TRAVELLER

Supplement 6: Military Vehicles

Machines of War

Traveller

Military Vehicles

Credits

Classic Traveller

Marc Miller

Loren Wiseman, John Harshman, Frank Chadwick, Darryl Hany, Winston Hamilton, Tony Svajlenka, Scott Renner, Doug Poe, David MacDonald, Wayne Roth, Paul R. Banner

Mongoose Traveller

Author
Simon Beal with additional text by Gareth Hanrahan

Editor
Nick Robinson

Layout
Joeseph McCance

Interior Illustrations
Travis Leichssenring, James Gammel

Proofreader
Charlotte Law

Special Thanks
Stuart Machin, Jake Collins, Arthur Pollard and Donald McKinney

Contents

Introduction

Vehicles are an important part of any *Traveller* game, whether to explore a new planet, deliver cargo or simply to get from one destination to another. Different vehicles are required for different tasks and this book presents you with almost 100 vehicles, from aircraft to watercraft and everything in between.

If you cannot find a vehicle here to suit your needs, you can use the vehicle design rules to create your own. A blank vehicle sheet is included at the back of the book that you can use to design and record the vehicles you create.

Please note that some of the military vehicles listed in the *Traveller Core Rulebook* have been included here, but using the new design rules there are some minor differences between them. You can of course still use the original vehicles but we recommend that you use the versions listed here if you want full compatibility with this and future books.

The vehicles detailed within this book cover a wide range of Technology Levels and have been designed for specific uses and tasks. The vehicles are divided into the following sections:

Aircraft

The aircraft section details conventional flying vehicles including gliders, helicopters and planes. Most aircraft have a co–pilot who can operate sensors, communications and weapons as required. Aircraft listed here cover TL 2–8. Later flying vehicles use grav technology and are given their own section.

Grav Vehicles

Grav technology becomes available at TL 8. Worlds with this technology quickly start to adapt most vehicles to use grav drives for the versatility and speed they provide.

Hybrid Vehicles

Hybrid vehicles are those that have been designed to operate over multiple types of terrain such as amphibious ATVs and sea planes. Vehicles listed here cover TL 4–8.

Land Vehicles

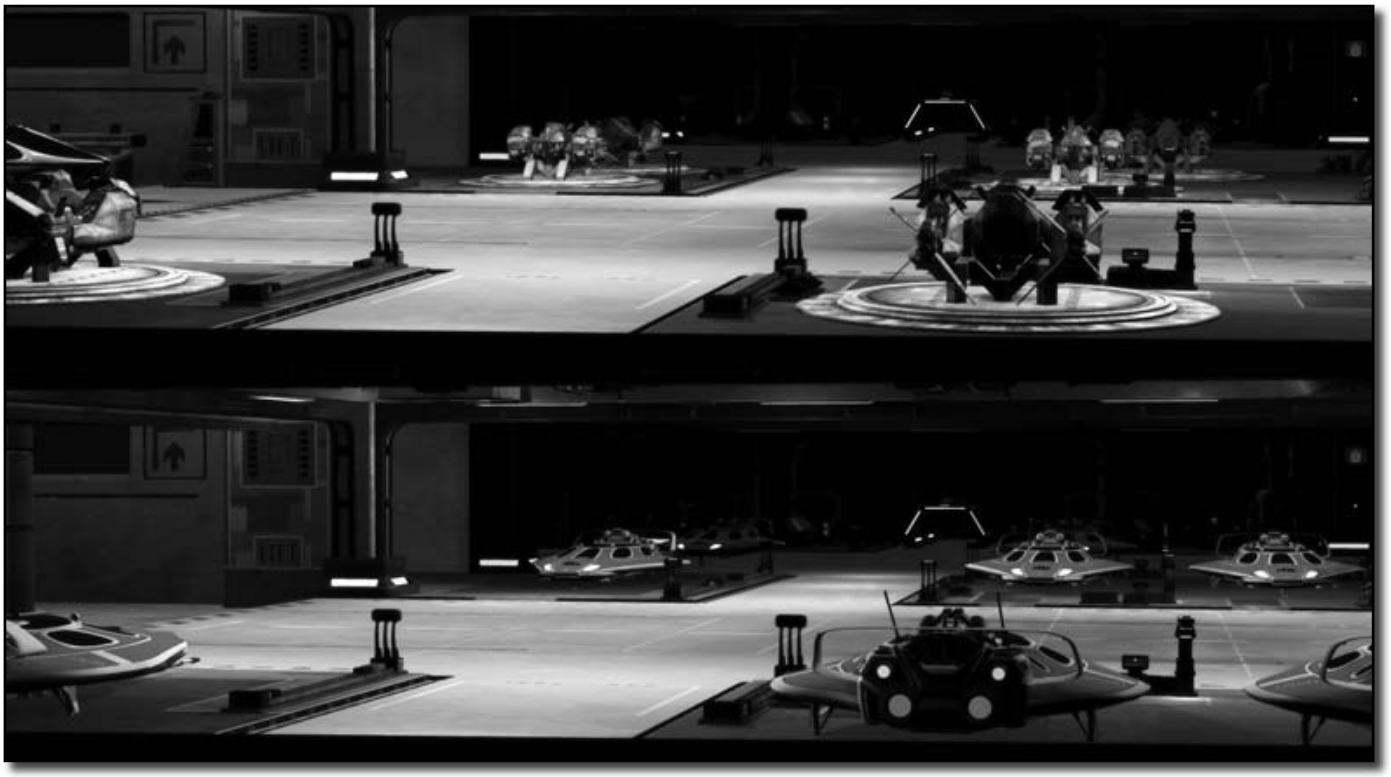
This section includes all tracked and wheeled vehicles that drive along the ground. Vehicles are listed here for a wide range of applications from TL 1–9.

