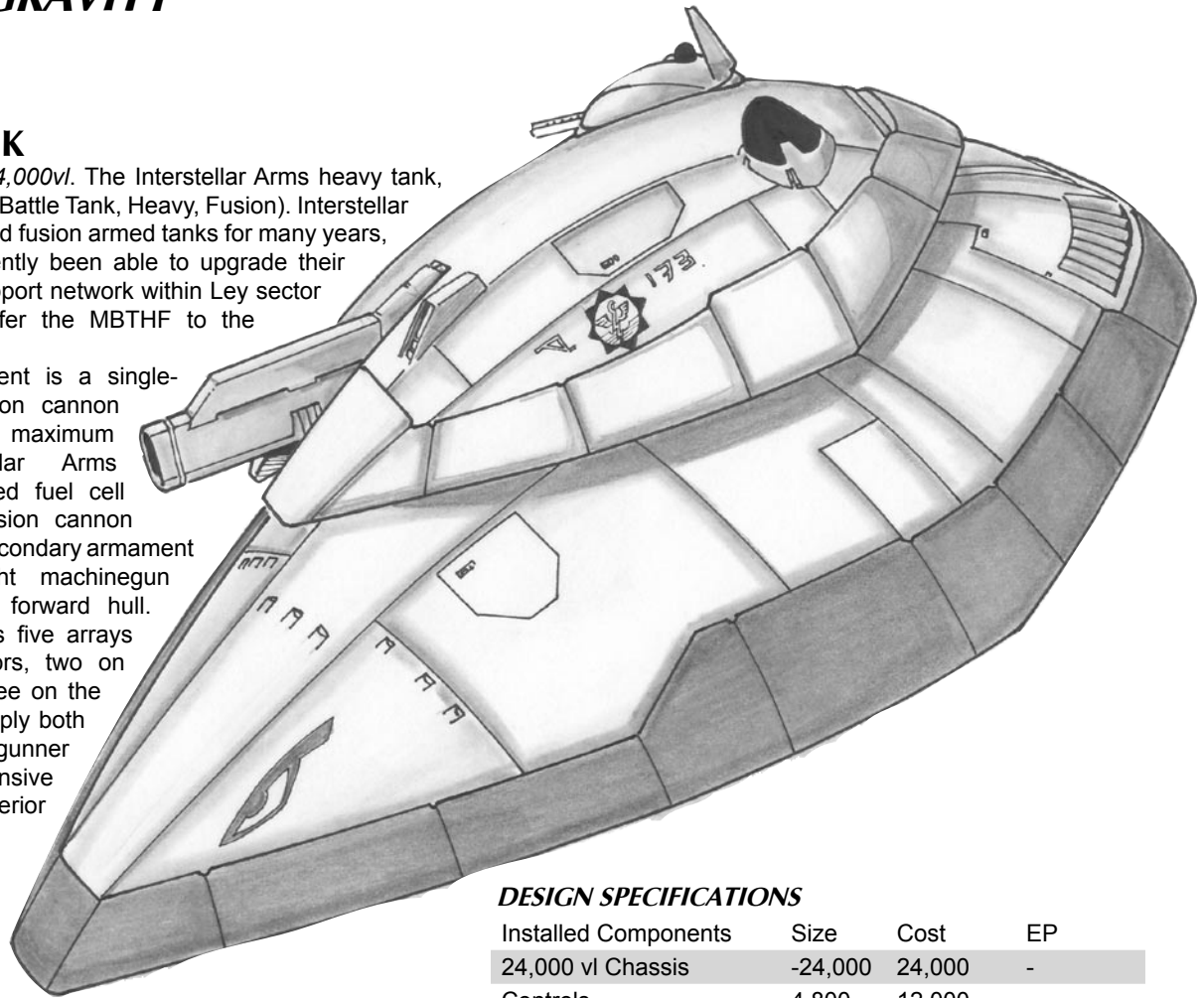
AGAINST GRAVITY

6

HEAVY TANK

TL12, Mcr6.19, 24,000vl. The Interstellar Arms heavy tank, the MBTHF (Main Battle Tank, Heavy, Fusion). Interstellar Arms has produced fusion armed tanks for many years, but has only recently been able to upgrade their local logistical support network within Ley sector to be able to offer the MBTHF to the general market.

Main armament is a single-pulse 30Mw fusion cannon with an 18km maximum range. Interstellar Arms uses an advanced fuel cell to supply the fusion cannon power system. Secondary armament is a single light machinegun mounted on the forward hull. The MBTHF uses five arrays of passive sensors, two on the turret and three on the main body, to supply both the pilot and gunner with a comprehensive view of the exterior environment.



DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
24,000 vl Chassis	-24,000	24,000	-
Controls	4,800	12,000	-
Partly Streamlined	-	24,000	
Armor : AR12	6,240	59,160	-
Climate Control	240	12,000	-2.4
Pressurized Interior	1,200	30,000	-30
Grav Drive Train	480	5,520,000	-120
Adv. Fuel Cell Power Plant	765	51,000	510
Fuel	573.75	-	-
Heavy Turret	9,478	94,780	-18.956
Fusion-4	(6300)	1,800,000	-45
4km visual sensor+LI+IR	(64)	104,000	-2.8
Crew Seats (2)	(400)	200	-
Fire Control Computer	(1.08)	1,600	-0.72
Cargo	(4.92)	-	-
Crew Seats (1)	200	100	-
Lt Machine Gun/Cupola	6.05	1230	-
200 rnds	5	240	-
2-way radio (long range)	4	600	-1.6
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	6.2	-	-

Subtotals 0 Cr7,734,710 (Mcr6.19 with 20% production model discount)

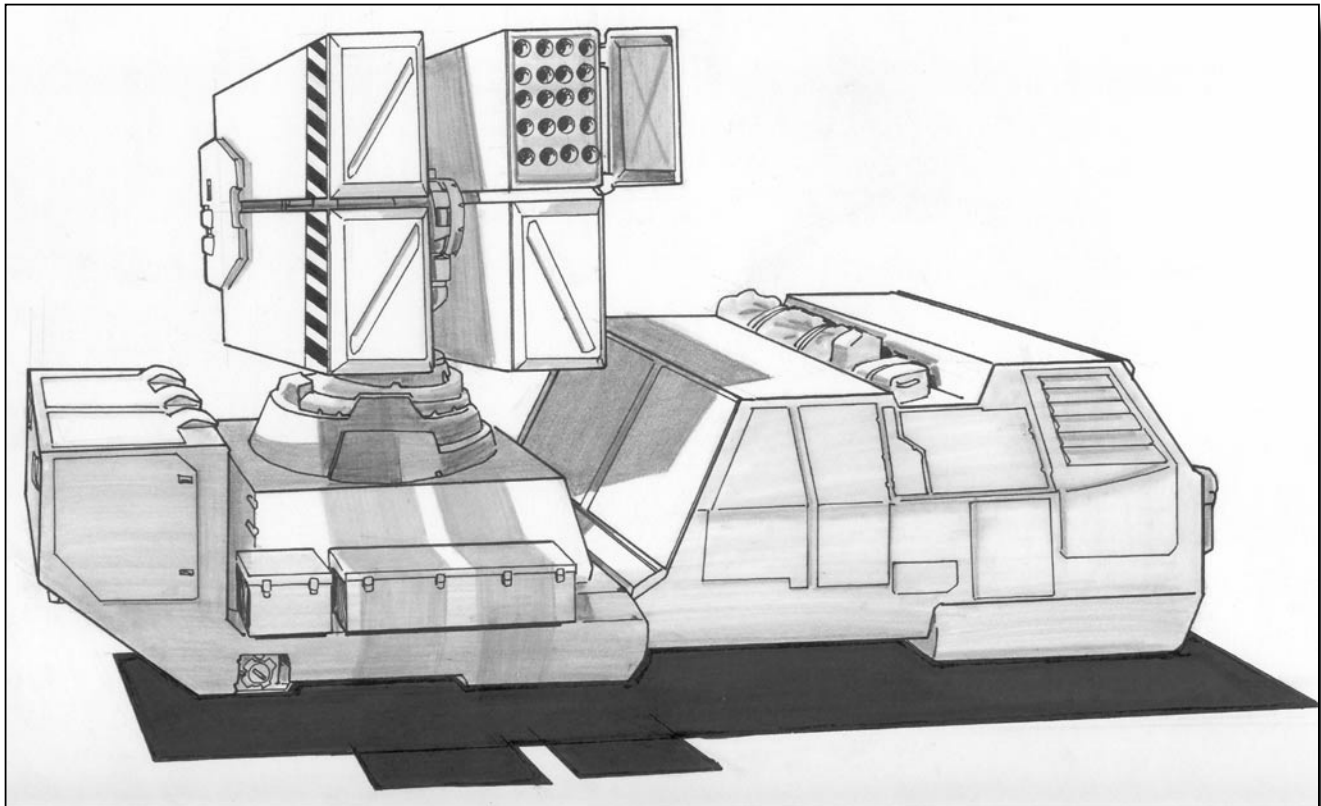
MISSILE ARTILLERY SLED

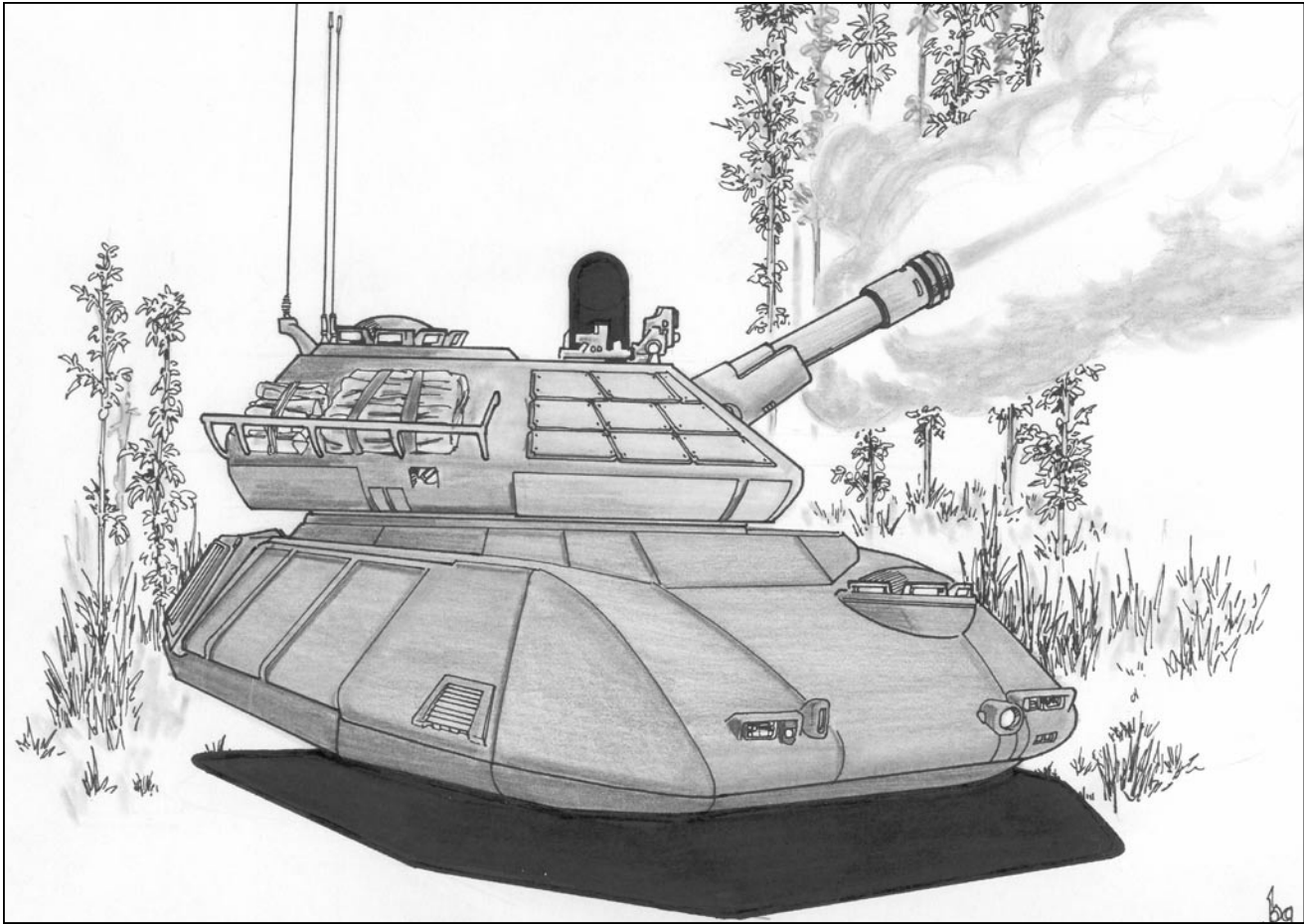
TL10, Cr732,674, 4600vl. The Telum Tormentum is manufactured by Ballistica Maximus and has been in production since 950. Ballistica produces the Telum Tormentum strictly for the export market and Ballistica continues to manufacture more than 100 examples per year. Ballistica Maximus licenses production of the missiles to a number of smaller firms to ensure the ammunition supply to their customers.

Armament consists of 100 launch rails grouped into four sets of 25 rails. Ammunition is factory packaged in to a cassette of 25 rockets. The rockets are then loaded onto the individual rails by an automated handling system. As long as ammunition carriers can reload the cassettes, the Telum Tormentum is capable of maintaining a 25 round per minute barrage. There have been complaints about the robotic arms used in loading systems failing under some particularly harsh environmental conditions.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
4,600 vl Chassis	-4,600	4,600	-
Controls	920	2,300	-
Partly Streamlined	-	4,600	
Armor : AR 5	828	10,452	-
Climate Control	46	2,300	-0.46
Pressurized Interior	210	5,250	-5.25
Grav Drive Train	73.6	846,400	-18.4
Fuel Cell Power Plant	172	25,800	86
Fuel	310	-	-
Heavy MLR/ Fixed mount	1100	5100	-
Crew (2)	400	200	-
Loading Arm (ST7) (4)	14	2800	-2.8
Fire Control Computer	2.025	1,500	-0.18
2-way radio (long range)	4	600	-1.6
Laser communication	2	2400	-0.1
Lights (2 beam, 2 area)	2	40	-0.08
Ammo Storage	500	1500	-
Cargo	16.375	-	-
Subtotals	0	Cr915,842 (Cr732,674 with 20% production model discount)	





ARTILLERY SLED

TL12, Mcr2.0, 12,750vl. The Ferreus Tormentum, manufactured by Ballistica Maximas and was first produced in 975 as the primary artillery weapon for the Huangfeng planetary armed forces. The Halucan Raiders, a mercenary company placed an order for 12 Ferreus Termentum's in 977 and reported excellent results under fire. These reports have prompted a number of additional orders and Ballistica Maximas has been producing 30 Ferreus Tormentus sleds per year.

Armament is a fix mounted 12cm ETC cannon with a high speed automatic loading system. Ammunition is stored in eight ten-round hoppers. The gunner selects individual rounds from each hopper to match fire mission requirements. Each hopper has an exterior airlock door allowing ammunition to be loaded into the sled even while the weapon is firing. The Ferreus Tormentum requires a crew of three, the pilot and gunner sit in the front right and left respectively. The commander sits behind and above the pilot.

The Ferreus Tormentum-B design is for direct fire assaults on heavily armored targets. A 102EP power plant upgrade and increased fuel supply (allowing a +3 agility) make the sled more mobile. The power plant expansion fits into the space for one of the ammunition hoppers, and reducing ammunition capacity to 70 rounds.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
12,750 vl Chassis	-12,750	12,750	-
Controls	2,550	6,375	-
Partly Streamlined	-	12,750	
Armor : AR 5	1,530	16,770	-
Climate Control	127.5	6,375	-1.275
Pressurized Interior	637.5	15,937	-15.94
Grav Drive Train	204	2,246,000	-51
Adv Fuel Cell Power Plant	183	12,200	122
Fuel	292.8	-	-
12cm Autocannon/Cupola	1,386	157,869	-
Ammo	5,360	12,800	-
Crew (2)	400	200	-
Fire Control Computer	1.08	1,600	-0.72
2-way radio (long range)	4	600	-1.6
Lights (2 beam, 2 area)	2	40	-0.08
Laser communication	2	2400	-0.1
Cargo	70.12	-	-

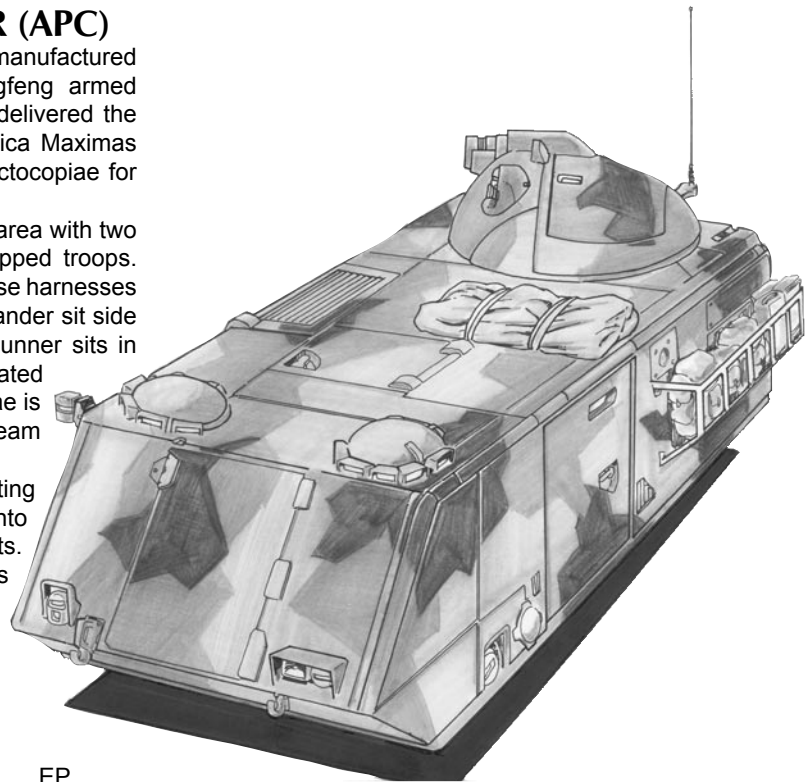
Subtotals 0 Cr2,504,666 (Mcr2.0 with 20% production model discount)

ARMORED PERSONAL CARRIER (APC)

TL12, Mcr1.24, 8500vl. Ballistica Maximas first manufactured the Octocopiae in 975 as part of the Huangfeng armed forces modernization effort. Ballistica Maximas delivered the initial order of 50 units within two years. Ballistica Maximas continues to manufacture small orders of the Octocopiae for selected external clients.

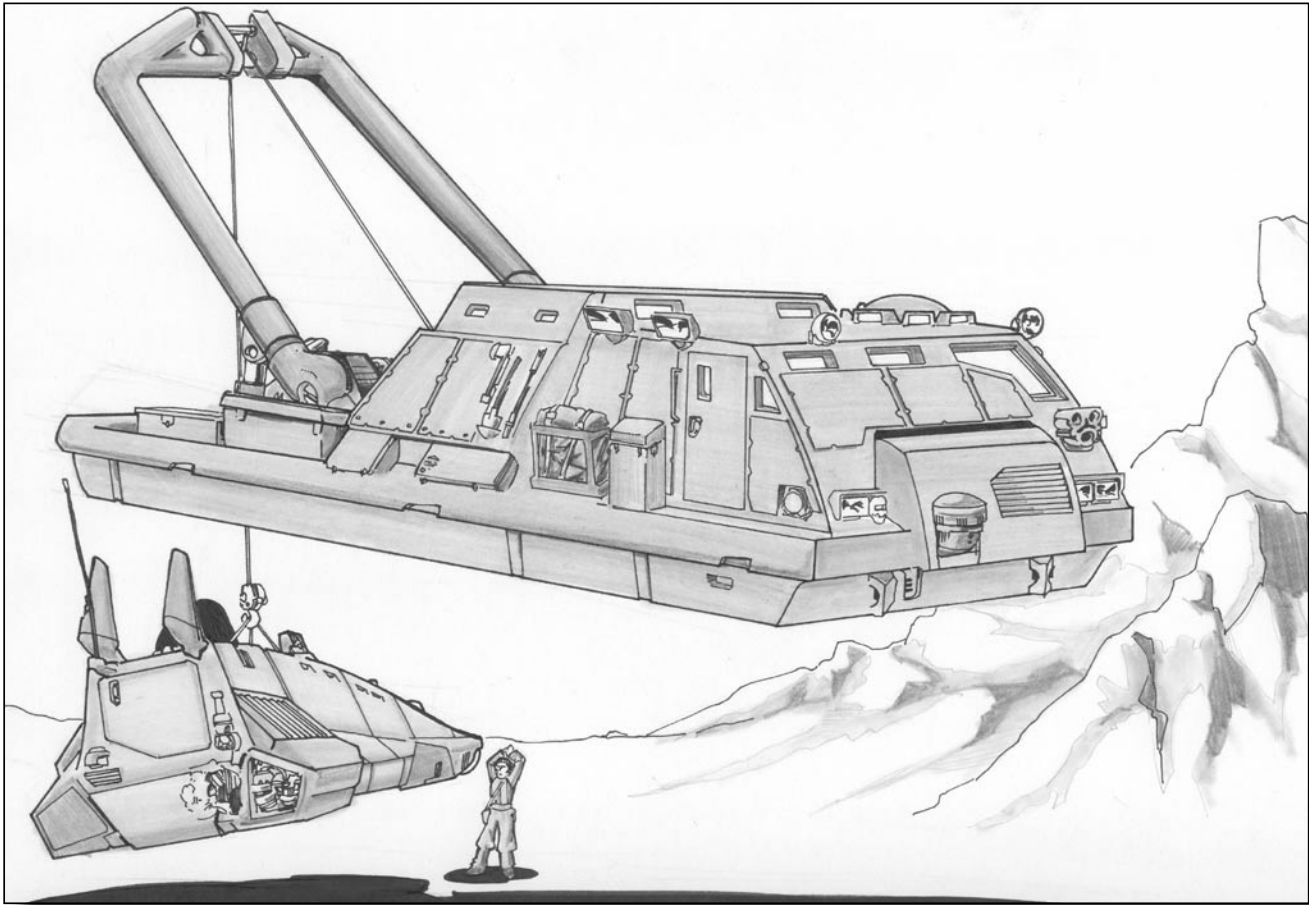
A large rear door gives access to the cargo area with two inward facing benches to carry eight fully equipped troops. Each seat is equipped with a six point quick-release harnesses for trooper safety during transit. Pilot and commander sit side by side in a forward isolated compartment. A gunner sits in the large rear mounted turret, which can be isolated from the passenger compartment. The Octocopiae is armed with a single 12 Mw variable frequency beam laser with an atmospheric range of 58.5 km.

The large rear compartment also has mounting points for stretchers, converting the Octocopiae into an ambulance with a capacity of up to ten patients. By removing the seats, the Octocopiae becomes an armed lightweight cargo sled.



DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
8,500vl Chassis	-8,500	8,500	-
Controls	1,700	4,250	-
Partly Streamlined	-	8,500	-
Armor : AR8	1,530	16,770	-
Climate Control	85	3,600	-0.72
Pressurized Interior	360	9,000	-9
Grav Drive Train	115.2		-28.8
Adv. Fuel Cell Power Plant	219	14,600	146
Fuel	153.3	-	-
Heavy Turret	924	9,240	-1.848
Beam Laser-12mw	(393)	47,600	-1.2
4km visual sensor+LI+IR	(64)	104,000	-2.8
Crew Seats (1)	(200)	100	-
Fire Control Computer	(1.08)	1,600	-0.72
Cargo	(1.92)	-	-
Crew Seats (1)	200	100	-
Passengers(8)	3200	800	-
2-way radio (long range)	4	600	-1.6
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	7.5	-	-
Subtotals	0	Cr1,554,100 (Mcr1.24 with 20% production model discount)	



ARMORED RECOVERY SLED

TL12, Mcr5.45, 20,000vl. A recovery sled is a large armored, though rarely armed, sled designed for rescue and recovery of downed vehicles on a battlefield. Dinabarib manufactures the AGR, which is a slightly modified DGR, a civilian recovery sled also produced by Dinabarib.

A pilot and commander sit in a forward compartment, while the electronics operator and three technical specialists sit in the rear compartment. Main access to the vehicle is through a large bottom hatch. The winch with a maximum lift capacity of 10,000kg contains a 60m cable and feeds through the bottom hatch. The six-meter lift arms each have a maximum lift capacity of 15,000kg. The Dinabarib built the Grav drive on AGR to expect these loads and the AGR provides a total lift capacity of 15 tons. The AGR is outfitted with a tool set and spare parts set designed to match the other vehicles in the armed forces.