Walkers

Walkers are land vehicles that move on legs, rather than wheels or tracks. Military walkers fulfil a variety of roles and range from TL 8–10.

Watercraft

Boats and ships are used throughout the history of most worlds. A number of vessels for travelling over and underwater are listed here coving TL 1–9.



Vehicle Design

Concepts & Definitions

By definition, a vehicle needs some kind of motive power (termed a **Power Plant**) and a means to deliver this power (termed a **Drive System**) so the vehicle can move. Some kind of control system is also necessary for the vehicle to be able to function. This may or may not include a human operator.

A vehicle must have a **Hull**. This is the body of the vehicle and includes the hull, axles, wings and other structural features as well as the vehicle's outer skin. Other **Components** are fitted into the hull as required, which can include weapons, sensors, communications equipment, crew facilities and cargo space.

Each component built into a vehicle takes up a certain amount of space. The unit used in this design system is the cubic metre (M^3). A vehicle cannot carry more than its internal volume allows, unless it is an open structure with items piled up on top or hanging out of the sides such as motorcycles, air/rafts and flatbed trucks.

A vehicle's hull will have a **Configuration,** which is often determined by its intended function. For example, a cargo van will have a different configuration to an aircraft or submarine.

A vehicle's hull will be constructed from whatever **Material** the designer deems to be most suitable. Generally, higher–tech materials will be stronger than lower–tech ones, allowing either a tougher or cheaper vehicle to be built on the same general configuration. The material a hull is built from also determines the vehicle's mass and Base Armour.

Further design decisions are represented by additional **Qualities**, which can modify vehicle attributes such as armour and speed as well as providing seals and coatings.

The size, construction, configuration and qualities determine the mass of a vehicle. Most components will also add to a vehicle's mass. Mass is used when calculating the speed of a vehicle.

Facings

All vehicles have six facings as follows:

- **Front:** The normal direction of travel.
- **Rear:** The opposite direction to the front. Most vehicles can also travel in this direction.
- **Dorsal:** The top surface when the vehicle is the right way up in a gravity field.
- **Ventral:** The bottom surface when the vehicle is the right way up under gravity.
- **Right:** The right hand side relative to a person inside the vehicle facing forward.
- **Left:** The left hand side relative to a person inside the vehicle facing forward.

Agility

A vehicle's Agility is used as a DM to Drive and Pilot checks when performing difficult manoeuvres as described on page 67 of the *Traveller Core Rulebook*. Agility can also be applied as a –DM to enemy attempts to hit the vehicle if it is attempting to dodge. A vehicle doing so is treated as moving at maximum speed for purposes of its own chance to hit an enemy. The vehicle's drive system will determine the Base Agility (see page 8) which can be increased with accessories and design options.

Agility modifications add Agility Potential which is converted into Agility during the final step of the vehicle design (see the table on page 26 for details). Some vehicle types and design choices can result in a negative Agility Potential which will give a negative Agility score; a vehicle with negative Agility can be given a zero or positive Agility with the right components.

Speed

All vehicles have a Cruising Speed and a Top Speed (see page 26 for calculations). Cruising Speed is reasonably fuel–efficient and comfortable. Top Speed is the maximum the vehicle can manage under ideal conditions. Fuel consumption is doubled when a vehicle is travelling faster than its Cruising Speed.

Ground vehicles also have an Offroad Speed (see page 26 for calculations), which is the best speed they can achieve over rough ground where there is no road. If the ground is very rough, most vehicles can only crawl along or might not be able to move at all.

Tech Level

Most design options and components have a listed Technology Level, which is the lowest TL that the component is available. The overall TL of a vehicle is usually determined by the highest TL component used in the design. However, if a vehicle only has a minimal amount of high–tech components you can give the vehicle a lower TL if imported parts are available.

Rounding

When designing vehicles some of the calculations can result in fractional numbers. Where whole numbers are required, always round up fractions unless otherwise stated. Also note that M^3 remains as a fractional number so no rounding is required.

DESIGN CHECKLIST

1. Technology Level
    a. Determine maximum Tech Level of the vehicle.
2. Capacity
    a. Determine hull capacity in M^3.
    b. Calculate base Hull and Structure values.
3. Hull
    a. Choose the construction material.
    b. Select a vehicle configuration.
    c. Pick any required qualities.
    d. Calculate hull cost and Total M^3.
    e. Apply modifiers.
4. Propulsion
    a. Choose the drive system.
    b. Select a power plant.
    c. Allocate fuel.
5. Armour and Weapons
    a. Choose armour.
    b. Select weapons.
    c. Allocate ammunition space.
    d. Add additional weapon options.
6. Optional Components
    a. Select sensors.
    b. Choose communications.
    c. Add environmental systems.
    d. Add any other equipment and upgrades.
7. Crew Facilities
    a. Allocate operating stations.
    b. Add passenger seats.
    c. Allocate sleeping areas.
    d. Allocate utility areas.
8. Final Calculations
    a. Allocate cargo space.
    b. Calculate mass.
    c. Calculate Agility.
    d. Calculate Ground Pressure
    e. Calculate Speed.

STEP ONE: CAPACITY

Capacity is measured in cubic metres (abbreviated M^3 hereafter). The shape taken by this volume is not relevant here. For large components, the shape will be dictated by the shape of the object. Smaller components or systems made up of many small components, such as wiring or life support, can be any shape and are usually dispersed throughout the vehicle.

Capacity refers to the internal volume of the vehicle. 1 M^3 translates to 2/27 of a displacement ton (dTon) in the spacecraft design system. However, the thickness of a vehicle's hull and external components, such as wheels, mean that a vehicle will take up more space than its internal capacity. If it is necessary to determine the overall displacement of a vehicle, calculate displacement as 1 dTon for every 10 M^3 of internal volume the vehicle has.