Dinabarib's DGR lacks the heavy armor of the AGR. The DGR also replaces some of the available tools and spare parts to add additional seating for repair personnel and transporting injured members of the downed craft.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
35,000vl Chassis	-35,000	35,000	-
Controls	7,000	17,500	-
Partly Streamlined	-	35,000	-
Armor : AR6	2,800	28,200	-
Climate Control	200	10,000	-2
Pressurized Interior	1,000	25,000	-10
Grav Drive Train	560	6,440,000	-140
Adv Fuel Cell Power Plant	690	46,000	460
Fuel	1104	-	-
Crew (5)	2,000	500	-
Engineering Shop (3)	3,000	60,000	-
Winch (ST 52)	10.4	520	-0.52
Lift Arms (St 55, DX;0, x2)	55	11,000	-11
4km visual sensor+LI+IR	64	104,000	-2.8
Lights (2 beam, 2 area)	2	40	-0.08
2-way radio (long range)	4	600	-1.6
Cargo	1510.6	-	-
Towing Capacity	15,000	-	-

Subtotals 0 Cr6,813,360
(Mcr5.45 with 20%
production model
discount)

ARMORED ENGINEERING SLED

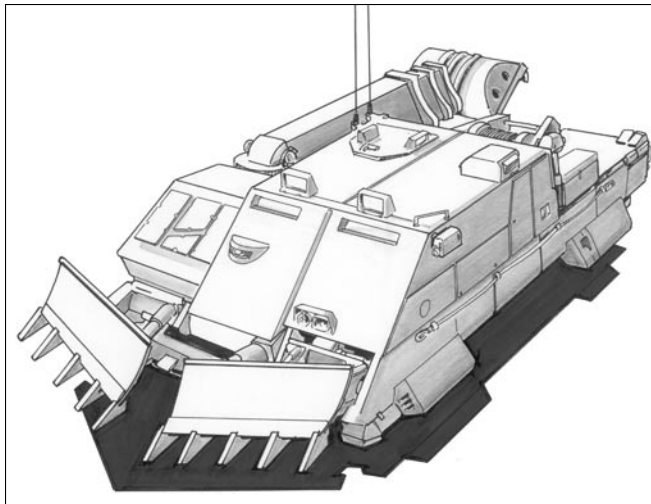
TL10, Mcr2.73, 8,000vl. The Agsaggai-A designed and built by Intergrav Logictics. One of the first designs produced by Intergrav, the Agasggai-A has become the standard engineering sled for the Imperial Army. The Agasggai design is one of the few vehicles Intergrav sells to clients other than the Imperial Army and is a part of the engineering companies on more than 100 worlds throughout the Gateway domain. The Agasggai is intended to operate along with the front line units. The front mounted bulldozer blade allows the quick digging of hull defilade positions for armor and infantry and construction of berms and strong points. The added winch is to assist in armor recover operations and for hauling debris.

Ling Standard Products has several versions of the unarmored engineering sled for civilian construction use. The most popular is the LSP ES3, which has a 3,000kg capacity.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
18,000vl Chassis	-18,000	18,000	-
Controls	3,600	9,000	-
Partly Streamlined	-	18,000	-
Armor : AR3	960	11,640	-
Ram Plate	480	7,320	-
Climate Control	80	4,000	-0.8
Grav Drive Train	288	3,312,000	-72
Fuel Cell Power Plant	200	30,000	100
Fuel	360	-	-
Crew (1)	200	100	-
Winch (ST 52)	10.4	520	-0.52
2-way radio (long range)	4	600	-1.6
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	1,815.6	-	-
Towing Capacity	10,000	-	-

Subtotals 0 Cr3,411,220 (Mcr2.73 with 20% production model discount)

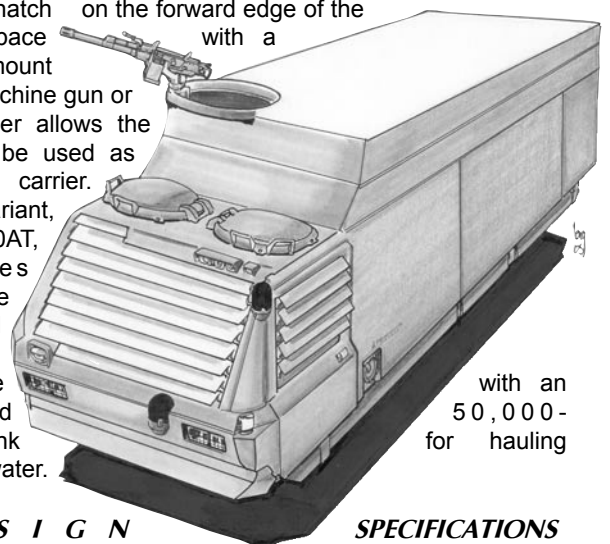


ARMORED TRUCK

TL10, Mcr2.9, 19,000vl. The Finmeccanica 50A series armored trucks have been in production since 930. The 50A series is an upgrade from the older 40A series, with a larger cargo capacity and a longer range. In addition to mercenary companies throughout Ley sector, the 50A has also been sold to a number of civilian agencies.

The layout of the 50A series is standard to anyone familiar with Grav Truck design. The front cab contains the driver and space for two passengers. The Fuel cell power plant and fuel tank is mounted underneath the front cab. The large rear cargo space is accessed through a pair of swinging doors. As an upgrade from the 40A series, the cargo space is sealed and pressurized, allowing the 50A to transport environmentally sensitive cargo.

Unlike most trucks designed for armed forces use, the 50A has a hard, armored top over the cargo space. The addition of a roof hatch on the forward edge of the cargo space with a pintle mount for a machine gun or light laser allows the 50A to be used as a troop carrier. A variant, the 50AT, replaces the armored cargo space with an armored 50,000-liter tank for hauling fuel or water.

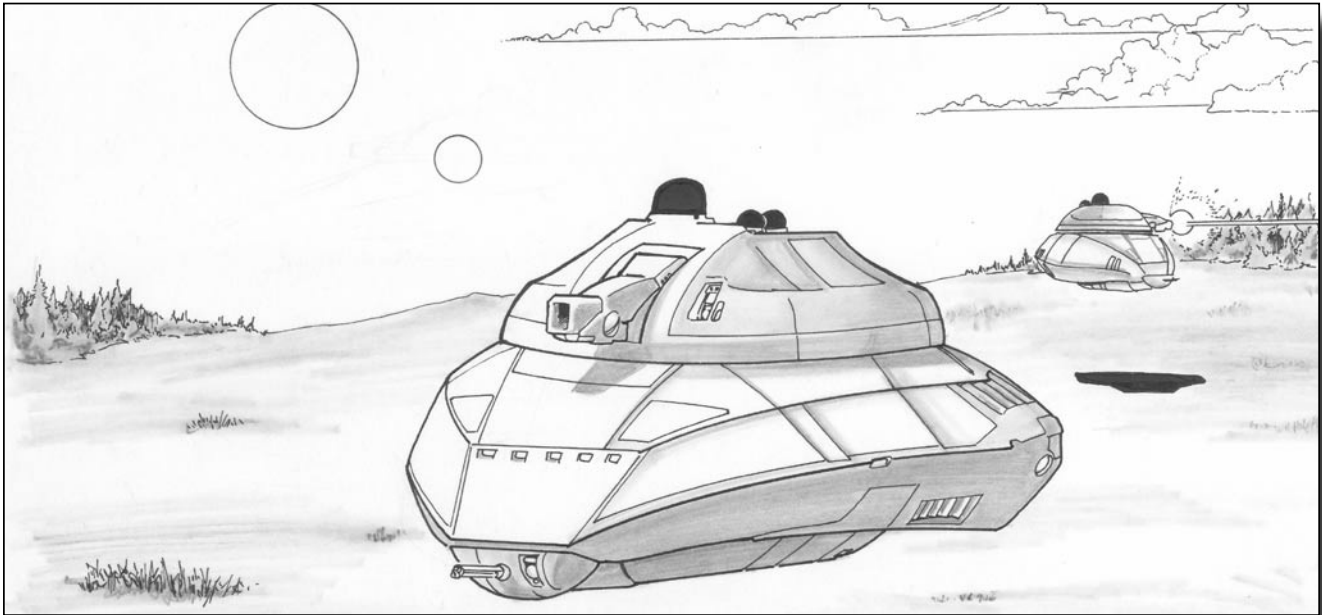


DESIGN

SPECIFICATIONS

Installed Components	Size	Cost	EP
19,000 vl Chassis	-19,000	19,000	-
Controls	3,800	9,500	-
Armor: AR3	2,280	23,520	-
Partial Streamlining	-	19,000	-
Climate Control	190	9,500	-1.9
Pressurized	950	23,750	-23.75
Grav Drive Train	304	3,496,000	-76
Fuel Cell Power Plant	260	30,900	+103
Fuel	741.6	-	-
Passenger Seats (2)	400	200	-
2-way radio (long range)	2	300	-0.8
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	10,070	-	-

Subtotals 0 Cr3,631,710 (Mcr2.9 with 20% production model discount)



LIGHT MAIN BATTLE TANK

TL14, Mcr6.59, 14,000vl. Interstellar Arms originally designed the Intruder class light tanks for the Imperial Army starting around 815. The primary supplier for the Intruder class tanks in the Ley sector is Delgato. The tank is an infantry support unit and to provide armored reconnaissance, a role for which it has served admirably.

The crew layout is standard for the Imperial designs, pilot and tank commander sit side by side in the main hull, while the gunner sits on the left side of the turret, just above the commander. Main armament is a single pulse 50Mw fusion gun with an integrated targeting system and a range of 22.5km. A battery holding 100 fire rounds powers the main fusion gun. The fusion power plant can recharge the battery in 14 minutes if the tank is at rest. Secondary armament consists of a single 18mm ETC autocannon in a remote front mount, and fired by any of the three crew. The power source is a damper enhanced low-emission micro-fusion plant.

The Imperial Army does not use any variants of this design. Delgato produces an Intruder-P variant, replacing the main fusion gun with a 9.4Mw ten-lens pulse laser (Damage 4d10, ROF 10) for use as a point defense sled.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
14,000vl Chassis	14,000	14,000	-
Controls	2,800	7,000	-
Partly Streamlined	-	14,000	-
Armor : AR13	1,960	20,640	-
Chameleon Armor	-	700,000	-
Climate Control	140	7,000	-1.4
Pressurized Interior	700	17,500	-17.5
Grav Drive Train	336	3,864,000	-84
Fusion Power Plant	1042.5	229,350	+347.5
Fuel	868.75	-	-
Battery (100 shots fusion)	50	2,500	-
Heavy Turret	5,334	53,340	-10.7
Fusion Gun – 6	(3,500)	3,000,000	-50
4km Holographic sensor+LI+IR	(108)	160,000	-5.6
Crew Seats (1)	(200)	100	-
Fire Control Computer	(0.8)	1,200	-0.054
HoloDisplay	(0.1)	500	-0.05
Cargo	(1.1)	-	-
Crew Seats (1)	200	100	-
Autocannon/Cupola	330	11,650	-
200 rnds Ammo	100	1,000	-
Fire Control Computer	0.8	1,200	-0.054
2-way radio (long range)	4	600	-1.6
Laser (long Range)	6	7,200	-0.3
Lights (2 beam, 2 area)	2	40	-0.08
Neutrino Sensor (Medium)	8	120,000	-2
Holodisplay (x2)	0.2	1000	-0.1
Cargo	117.75	-	-
Subtotals	0	Cr8,233,920 (Mcr6.59 with 20% production model discount)	

HEAVY MAIN BATTLE TANK

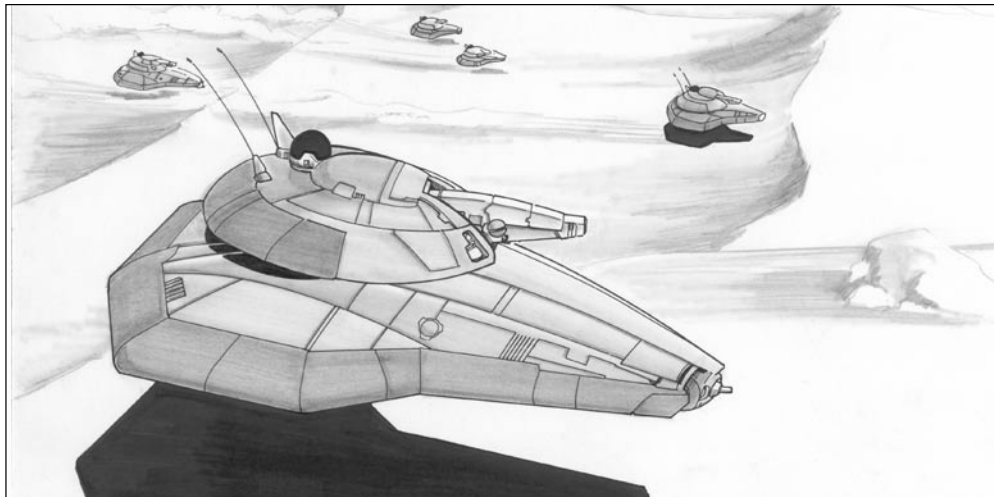
TL14, Mcr10.52, 22000vl. The Zhakirov main battle tank, named after the Emperor Zhakirov, is the backbone of both the Imperial Army and Marine armored forces. The original design of the Zhakirov was in 688 and, after numerous design changes, adapted by the Imperial armed forces in 820. The Zhakirov is beginning to show its age, outmatched by some of the newer Solomani and Zhodani heavy tanks. The current supplier of the Zhakirov tanks within Ley sector is the Delgato Corporation.

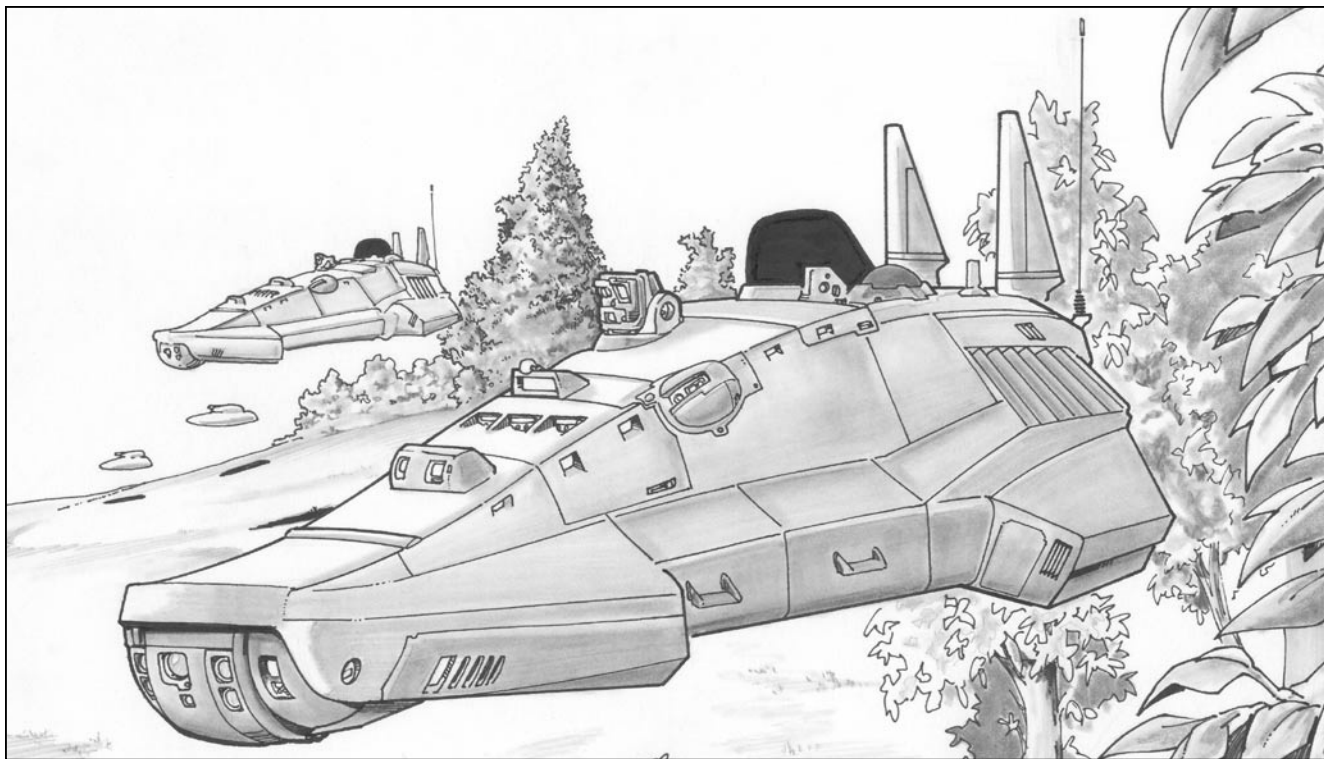
The Zhakirov's main armament is an 85-Mw single pulse fusion cannon, with power supplied by a 100 shot quick discharge energy cell. The power plant can recharge the energy cell in 17 minutes while the tank is at rest. The crew layout is standard for the Imperial designs, pilot and tank commander sit side by side in the main hull, while the gunner sits on the left side of the turret, just above the commander. Secondary armament consists of an Imperial standard 18mm ETC autocannon in a remote front mount, and fired by any of the three crew.

The Imperial Army, in order to cut down on its logistical support requirements, insisted the Zhakirov share as many parts in common as possible with the older Intruder light tank. The resulting equipment fitting makes the interior of the Zhakirov feeling much more cramped than it actually is.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
22,000vl Chassis	22,000	22,000	-
Controls	4,400	11,000	-
Partly Streamlined	-	22,000	
Armor : AR14	3,300	32,700	-
Chameleon Armor	-	1,100,000	-
Climate Control	220	11,000	-2.2
Pressurized Interior	1,100	27,500	-27.5
Grav Drive Train	528	6,072,000	-132
Fusion Power Plant	1,629	358,580	+543
Fuel	1221.75	-	-
Adv. Battery (100 shots)	85	4,250	-
Heavy Turret	8,764	87,640	
Fusion Gun – 8	(5,950)	5,100,000	-85
4km Holographic sensor+LI+IR	(108)	160,000	-5.6
Crew Seats (1)	(200)	100	-
Fire Control Computer	(0.8)	1,200	-0.054
HoloDisplay	(0.1)	500	-0.05
Cargo	(1.1)	-	-
Crew Seats (1)	200	100	-
Autocannon/Cupola	330	11,650	-
200 rnds Ammo	100	1,000	-
Fire Control Computer	0.8	1,200	-0.054
2-way radio (long range)	4	600	-1.6
Laser Comm (long Range)	6	7,200	-0.3
Lights (2 beam, 2 area)	2	40	-0.08
Neutrino Sensor (Medium)	8	120,000	-2
Holodisplay (x2)	0.2	1,000	-0.1
Cargo	101.25	-	-
Subtotals	0	Cr13,153,260 (Mcr10.52 with 20% production model discount)	





FAST ATTACK SLED

TL13, Mcr31.37, 14,000vl. The Ikenovr fast attack sled is a recent addition to the Imperial Marine's armory. Developed and deployed in the Spinward Marches during the Third Frontier War (979 to 986), it proved effective in several battles. Following the war the Imperial Marine supreme command ordered a full deployment for all IM units throughout the Imperium. Intergrav Logistics won the contract for Ley sector manufacturing, began production in 995, and is expected to complete delivery by 1001.

The Ikenovr is a light, high speed raiding unit with enough firepower to destroy or disrupt logistical supply lines. Main armament consists of four 9.4 Mw single lens pulse lasers mounted in a chin mount. The pilot and electronics operation officer sit one behind the other at the center of gravity.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
14,000vl Chassis	14,000	14,000	-
Controls	2,800	7,000	-
Hypersonic streamlining	700	126,000	
Armor : AR9	1,400	15,600	-
Chameleon Armor	-	700,000	-
Climate Control	140	7,000	-1.4
Pressurized Interior	700	17,500	-17.5
Grav Drive Train	2,240	25,760,000	-560
Fusion Power Plant	2,790	613,800	930
Fuel	1,395	-	-
Cupola	1,364	6,820	-
Pulse – 9.4Mw x4	(1,240)	151,000	-3.6
4km Holovideo sensor+LI+IR	108	160,000	-5.6
Crew Seats (1)	200	100	-
Fire Control Computer	0.8	1,200	-0.054
HoloDisplay	0.1	500	-0.05
2-way radio (long range)	4	600	-1.6
Laser Comm (long Range)	6	7,200	-0.3
Radar (Extreme Range)	30	1,500,000	-1.5
Ladar (Long Range)	20	10,000,000	-0.1
Neutrino Sensor (Medium)	8	120,000	-2
Cargo	94.1	-	-
Subtotals	0	Cr39,208,320 (Mcr31.37 with 20% production model discount)	

ARTILLERY SLED

TL14, Mcr28.54, 110,000vl. The Solar Wind is the primary artillery piece for the Imperial armed forces. The first Solar Wind sleds were deployed to Imperial forces in 877. The supplier of the Solar Wind for the Ley Sector Imperial army is Intergrav Logistics.

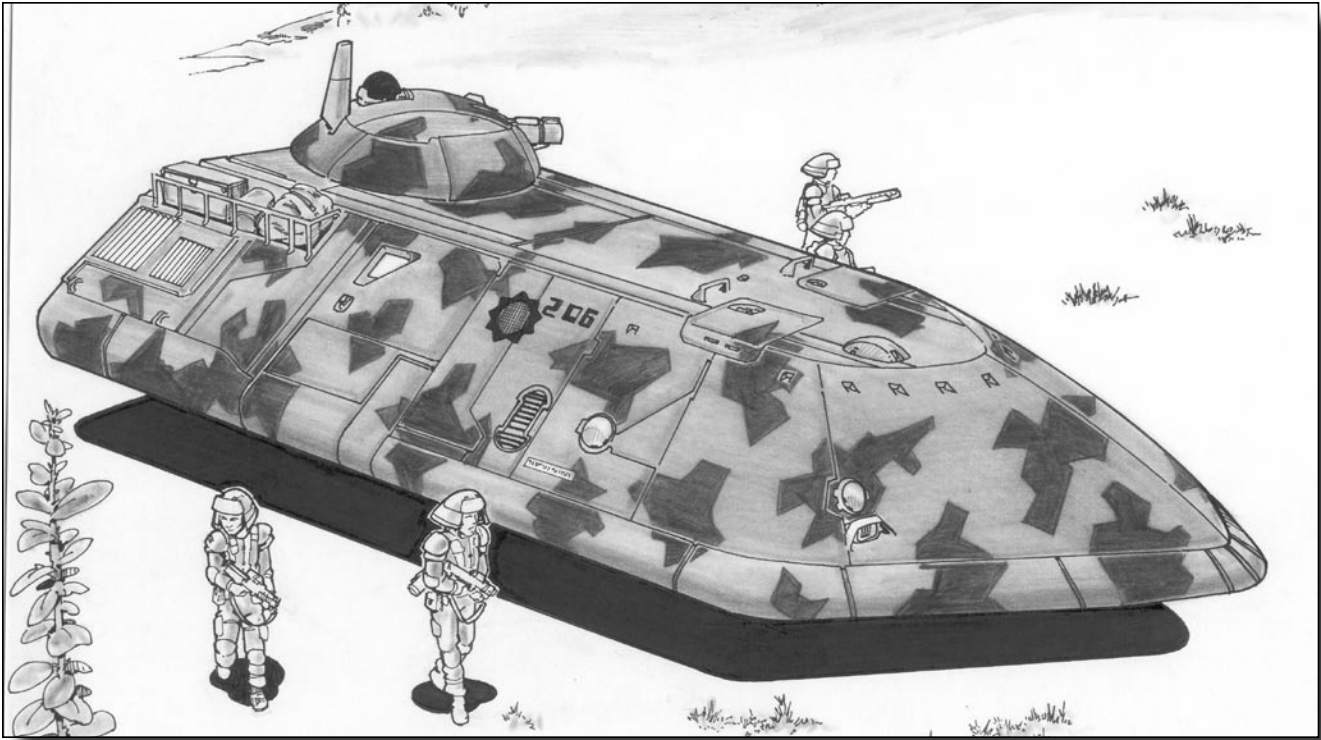
Primary armament is an 18cm mass-driver cannon with an effective range of 200km. The Solar Wind has an internal ammunition supply for 10 fire rounds. Access to the ammunition storage is through a rear deck hatch that allows the reloading of the sled even while the primary weapon is firing. Crew layout matches Imperial standard layout, with the pilot and commander sitting side by side in the forward crew compartment and the gunner sits behind and above the commander.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
110,000vl Chassis	110,000	110,000	-
Controls	22,000	55,000	-
Partial streamlining	-	110,000	-
Armor : AR7	8,800	82,200	-
Climate Control	1,100	55,000	-11
Pressurized Interior	5,500	137,500	-137.5
Grav Drive Train	2,640	30,360,000	-660
Fusion Power Plant	7,809	1,717,980	+2603
Fuel	6,377.35	-	-
Cupola	49,500	247,500	-
18cm MD	(45,000)	1,000,000	-22.5
Ammunition 100 rnds	5,600	6,800	-
4km Holovideo sensor+LI+IR	108	160,000	-5.6
Crew Seats (2)	400	200	-
Fire Control Computer	0.8	1,200	-0.054
HoloDisplay (3)	0.3	1,500	-0.15
2-way radio (long range)	4	600	-1.6
Laser Comm (long Range)	6	7,200	-0.3
Radar (Extreme Range)	30	1,500,000	-1.5
Neutrino Sensor (Medium)	8	120,000	-2
Cargo	116.55	-	-

Subtotals 0 Cr35,672,680
(Mcr28.54 with 20% production model discount)





ARMORED PERSONNEL CARRIER

TL14, Mcr6.7, 18,400vl. The Astrin APC is one of Interstellar Arms most successful designs. An Interstellar Arms subsidiary within the Core sector originally designed Astrin in 715. Updates to the highly flexible design include advanced armor, a larger and more powerful weapon, and numerous changes to the interior electronics. Still, the basic design remains unchanged and remains in service with the Imperial Armed forces and numerous planetary defense forces throughout the Imperium.

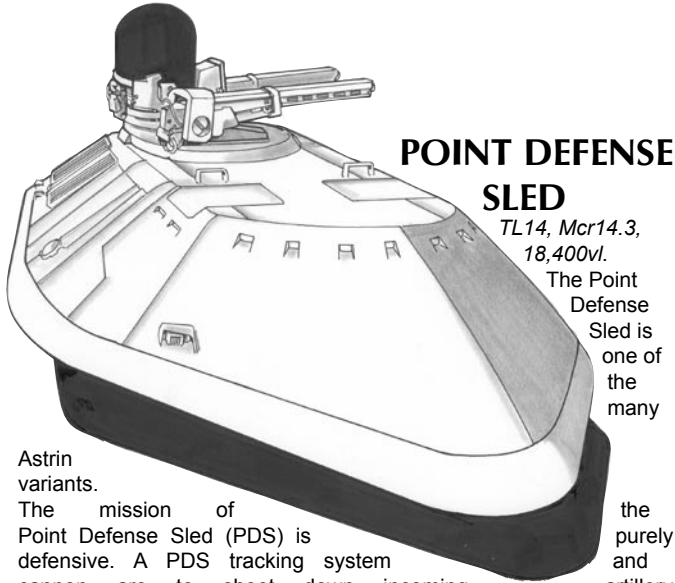
Primary armament is a 30 Mw rapid fire fusion cannon with an effective range of 19.5 km. Power for the fusion cannon is supplied by a 3,500EP power cell, enough power for 40 fire rounds. The fusion power plant can recharge the battery in 9 minutes if the vehicle is at rest. In its primary operation mode, the Astrin carries 10 battledress equipped troops in a large compartment accessed through a large drop door at the rear of the craft.