This base value for capacity is termed Base M^3 and is used to determine the cost of many components. Some vehicle configurations can modify the capacity of the vehicle; this modified value is termed Total M^3. Components that derive their M^3 cost from the vehicle's capacity always use the vehicle's Base M^3 value.

The Example Vehicles Table indicates the typical size, configuration and qualities of standard vehicles. These examples are just guidelines and there is no reason why a vehicle cannot be larger or smaller than those listed, or have different qualities.

Vehicle	Base M^3	Configuration	Qualities
APC	30	Standard	Rugged
Armoured Truck	40	Box	Rugged
Attack Helicopter	30	Airframe	—
Frigate	7,000	Super Streamlined	Waterproof
Buggy	8	Standard	—
Combat Submarine	1,200	Super Streamlined	Sealed
Gravcopter	30	Streamlined	Sealed
Gunskiff	20	Open	—
Jet Fighter	40	Super Airframe	—
Light Tank	35	Sloped	—
Main Tank	100	Super Sloped	Rugged

Hull and Structure

Once you have determined the vehicle's Base M^3 you can calculate the base Hull and Structure values. Hull and Structure points are described on page 67 of the *Traveller Core Rulebook* under 'Vehicle Damage'.

To calculate the Hull and Structure points simply divide the vehicle's Base M^3 by four. Round the result down for the Hull points and round up for the Structure points. These values can be further modified by the material, configuration and qualities (as detailed in Step Two). The minimum base amount for either of these values is one.

CAPACITY EXAMPLE

For our example, we will build a small armed van. Using the example vehicles listed in the table we can see a van of this size has a Base M^3 of 20 but let us make ours a little bigger with 26 M^3. We can now calculate the Hull and Structure by dividing the M^3 by 4 as follows:

Base M^3: *26*
Base Hull: *26 ÷ 4 = 6.5 round down to 6*
Base Structure: *26 ÷ 4 = 6.5 round up to 7*

STEP TWO: HULL

The vehicle's hull is broken down into three design options, which are the construction material configuration, and optional qualities.

Material

The construction material sets the base mass and cost of the vehicle based on its size. High technology materials give bonuses to the vehicle's base Hull and Structure points, whilst less advanced materials will reduce the Hull and Structure. Modifiers to Hull and Structure are applied as multipliers to the base values calculated in Step One.

The construction material also determines the vehicle's Base Armour. Further armour can be added as detailed in Step Four.

Material	TL	Hull & Structure Multiplier	Mass per M^3 (kg)	Cost per M^3 (Cr.)	Base Armour
Wood/Organic Materials	1	0.5	85	100	1
Iron	3	0.8	110	150	2
Steel	5	1	100	200	3
Light Alloys	6	1.1	80	250	2
Advanced Composites	7	1.25	90	500	4
Crystaliron	10	1.5	125	1,000	6
Superdense	12	2	150	5,000	7
Bonded Superdense	14	3	200	10,000	8

Configuration

The configuration determines the basic shape and function of the vehicle. It modifies the mass, cost and other attributes of the vehicle as detailed in the Configuration Table.

If you are designing an aircraft then you must choose either the Airframe or Super Airframe configuration. This does not apply to grav vehicles.

Configuration	TL	Mass Multiplier	Hull Cost Multiplier	Effects
Airframe	4	0.9	1.5	Flight. Maximum Speed 1,200 kph.
Box	1	1	0.8	Armour x 0.8. Total M^3 x 1.2.
Open	1	0.9	1	M^3 for crew stations and passenger seats x 0.5.
Cycle	4	0.75	0.5	M^3 for crew stations and passenger seats x 0.25, Hull and Structure x 0.5, Agility Potential +2. Vehicle cannot have extra armour.
Sloped	5	1	1.2	Armour x 1.1. Total M^3 x 0.9.
Standard	1	1	1	—
Streamlined	1	1	1.3	Top Speed x 1.1.
Super Airframe	6	0.7	2.5	Flight. Top Speed x 1.1.
Super Sloped	6	1	1.5	Armour x 1.2. Total M^3 x 0.8.
Super Streamlined	7	1	2	Top Speed x 1.25.

Qualities

You can now choose any qualities from the Quality Table as required. You can pick as many qualities as you like, or none at all. Each quality can only be selected once and you can only have one of a given type. For example, Very Rugged can not be combined with Rugged.

A vehicle of Dispersed Construction is essentially made up of fairly loosely connected blocks of components, such as a watercraft comprising several rafts, or a very lightly–built grav craft which is not designed to be subject to serious stress. A 'moon buggy' or similar vehicle could be built this way.

Type	TL	Quality	Mass Multiplier	Hull Cost Multiplier	Effects
Construction	1	Dispersed	0.8	0.8	Hull and Structure x0.4.
Construction	1	Lightweight	0.8	1.5	Hull and Structure x 0.7. Vehicle cannot have extra armour.
Construction	1	Rugged	1.15	1.75	Hull x 1.1, Structure x 1.2.
Construction	5	Very Rugged	1.4	3	Hull x 1.2, Structure x 1.3.
Sealing	1	Waterproof	1	1.2	Capable of floating in liquid.
Sealing	4	Sealed	1	1.5	Sealed against vacuum and water.
Sealing	7	Advanced Sealed	1.1	3	Sealed against extreme environments.
Coating	10	Reflec Coating	1	1.25	Armour +5 against lasers.
Coating	7	Stealth Coating	1	1.25	–4 DM for sensor locks on vehicle.

Calculate Hull Cost

The hull cost is determined by taking the vehicle's Base M^3 and multiplying it by the cost per M^3 of the construction material. Multiply the result by the cost multipliers for the hull configuration and any qualities you have added. Cost multipliers can be applied in any order as the result will be the same.

Calculate Total M^3

If the vehicle's configuration modifies the vehicle's M^3, multiply the Base M^3 by the M^3 multiplier listed in the Configuration Table to get the Total M^3. If the configuration does not affect the M^3, the Total M^3 is the same as the Base M^3.

It is important to distinguish between Base M^3 and Total M^3 because all calculations that use a percentage of the vehicle's M^3 use the Base M^3 value.

Apply Modifiers

Apply any Hull and Structure modifiers to the base values calculated in Step One. These modifiers can be applied in any order (the outcome will be the same). Once all multipliers have been applied, round up the total. Make a note of any other modifiers as they will be used later in the design process.

You now have the basic shape and size of your vehicle. Now you need to give it some propulsion, a crew and add in weapons and components as required.

HULL EXAMPLE

Continuing on from the example in Step One, we will build our van from advanced composites to give it additional Hull and Structure. We will use the box configuration to give us our basic van shape and we will add the Rugged add Reflec Coating qualities. The van has a Base M^3 of 26 used to calculate the hull cost as follows:

Advanced Composites:	*500 x 26 = 13,000*
Box configuration:	*13,000 x 0.8 = 10,400*
Reflec Coating	*10,400 x 1.25 = 13,000*
Rugged:	*13,000 x 1.75 = 22,750*
Cost:	*Cr. 22,750*

Next we determine the Total M^3:

Total M^3:	*26 x 1.2 = 31.2*
Round up:	*32*

The Hull and Structure are modified as follows:

Base Hull:	*6*
Advanced Composites:	*6 x 1.25 = 7.5*
Rugged:	*7.5 x 1.1 = 8.25*
Round up:	*9*

Base Structure:	*7*
Advanced Composites:	*7 x 1.25 = 8.75*
Rugged:	*8.75 x 1.2 = 10.5*
Round up:	*11*

Finally, we make a note of the Base Armour (4) value from the Advanced Composites and the armour modifiers from the Box configuration (0.8) and Reflec Coating (+5 against lasers). This information will be used in Step Four.

STEP THREE: PROPULSION

Drive System

A vehicle needs a suitable drive system for the environment it is intended to operate in. A drive system is assumed to be a complete system containing everything necessary to make the vehicle move, such as transmission, suspension, steering, and control surfaces.

- Ground vehicles require a fairly hard surface to drive on, with the exception of hover vehicles that can also travel on water and similar surfaces.
- Watercraft need a dense fluid medium (usually water) to float on or move through.
- Flyers require a gas medium (a thin or denser atmosphere) to generate lift.
- Grav vehicles do not need an atmosphere of any kind.
- Lifters are a special type of grav drive. They provide hover capability, allowing the vehicle to move up or down only. Additional flyer drive systems can be used with Lifters to provide motive power. Lifters are most commonly used for static platforms or grav trailers.
- Gasbags are a special case. They provide hover capability, allowing the vehicle to move up or down only. Additional flyer drive systems can be used with a gasbag to provide motive power. The capacity of a gasbag craft is based on the capacity of its gondola or other containers suitable for carrying people and cargo. The gasbag itself has a much greater volume and is filled with light gas; it cannot be used for cargo, personnel or components.

Type	Drive	TL	% of Base M^3	Mass per M^3 (kg)	Cost per M^3 (Cr.)	Base Speed	Maximum Speed	Base Agility
Gravitic	Lifter	8	1	100	100,000	0 kph	50 kph	0
Gravitic	Grav	8	5	150	500,000	200 kph	10,000 kph	0
Gasbag	Gasbag	4	10	25	100	0 kph	100 kph	–1
Ground	Hover	6	15	75	200,000	125 kph	150 kph	–1
Ground	Wheels	4	10	100	1,000	100 kph	500 kph	0
Ground	Tracks	5	20	500	5,000	60 kph	120 kph	1
Ground	Walker	8	5	1,000	50,000	25 kph	80 kph	1
Flyer	Rotors	5	20	80	25,000	75 kph	400 kph	1
Flyer	Propeller	4	5	60	15,000	150 kph	850 kph	1
Flyer	Jet	5	15	100	35,000	250 kph	6,000 kph	1
Flyer	Glider	2	5	0	500	50 kph	400 kph	0
Watercraft	Submarine	5	10	150	5,000	35 kph	100 kph	–2
Watercraft	Water–Based*	0	2	25	100	45 kph	45 kph	–2
Watercraft	Water–Driven	4	10	150	5,000	45 kph	200 kph	–2

* The Water-Based drive system is only suitable for Manual, Animal or Wind powered craft.

The '% of Base M^3 column' represents the amount of internal space taken up by a drive system and its associated components. Use this value to calculate the M^3 of the drive system as a percentage of the vehicle's Base M^3. For example, Tracks on a vehicle with a Base M^3 of 50 would use up 10 M^3 of the vehicle's capacity (20% of 50 M^3).

The 'Mass per M^3' column is used to determine the mass of the drive system and is calculated from the M^3 it occupies within the vehicle. The mass of the drive system is calculated by multiplying this value by the M^3 of the drive system.

'Cost per M^3' is the cost in Credits for the drive system based on the volume it occupies. The cost of the drive system is calculated by multiplying this value by the M^3 of the drive system. Following on from the previous example, the Tracks would cost Cr. 50,000 (Cr. 5,000 x 10 M^3).

The vehicle's Base Speed and Base Agility are used in the final step of the vehicle design and are detailed in Step Seven. For now, just make a note of these values.

Aircraft are assumed to have a set of wheels or skids to allow them to land and taxi. A floatplane replaces wheels with floats at no extra cost but a true 'flying boat' (such as the sea fighter, see page 100) needs to have the Waterproof quality.

A Walker can have two or more legs as appropriate to its function. Legs take up little room as they are mainly external to the vehicle's hull. Only the attachments and control points take up M^3 within the vehicle.

All watercraft powered by engines must have the Water–Driven or Submarine option. The Water–Based drive system should be used for any watercraft that uses alternate forms of power (such as oars or sails).