Interstellar Arms produces a number of modular options for the Astrin, allowing for field modifications. A frequent change is removing the turret, which disarms the Astrin, as many of the Astrin's duties do not require a heavy fusion gun. By removing the seats and battledress harnesses, the Astrin can haul up to 6,000kg of cargo. Several manufacturers produce a 6,000-liter collapsible tank designed to fit within the cargo space for carrying fuel, water or other liquid supplies. The ambulance version has space for three medical personnel and their equipment plus thirteen stretchers. The galley version carries a crew of three cooks and the galley space to prepare food for a company. The command version contains roomy seats for 10 crew, plus an enhanced holodisplay unit, a larger map computer, and an array of communications gear.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
18,400vl Chassis	-18,400	18,400	-
Controls	3,680	9,200	-
Partly Streamlined	-	18,400	-
Armor : AR10	2024	21,216	-
Chameleon Armor	-	920,000	-
Climate Control	184	9,200	-1.84
Pressurized Interior	920	23,000	-23
Grav Drive Train	441.6	5,078,400	-110.4
Fusion Power Plant	1320	290,400	440
Fuel	660	-	-
Adv Battery (3,600EP)	36	1,800	-
Standard Turret	2,892	28,404	-2.84
Fusion -4 (ROF 3)	(2,100)	1,800,000	-90
4km HoloVideo sensor+LI+IR	(108)	160,000	-2.8
HoloDisplay	(0.1)	500	-0.05
Crew Seats (1)	(200)	100	-
Fire Control Computer	(0.8)	1,200	-0.054
Cargo	(1.1)	-	-
Crew Seats (1)	200	100	-
Holodisplay (x2)	0.2	1000	-0.1
Passengers (10)	6,000	1,000	-
2-way radio (long range)	4	600	-1.6
Laser Comm (long Range)	6	7,200	-0.3
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	30.2	-	-

Subtotals 0 Cr8,390,160 (Mcr6.7 with 20% production model discount)



POINT DEFENSE SLED

TL14, Mcr14.3, 18,400vl.

The Point Defense Sled is one of the many

Astrin variants.

The mission of the Point Defense Sled (PDS) is defensive. A PDS tracking system cannon are to shoot down incoming rounds, missiles, or robotic drones. The PDS has the Astrin's fusion gun replaced with two 40mm VRF mass driver cannon. The cannon are slaved to a wide spectrum radar/ladar tracking system. Most of the cost of the upgrade is the high speed tracking system. The large cargo space is dedicated to ammunition storage, with a capacity of 7,500 rounds, which gives the craft 37 fire rounds. Ammunition reloads are in 40 kg, 50 round cassettes.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
18,400vl Chassis	-18,400	18,400	-
Controls	3,680	9,200	-
Partly Streamlined	-	18,400	-
Armor : AR10	2024	21,216	-
Chameleon Armor	-	920,000	-
Climate Control	184	9,200	-1.84
Pressurized Interior	920	23,000	-23
Grav Drive Train	441.6	5,078,400	-110.4
Fusion Power Plant	1320	290,400	440
Fuel	660	-	-
Adv Battery (3,600EP)	36	1,800	-
Standard Turret	2,892	28,404	-2.84
40mm MD cannon (x2)	(1920)	238,000	-10
4km Holovideo sensor+LI+IR	(108)	160,000	-2.8
HoloDisplay	(0.1)	500	-0.05
Crew Seats (1)	(200)	100	-
Fire Control Computer	(0.8)	1,200	-0.054
Radar (Long Range)	(20)	1,000,000	-1
Ladar (Long Range)	(20)	10,000,000	-0.1
Cargo	(141.1)	-	-
Crew Seats (1)	200	100	-
Holodisplay (x2)	0.2	1000	-0.1
Ammunition	6,000	11,250	-
2-way radio (long range)	4	600	-1.6
Laser Comm (long range)	6	7,200	-0.3
Lights (2 beam, 2 area)	2	40	-0.08
Cargo	30.2	-	-

Subtotals 0 Cr17,838,410 (Mcr14.3 with 20% production model discount)

ARMORED RECOVERY SLED

TL14, Mcr21.2, 66,000vl. The AGR series II manufactured by Dinabarib is one of the four Armored Recovery sleds used by the Imperial Armed Forces. The AGR series II is a larger and upgraded version of the Dinabarib's AGR Armored Recovery Sled.

The series II utilizes a fusion power plant instead of the fuel cell used by the AGR Series I. The additional power gives the Series II a 25-ton lifting capacity, a two-thirds improvement, and the lift arms strengthened correspondingly. The Series II has three arms for greater holding ability during recovery operations. The interior layout of the AGR Series II is otherwise identical to the AGR Series I, with the primary crew access through a large bottom hatch and the winch, arm controls and tool shops all within a large open bay.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
91,000vl Chassis	-91,000	91,000	-
Controls	18,200	45,500	-
Partly Streamlined	-	91,000	-
Armor : AR8	3,267	32,403	-
Climate Control	363	18,150	-3.63
Pressurized Interior	1,815	45,375	-45.38
Grav Drive Train	2,184	25,116,000	-546
Fusion Power Plant	3,438	756,360	1146
Fuel	1,719	-	-
Crew (5)	2,000	500	-
Engineering Shop (3)	3,000	60,000	-
Winch (ST 52)	10.4	520	-0.52
Lift Arms (6m, 25ton x3)	29,700	99,000	-
Arm Motors(St 58, DX;0, x3)	87	17,400	-17.4
4km visual sensor+LI+IR	64	104,000	-2.8
Lights (2 beam, 2 area)	2	40	-0.08
2-way radio (long range)	4	600	-1.6
Cargo	146.6	-	-
Towing Capacity	25,000	-	-

Subtotals 0 Cr26,477,848 (Mcr21.18 with 20% production model discount)

AGAINST GRAVITY

6

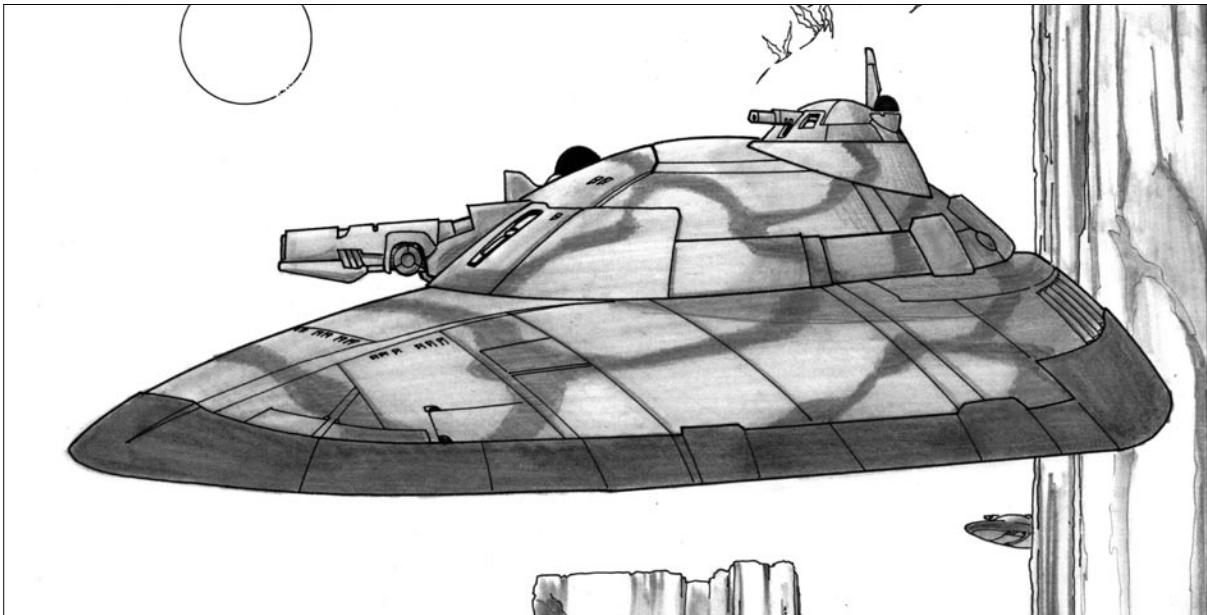
HEAVY MAIN BATTLE TANK

TL15, Mcr13.74, 29,250vl. The Intrepid heavy tank is the most recent addition to the Imperial Army arsenal. Using the latest in Imperial Technology and designed to replace the Zhakirov heavy tanks, the Intrepid prototypes elicited alarm from the military designers in both the Solomani Rim and the Zhodani Consulate. Slated for deployment starting in 997, the outbreak of hostilities in the Solomani Rim has moved up the deployment of the Intrepid's in the rimward sectors.

Crew layout is standard for Imperial armored vehicles; pilot and commander sit side by side in the main body and the gunner sits in the turret just behind the commander. Primary armament is a 110 Mw fusion gun with a rapid pulse capability. A quick discharge battery system powers the main fusion gun, and holds 400 shots. In addition to the fusion engine, the fusion gun battery can power Grav drive system for over four hours. While the Intrepid is at rest, the fusion engine can recharge the battery system in 68 minutes. Secondary armament is a VRF Gauss gun with an independent target system for use in anti-personnel, light anti-armor and point defense roles.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
29,250vl Chassis	29,250	29,250	-
Controls	5,850	14,625	-
Partly Streamlined	-	29,250	-
Armor : AR15	4,680	45,120	-
Chameleon Armor	-	1,462,500	-
Climate Control	292.5	14,625	-2.96
Pressurized Interior	1462.5	36,562.5	-36.56
Grav Drive Train	702	8,073,000	-175.5
Fusion Power Plant	1,074	236,280	+716
Fuel	1,074	-	-
Adv. Battery (400 shots)	440	22,000	-
Heavy Turret	11,214	112,140	-22.424
Fusion Gun - 9	(7,700)	6,600,000	-440
4km Hologvideo sensor+LI+IR	(108)	160,000	-5.6
Crew Seats (1)	(200)	100	-
Fire Control Computer	(0.8)	1,200	-0.054
HoloDisplay	(0.1)	500	-0.05
Cargo	(1.1)	-	-
Crew Seats (1)	200	100	-
VRF Gauss/Cupola	2200	211,000	-
2000 rnds Ammo	20	400	-
Fire Control Computer	0.8	1,200	-0.054
2-way radio (long range)	4	600	-1.6
Laser Comm (long Range)	6	7,200	-0.3
Lights (2 beam, 2 area)	2	40	-0.08
Neutrino Sensor (Medium)	8	120,000	-2
Holodisplay (x2)	0.2	1,000	-0.1
Cargo	20	-	-
Subtotals	0	Cr17,189,493 (Mcr13.74 with 20% production model discount)	



MESON ARTILLERY SLED

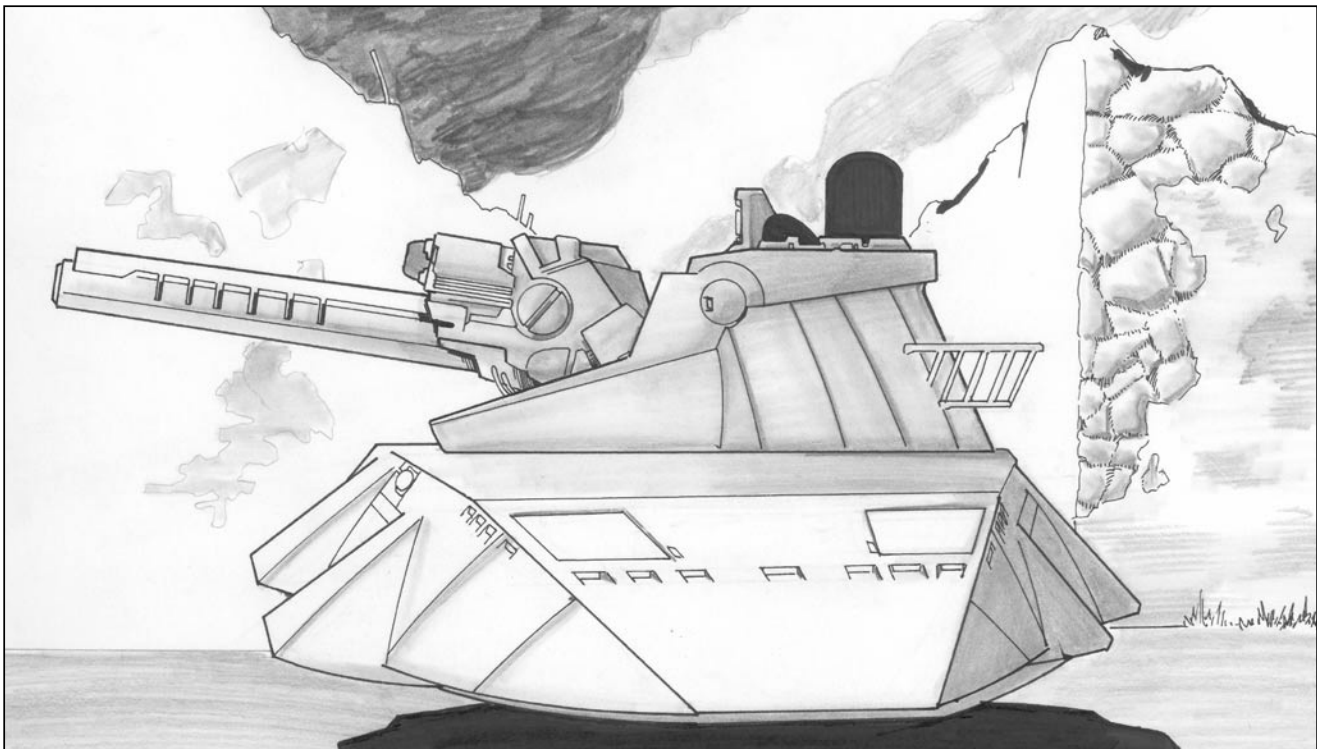
TL15, MCr51.8, 113,000vl. The YC-9443 is a prototype meson artillery sled submitted to the Imperial Army as a replacement for the aging Solar Wind as a primary artillery weapon. The first functional prototype completed in 995 and demonstrated on the Imperial Army weapons testing ground for the Old Expanses IA command. A number of sector commands, as well as planetary defense forces, have shown an interest in the meson sled.