Power Plant

A drive system requires something to power it. This design system does not make a distinction between electrical and mechanical power. It is assumed that generators and electric motors can swap power back and forth as required, and that a suitable means for power transmission is available as part of the drive system.

Most power plants can be of any size unless otherwise stated, and are allocated in units of M^3 or parts thereof. The more M^3 allocated to the power plant, the greater its power output. The power output is used in Step Seven when calculating the vehicle's speed but for now just note the value.

Power Plant	TL	Power Output per M^3	Mass per M^3 (kg)	Fuel per M^3 (litres)	Cost per M^3 (Cr.)	Notes
Manual Power	0	2	0	—	0	The cost and mass is included in the Drive System and crew costs. The power output is per operator (such as oarsmen). Assume 1 M^3 per crewman.
Pack Animal	1	1	1	—	25	The cost is for the harnessing equipment. Animals must be purchased separately.
Wind Power–1	1	5	20	—	50	See page 11 for details.
Wind Power–6	6	5	10	—	100	
Steam–3	3	4	200	5	100	—
Steam–4	4	6	150	5	250	
Steam–5	5	7	150	4	400	
Steam–6	6	8	100	4	450	
Steam–7	7	9	100	3	500	
Internal Combustion–4	4	10	90	5	800	—
Internal Combustion–5	5	12	80	4	1,000	
Internal Combustion–6	6	14	75	3	1,200	
Internal Combustion–7	7	16	75	2.5	1,350	
Internal Combustion–8	8	18	70	2	1,500	
Turbine–5	5	20	100	10	3,000	Turbine systems include advanced high–altitude hybrid engines used for space planes.
Turbine–6	6	22	90	10	3,500	
Turbine–7	7	24	90	9	4,000	
Turbine–8	8	26	90	9	4,250	
Turbine–9	9	28	80	8	4,500	
Turbine–10	10	30	80	8	5,000	
Solar–7	7	3	20	—	1,000	Excess energy is stored in batteries and can power the vehicle for up to two hours if no sunlight is available.
Solar–8	8	4	20	—	1,200	
Solar–9	9	5	20	—	1,350	
Solar–10	10	6	20	—	1,500	
Hydrogen Fuel Cell–7	7	16	150	1	1,500	—
Hydrogen Fuel Cell–8	8	18	150	1	1,800	
Hydrogen Fuel Cell–9	9	20	125	1	2,100	
Hydrogen Fuel Cell–10	10	22	125	1	2,400	
Nuclear Fission–6	6	16	200	—	6,000	Needs refuelling once every 2–3 years. Fuel storage is included in the cost of the plant. A fission plant has a minimum size of 15 M^3.
Nuclear Fission–7	7	17	200	—	7,000	
Nuclear Fission–8	8	18	200	—	8,000	
Nuclear Fission–9	9	19	150	—	9,000	
Nuclear Fusion–8	8	20	200	1	10,000	Minimum fusion plant size at TL 8 is 50 M^3 and 25 M^3 at TL 9.
Nuclear Fusion–9	9	22	200	1	12,500	
Nuclear Fusion–12	12	24	150	1	15,000	
Nuclear Fusion–15	15	28	110	1	17,500	
Antimatter–17	17	45	100	—	60,000	Needs refuelling once every 10–12 years. Fuel storage is included in the cost of the plant. Antimatter plants have a minimum size of 5 M^3.
Antimatter–18	18	60	100	—	75,000	
Antimatter–19	19	75	100	—	100,000	

The fuel, power output, mass and cost columns all refer to the M^3 of the power system unless otherwise stated. The fuel column lists the fuel consumption in litres per hour when the vehicle is travelling at Cruising Speed (see page 26 for details).

Power and Fuel Scale Efficiency

Larger engines are more efficient in their use of fuel and in providing power. One large engine will provide more power and use less fuel than two engines half its size combined. To reflect this the tables at the bottom of the page help calculate the efficiency to be had as engine size increases.

Wind Power

Wind power usually takes the form of sails and works differently to other types of power plant. The speeds achieved from wind power will vary depending on the actual wind speed and other conditions, so the power output is simply an average speed in regular conditions.

The apparent wind speed (the relative velocity of the wind relative to the vehicle's motion) is also an important factor. For example if a sailing boat is travelling with a direct tail wind at the same speed as the wind, there will be no power to drive the vehicle. Likewise, if the ocean current is moving at the same speed and direction as the wind, the apparent wind speed will be 0 kph and the vehicle is essentially drifting on the water.

When travelling in a direction against the wind or directly with the wind, sailing vessels must 'tack' in a zig–zag fashion to ensure that the sails can harness the wind power. This means that although a sailing vessel might be travelling at a fast speed, it is not necessarily heading directly towards it destination.

For gaming purposes, you can assume that the above factors have been taken into consideration and the vehicle's speed reflects changes in the wind and the indirect course the vehicle must travel. A wind powered vehicle's Cruising Speed represents the average speed it can travel at in normal conditions.

Multiple Drives & Power Plants

Some vehicles utilise more than one drive system or power plant. These vehicles are usually designed to operate on different terrains or provide alternative power. Some examples of multi–terrain vehicles include amphibious cars and submergible planes as detailed in the Hybrid Vehicles chapter. Multi–powered vehicles might have a separate power plant for each drive system or carry a backup power plant (such as a modern sailing boat with a motor).

Hybrid vehicles are designed as normal, calculating the cost of additional drive systems and power plants as required. For multiple drive systems, calculate Agility and speed statistics and then take the average, highest, or list all values as appropriate to the design. For example, a zeppelin (see page 82) uses the Top Speed of the propeller since the gasbag only provides lift, whereas a half track would take the average of the tracked and wheeled speeds. A submersible fighter (see page 102) would list agility and speed values separately as each drive system operates independently depending on the terrain.