The YC-9443 Meson Artillery Sled (MAS) armament is a single 250 Mw meson accelerator weapon. Meson weapons, like laser and fusion guns, have the advantage of no ammunition requirements and as a direct fire energy weapon; there are no point defense systems capable of stopping meson weapons fire. Unlike the laser and energy weapons, meson beams can travel through intervening obstacles, requiring no line of sight to the target, making them ideal artillery weapons. The MA-250 weapon, one of the smallest weapons grade meson accelerators ever built, has a direct fire range of 90km and is powered by a quick-discharge battery capable of supplying 10 fire rounds. The fusion plant can recharge the energy cell in 2 minutes while the vehicle is at rest.

The YC-9443 is built upon the same base frame as the Solar Wind to reduce logistical requirements during deployment. The intention is to have a mixed deployment of artillery, the meson weapon, capable of vast unstoppable destruction, and the Solar Wind to add mission flexibility.

DESIGN SPECIFICATIONS

Installed Components	Size	Cost	EP
113,000vl Chassis	113,000	113,000	-
Controls	22,600	56,500	-
Partial streamlining	-	113,000	-
Armor : AR7	9,040	84,360	-
Climate Control	1,130	56,500	-11.3
Pressurized Interior	5,650	141,250	-
Grav Drive Train	2,712	31,188,000	-678
Fusion Power Plant	2,619	851,400	+1746
Fuel	2,619	-	-
Adv Battery (10 shots)	24	1,200	-
Cupola	66,000	330,000	-
Meson Accelerator	(60,000)	30,000,000	240
4km Holovideo sensor+LI+IR	108	160,000	-5.6
Crew Seats (2)	400	200	-
Fire Control Computer	0.8	1,200	-0.54
HoloDisplay (3)	0.3	1500	-0.15
2-way radio (long range)	4	600	-1.6
Laser Comm (long Range)	6	7,200	-0.3
Radar (Extreme Range)	30	1,500,000	-1.5
Neutrino Sensor (Medium)	8	120,000	-2
Cargo	48.9	-	-
Subtotals	0	Cr64,728,910 (Mcr51.8 with 20% production model discount)	



AGAINST GRAVITY

6

GRAV BELT

Class: Grav Vehicle	EP Output: 1 (0.76 excess)
Cost: Cr9,192	Agility: 0
Tech Level: 12	Initiative: 0
Size: Medium (100vl)	AC: 10
Streamlining: Standard	AR: 0
Pressurized? No	SI: 4
Climate Control? No	Visual:
Drive Train: Grav	
Crew: 1	
Passengers: 0	Sensors:
Cargo Space: 33.94vl	
Fuel: 33.6vl	
Range: 28 days	Comm:
Speeds:	
Acceleration = 12 kph	
Off Road = n/a Very Slow = 12kph Slow = 30kph	
Cruising = 60kph Fast = 90kph Maximum = 120kph	
Other Equipment:	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

HIVER FLOATER

Class: Grav Vehicle	EP Output: 2 (0.075 excess)
Cost: Cr50,368	Agility: 0
Tech Level: 15	Initiative: +0
Size: Large (1,500vl)	AC: 9
Streamlining: Standard	AR: 0
Pressurized? No	SI: 42
Climate Control? No	Visual:
Drive Train: Grav	
Crew: 1	
Passengers: 0	Sensors:
Cargo Space: 1,145vl	
Fuel: 36vl	
Range: 1 year	Comm: 2-way radio (50km)
Speeds:	
Acceleration = 7kph	
Off Road = n/a Very Slow = 7kph Slow = 19kph	
Cruising = 37kph Fast = 56kph Maximum = 75kph	
Other Equipment: Navigation computer (Parallel, 200 cpu, pilot +3, Navigation +3)	

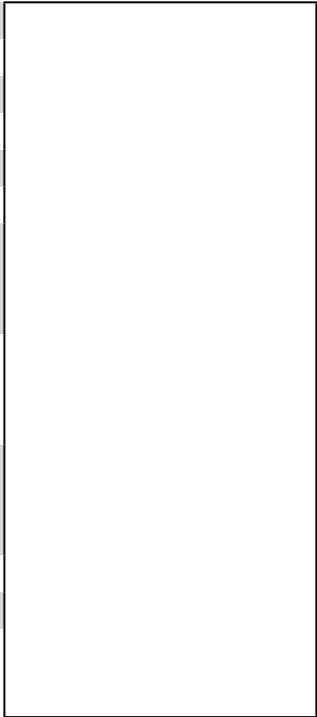


TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

GRAV BIKE

Class: Grav Vehicle	EP Output: 5.05
Cost: Cr38,188	Agility: 2
Tech Level: 12	Initiative: +2
Size: Medium (130vl)	AC: 12
Streamlining: Standard	AR: 0
Pressurized? No	SI: 16
Climate Control? No	Visual: Headlight (6m beam)
Drive Train: Grav	
Crew: 1	
Passengers: 1	Sensors:
Cargo Space: 21.645vl	
Fuel: 42.42vl	
Range: 1 week	Comm: 2-way radio (50km)
Speeds:	
Acceleration = 30kph	
Off Road = n/a	Very Slow = 30kph Slow = 75kph
Cruising = 150kph	Fast = 225kph Maximum = 300kph
Other Equipment:	

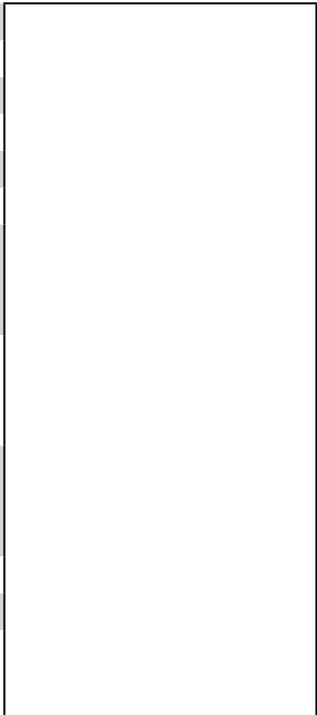


TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

AIR/RAFT

Class: Grav Vehicle	EP Output: 10 (2.8 excess)
Cost: Cr265,920	Agility: 0
Tech Level: 8	Initiative: +0
Size: Huge (8,000vl)	AC: 8
Streamlining: Standard	AR: 0
Pressurized? No	SI: 57
Climate Control? No	Visual:
Drive Train: Grav	
Crew: 1	
Passengers: 3	Sensors:
Cargo Space: 4118vl	
Fuel: 336vl	
Range: 1 week	Comm: 2-way Radio (500km)
Speeds:	
Acceleration = 12kph	
Off Road = n/a	Very Slow = 12kph Slow = 30kph
Cruising = 60kph	Fast = 90kph Maximum = 120kph
Other Equipment:	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

AGAINST GRAVITY

6

GCARRIER

Class: Grav Vehicle	EP Output: 42	Turret: Pulse laser, ROF 5 Attack +0, Damage 2d10, range 3.7km
Cost: Cr576,432	Agility: 0	
Tech Level: 9	Initiative: +0	
Size: Huge (10,000vl)	AC: 14	
Streamlining: Standard	AR: 6	
Pressurized? Yes	SI: 65	
Climate Control? Yes	Visual: Visual + LI (4km), 2 headlights (12m beam), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 2		
Passengers: 12	Sensors:	
Cargo Space: 557vl		
Fuel: 1764vl		
Range: 1 week	Comm: 2-way radio (500km)	
Speeds:		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

SUB-ORBITAL TRANSPORT

Class: Grav Vehicle	EP Output: 310	
Cost: MCr8.45	Agility: 1	
Tech Level: 13	Initiative: +1	
Size: Gargantuan (20,000vl)	AC: 12	
Streamlining: Airframe	AR: 5	
Pressurized? Yes	SI: 76	
Climate Control? Yes	Visual:	
Drive Train: Grav		
Crew: 2		
Passengers: 10	Sensors: Radar (500km)	
Cargo Space: 1312vl		
Fuel: 930vl		
Range: 2 months	Comm: 2-way radio (500km)	
Speeds:		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

SPEEDER

Class: Grav Vehicle	EP Output: 34
Cost: Cr629,728	Agility: 2
Tech Level: 10	Initiative: +2
Size: Huge (2,000vl)	AC: 10
Streamlining: Airframe	AR: 0
Pressurized? No	SI: 50
Climate Control? Yes	Visual: Visual + LI (1km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 1	Sensors:
Cargo Space: 1004vl	
Fuel: 123.6vl	
Range: 15,600km	Comm: 2-way radio (500km)
Speeds:	
Acceleration = 83kph	
Off Road = n/a Very Slow = 100kph Slow = 250kph	
Cruising = 500kph Fast = 750kph Maximum = 1000kph	
Other Equipment:	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

CARGO HAULER, LIGHT

Class: Grav Vehicle	EP Output: 19
Cost: Cr657,072	Agility: 0
Tech Level: 9	Initiative: +0
Size: Huge (7,000vl)	AC: 8
Streamlining: Standard	AR: 0
Pressurized? No	SI: 59
Climate Control? Yes	Visual: 2 headlights (12m beam, 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 1	Sensors:
Cargo Space: 5,000vl	
Fuel: 218vl	
Range: 5,750km	Comm: 2-way radio (500km)
Speeds:	
Acceleration = 25kph	
Off Road = n/a Very Slow = 25kph Slow = 62kph	
Cruising = 125kph Fast = 187kph Maximum = 250kph	
Other Equipment:	



TAS Form 3.1v (Condensed)

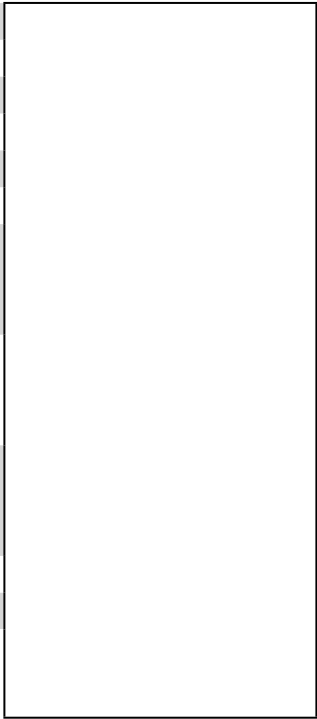
Vehicle Data (Commercial)

AGAINST GRAVITY

6

CARGO HAULER, HEAVY

Class: Grav Vehicle	EP Output: 194
Cost: MCr7.2	Agility: 0
Tech Level: 9	Initiative: +0
Size: Gargantuan (31,500vl)	AC: 6
Streamlining: Partial	AR: 0
Pressurized? No	SI: 79
Climate Control? Yes	Visual: Video+LI (1km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 2	Sensors:
Cargo Space: 22,400vl	
Fuel: 291vl	
Range: 1 month	Comm: 2-way radio (500km)
Speeds:	
Acceleration = 60kph	
Off Road = n/a Very Slow = 60kph Slow = 150kph	
Cruising = 300kph Fast = 450kph Maximum = 600kph	
Other Equipment: Autopilot/0	