Power Efficiencies of Scale

Power Plant Size (M^3)	Steam	Internal Combustion	Turbine	Hydrogen Fuel Cell	Solar	Nuclear Fission	Nuclear Fusion	Anti-Matter
10-99.9	1.25	1.25	1.5	1.5	—	—	—	—
100-999.9	1.5	1.5	2	2	1.25	1.5	1.5	1.5
1,000+	2	2	2.5	2.5	1.5	2	2	2

Multiply the power output generated by the power plant by the relevant number in the above table to calculate the new power output figure.

Fuel Efficiencies of Scale

Power Plant Size (M^3)	Steam	Internal Combustion	Turbine	Hydrogen Fuel Cell	Solar	Nuclear Fission	Nuclear Fusion	Anti-Matter
10-99.9	1.5	1.5	2	2	—	—	—	—
100-999.9	2	2	3	3	—	—	1.5	—
1,000+	3	3	5	5	—	—	2	—

Divide the fuel consumption of the power plant by the relevant number in the above table to calculate the new fuel consumption figure.

You can also reduce the cost and M^3 of the drive system if appropriate. For example, a half track vehicle might halve the cost and M^3 usage of either its tracks or wheels.

If a vehicle has multiple power plants then the vehicle's speed must be calculated separately for each one. If the vehicle uses the combined power then simply total the power output and fuel consumption.

Trailers

Trailers are vehicles designed to be pulled by another vehicle. They are designed as normal but have no power plant; they will usually have a Lifter or Wheels drive system.

When a vehicle is pulling a trailer you will need to recalculate the vehicle's speed by adding the trailer's mass to the mass of the vehicle. Trailers also have an agility penalty that is applied to the vehicle pulling it, equal to the trailer's Base M^3 divided by 50.

Fuel

Fuel is measured in litres. One litre of fuel occupies 0.001 of a M^3, therefore 1,000 litres of fuel takes up 1 M^3. Fuel is stored in a suitable tank or container, with feed systems and other related components included in the overall cost of the hull and power plant. The mass of fuel tankage is 1 kg per litre.

There is no minimum amount of fuel that can be carried but practicalities suggest that a reasonable amount is needed if the vehicle is to go anywhere. Fuel consumption assumes that the drive system is travelling at Cruising Speed (see page 26). Fuel consumption is doubled when travelling faster than the vehicle's Cruising Speed.

PROPULSION EXAMPLE

Installing wheels on our van will use up 2.6 M^3 (10% of 26 M^3), have a mass of 260 kg (2.6 x 100) and cost Cr. 2,600 (Cr. 1,000 x 2.6 M3).

We will allocate 4 M^3 for an Internal Combustion–7 power plant. This provides a power output of 64 (4 x 16), has a mass of 300 kg (4 x 75 kg) and costs Cr. 5,400 (4 x Cr. 1,350). The fuel consumption of the power plant is 10 litres per hour (4 x 2.5), so a 70 litre fuel tank will give a running time of 7 hours, weighs 70 kg and will use 0.07 M^3 (70 ÷ 1000).

STEP FOUR: ARMOUR AND WEAPONS

Armour

All vehicles have a Base Armour value determined by the construction material used for the hull (see page 5). Additional armour can be added and is normally made of the same material, but this is not mandatory. Armour protection is abstracted; a high armour value might indicate very thick armour or it could indicate spaced layers with reactive panels, for example, the effect is the same in game terms.

Armour uses up available M^3 and adds to the mass of the vehicle. The Armour Material Table indicates how much Armour is added for each 1% of the vehicle's Base M^3 given over to armour. Any modifiers from other design options are applied to the new total. Partial armour points are rounded down if less than 0.5 or rounded up if equal to or greater than 0.5.

Adding armour requires strengthening the vehicle's chassis, suspension and other components, making the addition of armour much more than just bolting on some plates. For this reason the mass cost is more expensive than the hull costs.

Armour Facing

The armour rating of a vehicle applies to all of its facings, except for open configuration vehicles that do not have any armour on the dorsal facing. If you wish to create a vehicle with more armour on some faces than it does on others, you can 'move' armour points from one facing to another. Only additional armour points can be moved in this way, Base Armour points cannot be moved as they represent the intrinsic armour value of the construction material.

Where armour varies on different facings the values will be listed in the following order: front, left, right, rear, dorsal and ventral.

For example, we have a vehicle with a Base Armour of 7 and 2% of its M^3 allocated to armour made from Advanced Composites. This gives a total of 17 armour points on each facing (7 base + 10 additional). We will now take all 10 points of additional armour from the ventral facing and 6 points from the dorsal facing. We now have 16 points that can be evenly distributed over the other four facings, adding 4 points to each. This results in the vehicle having 21 points on the front, rear, left and right facings (7 base + 10 additional + 4 moved), 11 points on the dorsal facing (7 base + 4 additional) , and just the base value of 7 points on the ventral facing.

ARMOUR EXAMPLE

Following on from the previous example, our van (made from advanced composites) has a Base Armour of 4 and a Base M^3 of 26. We will allocate 2% of the van's M^3 to additional armour made from Light Alloys. This will use up 0.52 M^3 (2% of 26 M^3), has a mass of 832 kg (0.52 x 1,600), costs Cr. 1,300 (0.52 M^3 x 2,500), and gives our vehicle a further 8 points of armour (2 x 4).

The van now has 12 armour (4 + 8), but because we chose the Box configuration in Step Two we get an armour multiplier of 0.8. This gives a total of 9.6 armour points, which rounds up to 10. We also added Reflec Coating which gives a +5 armour bonus against lasers for a total of 15.