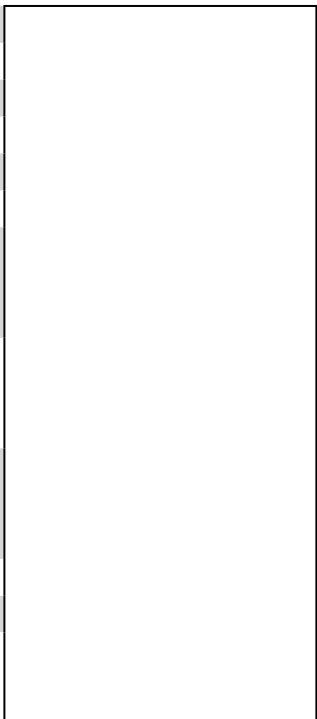


TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

GRAV ATV

Class: Grav Vehicle	EP Output: 95
Cost: MCr1.61	Agility: 1
Tech Level: 14	Initiative: +1
Size: Huge (10,000vl)	AC: 11
Streamlining: Partial	AR: 2
Pressurized? Yes	SI: 65
Climate Control? Yes	Visual: Video+LI (1km), 2 Headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 7	Sensors:
Cargo Space: 1764.4vl	
Fuel: 427.5vl	
Range: 3 months	Comm: 2-way radio (500km)
Speeds:	
Acceleration = 40kph	
Off Road = n/a Very Slow = 40kph Slow = 100kph	
Cruising = 200kph Fast = 300kph Maximum = 400kph	
Other Equipment: Autopilot/0, galley, fresher/shower, laboratory	

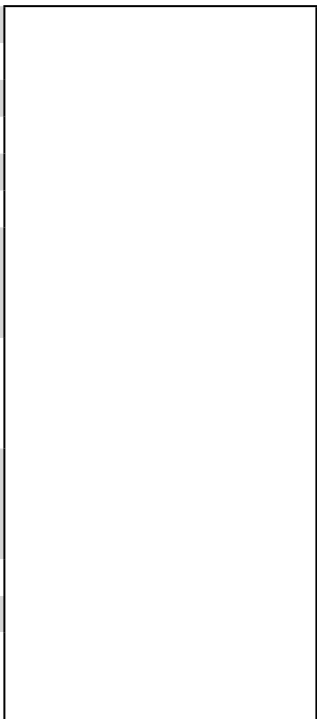


TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

AMBULANCE

Class: Grav Vehicle	EP Output: 90
Cost: MCr1.13	Agility: 3
Tech Level: 9	Initiative: +3
Size: Huge (5,000vl)	AC: 11
Streamlining: Partial	AR: 0
Pressurized? No	SI: 55
Climate Control? Yes	Visual: Visual+LI (1km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 3	Sensors:
Cargo Space: 156	
Fuel: 1296vl	
Range: 4 days	Comm: 2-way radio (500km)
Speeds:	
Acceleration = 50kph	
Off Road = n/a Very Slow = 50kph Slow = 125kph	
Cruising = 250kph Fast = 375kph Maximum = 500kph	
Other Equipment: Autopilot/0, Medical computer/1, 2 sickbays	

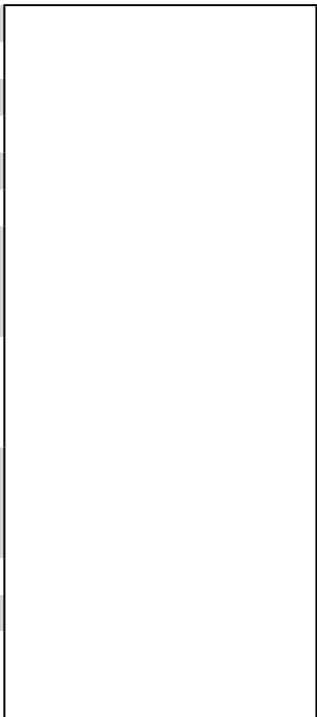


TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

GRAV BUS

Class: Grav Vehicle	EP Output: 44
Cost: MCr1.14	Agility: 0
Tech Level: 10	Initiative: +0
Size: Huge (10,000vl)	AC: 8
Streamlining: Standard	AR: 0
Pressurized? Yes	SI: 65
Climate Control? Yes	Visual: 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 20/24	Sensors:
Cargo Space: 421vl	
Fuel: 370vl	
Range: 1 week	Comm:
Speeds:	
Acceleration = 30kph	
Off Road = n/a Very Slow = 30kph Slow = 75kph	
Cruising = 150kph Fast = 225kph Maximum = 300kph	
Other Equipment:	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

AGAINST GRAVITY

6

CARGO LIFTER

Class: Grav Vehicle	EP Output: 42
Cost: Cr730,000	Agility: 0
Tech Level: 9	Initiative: +0
Size: Huge (7,800vl)	AC: 8
Streamlining: Standard	AR: 0
Pressurized? Yes	SI: 60
Climate Control? Yes	Visual: 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 1	Sensors:
Cargo Space: 116vl	
Fuel: 605vl	
Range: 4 days	Comm: 2-way radio (500km)
Speeds:	
Acceleration = 6kph	
Off Road = n/a	Very Slow = 6kph Slow = 15kph
Cruising = 30kph	Fast = 45kph Maximum = 60kph
Other Equipment: 2 lift arms (Str:64, 56 tons capacity)	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

MEDIUM TANK

Class: Grav Vehicle	EP Output: 410
Cost: MCr4.43	Agility: 3
Tech Level: 10	Initiative: +3
Size: Gargantuan (21,500vl)	AC: 19
Streamlining: Partial	AR: 10
Pressurized? Yes	SI: 76
Climate Control? Yes	Visual: Visual+IR+LI (4km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 4	
Passengers: 0	Sensors:
Cargo Space: 10v	
Fuel: 1516vl	
Range: 7075km	Comm: 2-way radio (5000km)
Speeds:	
Acceleration = 50kph	
Off Road = n/a	Very Slow = 50kph Slow = 125kph
Cruising = 250kph	Fast = 375kph Maximum = 500kph
Other Equipment: Fire control computer	

Heavy Turret: 65mm Mass driver cannon, 160 rounds, ROF 4, damage 5d12, range 1.1km
Body: Light machine gun, 200 rounds, ROF 20, damage 1d12-5, range 60m

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

LIGHT TANK

Class: Grav Vehicle	EP Output: 136	Heavy Turret: Pulse Laser 32MW, ROF 1, Damage 6d10, Range 42km. Body: Light Machine Gun, 200 rounds, ROF 20, Damage 1d12-5, Range 60m
Cost: MCr1.34	Agility: 3	
Tech Level: 10	Initiative: +3	
Size: Huge (7,200vl)	AC: 21	
Streamlining: Partial	AR: 10	
Pressurized? Yes	SI: 54	
Climate Control? Yes	Visual: Visual+LI+IR (4km), 2 headlights (12m beam), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 4		
Passengers: 0	Sensors:	
Cargo Space: 8vl		
Fuel: 212vl		
Range: 2100km	Comm: 2-way radio (5,000km)	
Speeds:		
Acceleration = 40kph		
Off Road = n/a Very Slow = 40kph Slow = 100kph		
Cruising = 200kph Fast = 300kph Maximum = 400kph		
Other Equipment: Fire Control Computer		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

HEAVY TANK

Class: Grav Vehicle	EP Output: 510	Heavy Turret: Fusion-4, ROF 1, damage 4d20, range 1.0km Body: Light machine gun, 200 rounds, ROF 20, damage 1d12-5, range 60m.
Cost: MCr6.19	Agility: 3	
Tech Level: 12	Initiative: +3	
Size: Gargantuan (24,000vl)	AC: 21	
Streamlining: Partial	AR: 12	
Pressurized? Yes	SI: 77	
Climate Control? Yes	Visual: Visual+LI+IR (4km), 2 headlights (12m), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 4		
Passengers: 0	Sensors:	
Cargo Space: 11vl		
Fuel: 573.73vl		
Range: 5625km	Comm: 2-way radio (5000km)	
Speeds:		
Acceleration = 50kph		
Off Road = n/a Very Slow = 50kph Slow = 125kph		
Cruising = 250kph Fast = 375kph Maximum = 500kph		
Other Equipment: Fire control computer		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

AGAINST GRAVITY

6

MISSILE ARTILLERY SLED

Class: Grav Vehicle	EP Output: 86	Body: Heavy MRL, ROF 100, damage 6d8, range 2.1km
Cost: Cr732,674	Agility: 3	
Tech Level: 10	Initiative: +3	
Size: Huge (4,600vl)	AC: 16	
Streamlining: Partial	AR: 5	
Pressurized? Yes	SI: 55	
Climate Control? Yes	Visual: 2 headlights (12m beam), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 3		
Passengers: 0	Sensors:	
Cargo Space: 18vl		
Fuel: 310vl		
Range: 4800vl	Comm: 2-way radio (5000km)	
Speeds:		
Acceleration = 40kph		
Off Road = n/a	Very Slow = 40kph Slow = 100kph	
Cruising = 200kph	Fast = 300kph Maximum = 400kph	
Other Equipment: Fire control computer, 4 loading arms (Str:7)		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

ARMORED PERSONNEL CARRIER (APC)

Class: Grav Vehicle	EP Output: 146	Turret: Beam Laser-12Mw, ROF 1, damage 3d8, range 3.9km
Cost: MCr1.24	Agility: 3	
Tech Level: 12	Initiative: +3	
Size: Huge (8,500vl)	AC: 19	
Streamlining: Partial	AR: 8	
Pressurized? Yes	SI: 62	
Climate Control? Yes	Visual: Visual+LI+IR (4km), 2 headlights (12m beam), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 3		
Passengers: 8	Sensors:	
Cargo Space: 7.5vl		
Fuel: 153.3vl		
Range: 4200km	Comm: 2-way radio (5000km)	
Speeds:		
Acceleration = 40kph		
Off Road = n/a	Very Slow = 40kph Slow = 100kph	
Cruising = 200kph	Fast = 300kph Maximum = 400kph	
Other Equipment:		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

ARTILLERY SLED

Class: Grav Vehicle	EP Output: 122	Body: 12cm Autocannon, 80 rounds, ROF 2, damage 8d12, range 1.7km
Cost: MCr2.0	Agility: 1	
Tech Level: 12	Initiative: +1	
Size: Huge (12,750vl)	AC: 14	
Streamlining: Partial	AR: 5	
Pressurized? Yes	SI: 70	
Climate Control? Yes	Visual: 2 headlights (12m beam), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 3		
Passengers: 0	Sensors:	
Cargo Space: 70vl		
Fuel: 293vl		
Range: 9600km	Comm: 2-way radio (5000km), lasercom (5000km)	
Speeds:		
Acceleration = 40kph		
Off Road = n/a	Very Slow = 40kph Slow = 100kph	
Cruising = 200kph	Fast = 300kph Maximum = 400kph	
Other Equipment: Fire control computer		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

ARMORED RECOVERY SLED

Class: Grav Vehicle	EP Output: 460	
Cost: MCr5.45	Agility: 3	
Tech Level: 12	Initiative: +3	
Size: Gargantuan (20,000vl)	AC: 15	
Streamlining: Partial	AR: 5	
Pressurized? Yes	SI: 76	
Climate Control? Yes	Visual: Visual+LI+IR (4km), 2 headlights (12m beam), 2 taillights (1.5m area)	
Drive Train: Grav		
Crew: 6		
Passengers: 0	Sensors:	
Cargo Space: 1512vl		
Fuel: 1104vl		
Range: 9600vl	Comm: 2-way radio (5000km)	
Speeds:		
Acceleration = 40kph		
Off Road = n/a	Very Slow = 40kph Slow = 100kph	
Cruising = 200kph	Fast = 300kph Maximum = 400kph	
Other Equipment: Winch (Str: 52), 2 lift arms (Str:55, Dex:1), 3 engineering shops		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

ARMORED ENGINEERING SLED

Class: Grav Vehicle	EP Output: 100
Cost: MCr2.73	Agility: 0
Tech Level: 10	Initiative: +0
Size: Huge (8,000vl)	AC: 11
Streamlining: Partial	AR: 3
Pressurized? No	SI: 61
Climate Control? Yes	Visual: 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 2	
Passengers: 0	Sensors:
Cargo Space: 1790vl	
Fuel: 360vl	
Range: 4,800km	Comm: 2-way radio (5000km)
Speeds:	
Acceleration = 40kph	
Off Road = n/a Very Slow = 40kph Slow = 100kph	
Cruising = 200kph Fast = 300kph Maximum = 400kph	
Other Equipment: Winch (Str:52), Front ram plate	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

LIGHT MAIN BATTLE TANK

Class: Grav Vehicle	EP Output: 347.5
Cost: MCr6.59	Agility: 4
Tech Level: 14	Initiative: +4
Size: Huge (14,000vl)	AC: 27 (+13 armor, +4 Init, +2 chameleon)
Streamlining: Partial	AR: 13
Pressurized? Yes	SI: 73
Climate Control? Yes	Visual: Holodisplay+IR+LI (4km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 3	
Passengers: 0	Sensors: Neutrino (50km)
Cargo Space: 117.75vl	
Fuel: 868.75vl	
Range: 50 day	Comm: 2-way radio (5000km), lasercom (5000km)
Speeds:	
Acceleration = 60kph	
Off Road = n/a Very Slow = 60kph Slow = 150kph	
Cruising = 300kph Fast = 450kph Maximum = 600kph	
Other Equipment: Three holodisplay units, fire control computer, chameleon armor, 5000EP battery.	

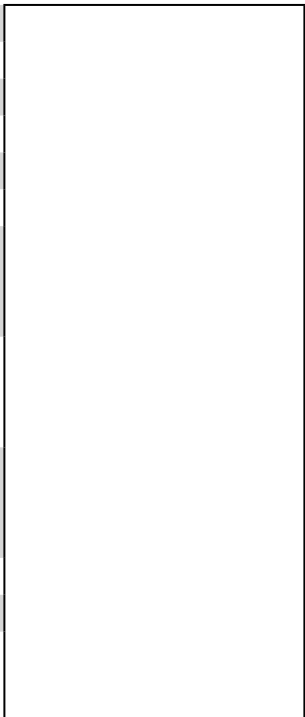
Turret: Fusion-6, ROF 1, damage 6d20, range 1.5km
Body: Autocannon, 200 rounds, ROF 10, damage 1d10, range 111m

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

ARMORED TRUCK

Class: Grav Vehicle	EP Output: 103
Cost: MCr2.9	Agility: 0
Tech Level: 10	Initiative: +0
Size: Gargantuan (19,000vl)	AC: 9
Streamlining: Partial	AR: 3
Pressurized? Yes	SI: 76
Climate Control? Yes	Visual: 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 1	
Passengers: 2	Sensors:
Cargo Space: 10,070vl	
Fuel: 741.6vl	
Range: 9,600km	Comm: 2-way radio (5000km)
Speeds:	
Acceleration = 40kph	
Off Road = n/a	Very Slow = 40kph Slow = 100kph
Cruising = 200kph	Fast = 300kph Maximum = 400kph
Other Equipment:	



TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

HEAVY MAIN BATTLE TANK

Class: Grav Vehicle	EP Output: 541
Cost: MCr10.52	Agility: 4
Tech Level: 14	Initiative: +4
Size: Gargantuan (22,000vl)	AC: 26 (+14 armor, +4 init, +2 chameleon)
Streamlining: Partial	AR: 14
Pressurized? Yes	SI: 76
Climate Control? Yes	Visual: Holodisplay+IR+LI (4km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 3	
Passengers: 0	Sensors: Neutrino (50km)
Cargo Space: 101.25vl	
Fuel: 1,221.75vl	
Range: 45 days	Comm: 2-way Radio (5000km), lasercom (5000km)
Speeds:	
Acceleration =60kph	
Off Road = n/a	Very Slow = 60kph Slow = 150kph
Cruising = 300kph	Fast = 450kph Maximum = 600kph
Other Equipment: Three holodisplay units, fire control computer, chameleon armor, 8,500EP battery	

Turret: Fusion-8, ROF 1, damage 8d20, range 1.9km
Body: Autocannon, 200 rounds, ROF 10, damage 1d12, range 111m

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

AGAINST GRAVITY

6

FAST ATTACK SLED

Class: Grav Vehicle	EP Output: 930	Body: Four pulse laser-9.4Mw, ROF 1, damage 4d10, range 12km
Cost: MCr31.37	Agility: 6	
Tech Level: 14	Initiative: +6	
Size: Huge (14,000vl)	AC: 25 (+9 armor, +6 init, +2 chameleon)	
Streamlining: Hypersonic	AR: 9	
Pressurized? Yes	SI: 73	
Climate Control? Yes	Visual: Holodisplay+IR+LI (4km)	
Drive Train: Grav		
Crew: 2		
Passengers: 0	Sensors: Neutrino (50km), Radar (5000km), Ladar(500km)	
Cargo Space: 94.1vl		
Fuel: 1,395vl		
Range: 50 days	Comm: 2-way radio (5000km), lasercom (5000km)	
Speeds:		
Acceleration = 480kph		
Off Road = n/a Very Slow = 480kph Slow = 1200kph		
Cruising = 2400kph Fast = 3600kph Maximum = 4800kph		
Other Equipment: Holodisplay unit, fire control computer, chameleon armor		
TAS Form 3.1v (Condensed)		

Vehicle Data (Commercial)

ARMORED PERSONNEL CARRIER

Class: Grav Vehicle	EP Output: 440	Turret: Fusion-4, ROF 3, damage 4d20, range 1.2km
Cost: MCr6.7	Agility: 4	
Tech Level: 14	Initiative: +4	
Size: Gargantuan (18,400vl)	AC: 22	
Streamlining: Partial	AR: 10	
Pressurized? Yes	SI: 75	
Climate Control? Yes	Visual: Holodisplay+LI+IR (4km), 2 headlight (12m beam), 2 taillight (1.5m area)	
Drive Train: Grav		
Crew: 3		
Passengers: 10	Sensors:	
Cargo Space: 30.4vl		
Fuel: 650vl		
Range: 30 days	Comm: 2-way radio (5000km), lasercom (5000km)	
Speeds:		
Acceleration = 60kph		
Off Road = n/a Very Slow = 60kph Slow = 150kph		
Cruising = 300kph Fast = 450kph Maximum = 600kph		
Other Equipment: Three holodisplay units, Fire control computer, chameleon armor, 8,500 EP battery		
TAS Form 3.1v (Condensed)		

Vehicle Data (Commercial)

ARTILLERY SLED

Class: Grav Vehicle	EP Output: 2603
Cost: MCr28.54	Agility: 4
Tech Level: 14	Initiative: +4
Size: Gargantuan (110,000vl)	AC: 17
Streamlining: Partial	AR: 7
Pressurized? Yes	SI: 98
Climate Control? Yes	Visual: Holodisplay+LI+IR (4km)
Drive Train: Grav	
Crew: 3	
Passengers: 0	Sensors: Neutrino (50km), radar (5000km)
Cargo Space: 166.55vl	
Fuel: 6,377.35vl	
Range: 49 days	Comm: 2-way radio (5000km), lasercom (5000km)
Speeds:	
Acceleration = 60kph	
Off Road = n/a Very Slow = 60kph Slow = 150kph	
Cruising = 300kph Fast = 450kph Maximum = 600kph	
Other Equipment: holodisplay unit, fire control computer	

Body: 18cm mass driver cannon, 100 rounds, ROF 10, damage 10d12, range 2.7km

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

POINT DEFENSE SLED

Class: Grav Vehicle	EP Output: 440
Cost: MCr14.3	Agility: 4
Tech Level: 14	Initiative: +4
Size: Gargantuan (18,400vl)	AC: 22
Streamlining: Partial	AR: 10
Pressurized? Yes	SI: 75
Climate Control? Yes	Visual: Holodisplay+IR+LI (4km), 2 headlights (12m beam), 2 taillights (1.5m area)
Drive Train: Grav	
Crew: 3	
Passengers: 0	Sensors: radar (500km), ladar (500km)
Cargo Space: 30.2vl	
Fuel: 660vl	
Range: 30 days	Comm: 2-way radio (5000km), lasercom (5000km)
Speeds:	
Acceleration =60kph	
Off Road = n/a Very Slow = 60kph Slow = 150kph	
Cruising = 300kph Fast = 450kph Maximum = 600kph	
Other Equipment: Three holodisplay units, Fire control computer, chameleon armor	

Turret: Two 40mm mass driver cannon, 7,500 rounds, ROF 100, damage 2d12, range 500m.

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

ARMORED RECOVERY SLED

Class: Grav Vehicle	EP Output: 1,146
Cost: MCr21.2	Agility: 2
Tech Level: 14	Initiative: +2
Size: Gargantuan (66,000vl)	AC: 16
Streamlining: Partial	AR: 8
Pressurized? Yes	SI: 87
Climate Control? Yes	Visual: Visual sensor + LI + IR (4000 m). 2 headlight (12m beam), 2 tail lights (1.5m area)
Drive Train: Grav	
Crew: 3	
Passengers: 3	Sensors:
Cargo Space: 146.6vl	
Fuel: 1,719vl	
Range: 30 days	Comm: 2-way radio (5,000km)
Speeds:	
Acceleration = 60 kph	
Off Road = n/a	Very Slow = 60kph Slow = 150kph
Cruising = 300kph	Fast = 450kph Maximum = 600kph
Other Equipment: Winch (ST:52), Three 6m arms, Arm Motors (STR: 58, Dex 0).	
TAS Form 3.1v (Condensed)	



Vehicle Data (Commercial)

HEAVY MAIN BATTLE TANK

Class: Grav Vehicle	EP Output: 716
Cost: MCr13.74	Agility: 4
Tech Level: 15	Initiative: +4
Size: Gargantuan (29,250vl)	AC: 27 (+15 armor, +4 Initiative, +2 chameleon)
Streamlining: Partial	AR: 15
Pressurized? Yes	SI: 78
Climate Control? Yes	Visual: Holodisplay + LI + IR (4km) 2 headlight (12m beam), 2 tail lights (1.5m area)
Drive Train: Grav	
Crew: 3	
Passengers: 0	Sensors: Neutrino (50km)
Cargo Space: 20.8vl	
Fuel: 1,074vl	
Range: 30 days	Comm: 2-way radio (5,000km), Lasercom (5,000km)
Speeds:	
Acceleration = 60kph	
Off Road = n/a	Very Slow = 60kph Slow = 150kph
Cruising = 300kph	Fast = 450kph Maximum = 600kph
Other Equipment: Three holodisplay units, Fire control computer, chameleon Armor, 44,000 EP battery.	
TAS Form 3.1v (Condensed)	

Turret: Fusion-9, ROF 4, damage 9d20, range 2.2km
Body: VRF Gauss, 2000 rounds, ROF 100, damage 1d12-4, range 1km

Vehicle Data (Commercial)

MESON ARTILLERY SLED

Class: Grav Vehicle	EP Output: 1746EP	Body: Meson Gun, ROF 1, damage 9d20, range 6km
Cost: MCr51.8	Agility: 2	
Tech Level: 15	Initiative: +2	
Size: Gargantuan (113,000vl)	AC: 17	
Streamlining: Partial	AR: 7	
Pressurized? Yes	SI: 99	
Climate Control? Yes	Visual: Holodisplay + LI + IR (4km)	
Drive Train: Grav		
Crew: 3		
Passengers: 0	Sensors: Neutrino (50km), Radar (5000km),	
Cargo Space: 48.62vl		
Fuel: 2,619vl		
Range: 30 days	Comm: 2-way radio (5,000km), Lasercom (5,000km)	
Speeds:		
Acceleration = 60kph		
Off Road = n/a	Very Slow = 60kph Slow = 150kph	
Cruising = 300kph	Fast = 450kph Maximum = 600kph	
Other Equipment: Three Holodisplay units, targeting computer		

TAS Form 3.1v (Condensed)

Vehicle Data (Commercial)

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AGAINST GRAVITY

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VEHICLE INDEX

<i>Vehicle</i>	<i>Cost</i>	<i>TL</i>	<i>Size</i>	<i>AC</i>	<i>AR</i>	<i>SI</i>	<i>Cruise Speed</i>	<i>Page</i>
Air/raft	Cr265,920	8	8000vl	8	0	57	60kph	10
Ambulance	MCr1.13	9	5000vl	11	0	55	250kph	16
Armored Personnel Carrier	MCr1.24	12	8500vl	19	8	62	200kph	25
Armored Personnel Carrier	MCr6.7	14	18,400vl	22	10	75	300kph	32
Armored Engineering Sled	MCr2.73	10	8000vl	11	3	61	200kph	27
Armored Recovery Sled	MCr5.45	12	20,000vl	15	5	76	200kph	26
Armored Recovery Sled	MCr21.2	14	66,000vl	16	8	87	300kph	33
Armored Truck	MCr2.9	10	19,000vl	9	3	76	200kph	27
Artillery Sled	MCr2.0	12	12,750vl	14	5	70	200kph	24
Artillery Sled	MCr28.54	14	110,000vl	17	7	98	300kph	31
Cargo Hauler, Light	Cr657,072	9	7000vl	8	0	59	125kph	14
Cargo Hauler, Heavy	MCr7.2	9	31,500vl	6	0	79	300kph	15
Cargo Lifter	Cr730,000	9	7800vl	8	0	60	30kph	19
Fast Attack Sled	MCr31.37	14	14,000vl	25	9	73	2400kph	30
GCarrier	Cr576,432	9	10,000vl	14	6	65	60kph	11
Grav ATV	MCr1.61	14	10,000vl	11	2	65	200kph	17
Grav Belt	Cr9,192	12	100vl	10	0	4	60kph	8
Grav Bike	Cr38,188	12	130vl	12	0	16	150kph	9
Grav Bus	MCr1.14	10	10,000vl	8	0	65	150kph	18
Heavy Main Battle Tank	MCr10.52	14	22,000vl	26	14	76	300kph	29
Heavy Main Battle Tank	MCr13.74	15	29,250vl	27	15	78	300kph	34
Heavy Tank	MCr6.19	12	24,000vl	21	12	77	250kph	22
Hiver Floater	Cr50,368	15	1500vl	9	0	42	37kph	10
Light Main Battle Tank	MCr6.59	14	14,000vl	27	13	73	300kph	28
Light Tank	MCr1.34	10	7200vl	21	10	54	200kph	20
Medium Tank	MCr4.43	10	21,500vl	19	10	76	250kph	21