Armour Material	TL	Armour Points per 1% of M^3	Mass per M^3 of Armour (kg)	Cost per M^3 of Armour (Cr.)
Wood/Organic Materials	1	2	5,100	1,000
Iron	3	4	6,600	1,500
Steel	5	6	6,000	2,000
Light Alloys	6	6	4,800	2,500
Advanced Composites	7	8	5,400	5,000
Crystaliron	10	12	7,500	10,000
Superdense	12	14	9,000	50,000
Bonded Superdense	14	16	12,000	100,000

Weapons

Weapons use up an amount of M^3 and add mass depending on their design. A full list of weapons is detailed in the *Central Supply Catalogue*, which lists the damage, mass and cost. A selection of these weapons are listed in the Weapon Table. Support and artillery weapons in the *Central Supply Catalogue* include carriage, gun shields and other components that are not needed for vehicle mounting, so you can reduce the mass of these types of weapons by 75% (not including bombs, grenades, missiles and rockets).

Weapon	TL	Cost (Cr.)	Damage	M^3	Mass (kg)
Light Machinegun	5	3,000	3d6 SAP	0.25	7
Advanced Support Weapon	10	2,750	4d6 SAP	0.25	5
Improved Flamethrower	6	1,400	4d6 Flame	0.5	12
Advanced Flamethrower	8	2,500	3d6+6 Flame	0.5	12
Light Autocannon	6	7,500	6d6 SAP	1.5	50
VRF Gauss Gun	10	200,000	5d6 AP	2	1,500
60mm Antitank Gun	6	56,000	7d6 Super–AP	3	863
9lb Cannon	3	2,600	9d6	2	113
75mm Cannon	7	160,000	8d6 Super–AP	4	1,125
Heavy Autocannon	6	95,000	8d6 SAP	2.5	450
120mm Cannon	8	400,000	10d6 Super–AP	4	1,875
35mm Rail Gun	9	1,000,000	12d6 Super–AP	7	5,250
12mm Light Gauss Cannon	12	3,000,000	10d6 Mega–AP	3	750
15mm Heavy Hypervelocity Cannon	13	26,000,000	18d6 Ultimate–AP	8	13,500
Gatling Laser	8	750,000	6d6	4	5,250
Laser Cannon	9	1,000,000	8d6	6	3,750
Plasma A Gun	10	1,000,000	14d6	6	3,000
Fusion Z Gun	14	8,000,000	28d6	6	3,000
Meson Accelerator	14	20,000,000	18d6	12	45,000
Heavy Torpedo	6	2,200	14d6	4	1,500
Smart Torpedo	8	2,800	12d6	2.5	200
70mm Strafing Rocket Pod (7 pack)	6	4,000	8d6	0.5	16
Medium Missile	7	2,000	8d6+4 AP	0.5	24
Light Tac Missile (Anti–Air)	9	3,000	9d6	0.25	14
Light Tac Missile (Anti–Armour)	9	4,000	9d6 Super–AP	0.25	16
Light Tac Missile (Anti–Personnel)	9	1,800	9d6	0.25	10
Plasma Missile	12	3,200	8d6 Mega–AP	0.5	8
Medium Bomb	4	1,200	12d6	2	450
Heavy Bomb	5	4,000	14d6 AP	4	1,200
Super Heavy Bomb	6	10,000	16d6 Super–AP	6	4,500

The M^3 of a weapon will largely depend on its weight and can be determined by using the Weapon Mass Table as a guideline.

Weapon Mass (kg)	Weapon M^3
0 – 9	0.25
10 – 24	0.5
25 – 49	1
50 – 99	1.5
100 – 199	2
200 – 499	2.5
500 – 999	3
1,000 – 1,999	4
2,000 – 2,999	5
3,000 – 4,999	6
5,000 – 9,999	7
10,000 – 14,999	8
15,000 – 19,999	9
20,000 – 29,999	10
30,000 – 39,999	11
40,000 – 49,999	12
50,000+	13

Armour–Piercing Rounds

Some artillery weapons perform better against armour than others. Area effects such as fragmentation from a shell burst usually have no intrinsic armour–piercing capability. There are a number of different armour piercing rounds available:

Semi Armour–Piercing (SAP): This effect is uncommon with artillery weapons. The round ignores a number of points of armour equal to half the number of damage dice, rounding down. For example, a weapon doing 9d6 SAP damage ignores 4 points of armour. If the target has less armour than this value, the excess is wasted.

Armour–Piercing (AP): Ignores a number of points of armour equal to the number of damage dice. Example: a weapon doing 9d6 AP damage ignores 9 points of armour. If the target has less armour than this value, the excess is wasted.

Super Armour–Piercing (Super–AP): Ignores a number of points of armour equal to twice the number of damage dice. Example: a weapon doing 9d6 AP damage ignores 18 points of armour. If the target has less armour than this value, the excess is wasted.

Ultra Armour–Piercing (Ultra–AP): Ignores a number of points of armour equal to three times the number of damage dice. Example: a weapon doing 9d6 AP damage ignores 27 points of armour. If the target has less armour than this value, the excess is wasted.

Mega Armour–Piercing (Mega–AP): Ignores a number of points of armour equal to four times the number of damage dice. Example: a weapon doing 9d6 AP damage ignores 36 points of armour. If the target has less armour than this value, the excess is wasted.

Ultimate Armour–Piercing (Ultimate–AP): Ignores a number of points of armour equal to five times the number of damage dice. Example: a weapon doing 9d6 AP damage ignores 45 points of armour. If the target has less armour than this value, the excess is wasted.

Weapon Mounts

A vehicle can carry weapons either inside its armour (termed internal weapons) or outside it (external weapons). A tank gun mounted in an armoured turret is considered to be an internal weapon as a significant part of the weapon (and most importantly, the operator and any sighting equipment he is using) is behind armour.

All weapons must be carried on a mount, which can be one of three types: fixed traversing, or pop–up. Each weapon mount must specify the facing it is carried on.

Fixed weapons can only be aimed by pointing the whole craft and are usually controlled by the driver or pilot. There is no reason why a guided missile cannot be fired from a fixed mount; what the weapon does after being fired does not define the mounting.

Traversing weapons can elevate and traverse to engage targets in various directions. They can be mounted in a powered turret, on the arm of a combat walker, or on a manually operated swivel mount; the principle is much the same in each case. Traversing mounts can be powered or unpowered as required at no additional cost.

Pop–up weapons are concealed or protected by armour, but cannot fire until they are deployed. Once deployed, the weapon can engage and will be obvious to any observer. Pop–up mounts are available for almost any weapon type. For example, an aircraft might carry its missiles in an internal bay, deploying them to the ready position when combat begins. Pop–up weapons can be internal or external depending on their firing position – if the weapon is still protected by armour in the firing position, it is an internal weapon. If it moves outside the armour, it is an external weapon.

Example Weapon	Mount Type
Aircraft cannon	Fixed, Internal
Aircraft bomb/missile rail	Fixed, External
Tank Destroyer with fixed plasma gun on hull mounting	Fixed, Internal
Tank gun in turret	Traversing, Internal
Secret agent's car with concealed machineguns	Fixed, Pop–up
Tank commander's machinegun	Traversing, External
Helicopter rocket pod	Fixed, External
Unprotected missile launcher on the deck of a nautical warship	Traversing, External
Vertical launch tube for missiles on a nautical warship	Fixed, Internal
Concealed turret containing a VRF Gauss Gun on a Grav Sled	Pop–Up, Traversing, Internal
Laser mounted on the arm of a combat walker or Warmek	Traversing, Internal
Submarine Torpedo Tube	Fixed, Internal

Most weapons can be carried on any sort of mount. The type of mount used for a weapon will modify the weapon M^3, mass and cost as indicated in the Mount Type Table. The multiplier for each type of mounting that applies is used, and can be calculated in any order (the result will be the same). For example, a weapon with a volume of 4 M^3, carried on an internal pop–up traversing mount takes up 7.2 M^3 (4 x 1 x 1.2 x 1.5).

A vehicle can also carry one antipersonnel weapon on an unpowered traversing mount for every 20 M^3 (or part thereof) of the vehicle's Base M^3. Weapons added in this manner do not use up any of the vehicle's M^3 capacity, but do add to the vehicle's mass as normal. The cost is just the price of the weapon. Weapons added in this manner require a crew member to operate the weapon, who is exposed outside the vehicle's armour while doing so.

Mount Type	Weapon M^3 Multiplier	Weapon Mass Multiplier	Weapon Cost Multiplier
Fixed	1	1	1
Traversing	1.5	1.25	1.5
Internal	1	1	1.2
External	0.2	1	1
Pop–Up	1.2	1.1	1.5

Ammunition

The volume required for a projectile weapon includes enough ammunition for 10 attacks (shots, bursts and so on). Missiles, rockets and torpedoes only include space for 1 attack. Energy weapons do not need ammunition.

Additional ammunition stowage requires 20% of the weapon's base M^3 and mass per additional 5 attacks or 90% per single missile, rocket or torpedo. The cost of the ammunition space is negligible but the ammunition itself must be paid for. It is assumed that additional ammunition space includes feed systems and other related components where appropriate.

Weapon Stabilisation

Stabilisation gear enables a vehicle to fire its weapons whilst moving. Any projectile or energy weapon can be stabilised. Missiles, rockets and torpedoes do not need stabilisation. The gear is located on the mount, except for open mounts where the gear is located in the hull. Stabilisation reduces the penalty for firing on the move; it does not provide any positive bonus.

The effects of movement on fire are dependent on the stabilisation system in use and are listed in the Stabilisation Table. Apply the appropriate DM to rolls to hit depending on the stabilisation system in place, the vehicle's speed and whether or not it is evading. Stabilisation gear modifies the cost and M^3 usage of the weapon it is applied to as indicated in the table.

Weapon Stabilisation

TL	Move at Half Speed or Less: DM to Firing	Move at More than Half Speed or Evading: DM to Firing	Weapon Cost Multiplier	Weapon M^3 & Mass Multiplier
None	–6	–6	–	–
6	–4	–6	1.25	1.3
7	–2	–4	1.25	1.25
8	No DM	–3	1.25	1.2
9	No DM	–2	1.25	1.15
10+	No DM	No DM	1.25	1.1

WEAPONS EXAMPLE

We will mount a Light Autocannon on the roof of our van. We will use an external traversing mount, TL 7 stabilisation and add ammunition space for 10 additional attacks. This will modify the M³, mass and cost as follows:

Weapon M³:	*1.5*
Traversing mount:	*1.5 x 1.5 = 2.25*
External mount:	*2.25 x 0.2 = 0.45*
Stabilisation:	*0.45 x 1.25 = 0.56*
Ammunition:	*1.5 x 0.4 = 0.6*
Total:	*1.16 M³*
Weapon mass:	*50*
Traversing mount:	*50 x 1.25 = 62.5*
External mount:	*62.5 x 1 = 62.5*
Stabilisation:	*62.5 x 1.25 = 78.13*
Ammunition:	*50 x 0.4 = 20*
Total:	*98.13 kg*
Weapon cost:	*7,500*
Traversing mount:	*7,500 x 1.5 = 11,250*
External mount:	*11,250 x 1 = 11,250*
Stabilisation:	*11,250 x 1.25 = 14,063*
Total:	*Cr. 14,063*

Decoy Devices

Smoke, decoy and aerosol dischargers can be mounted on any part of a vehicle. Decoys are used to break a sensor lock or distract an incoming guided or smart weapon. Chaff must be deployed as a reaction to self–guided missiles and applies a –2 penalty to the weapon hit roll (not the main attack roll), rules for other devices can be found in the *Central Supply Catalogue*.

Decoy Device	TL	M³	Cost (Cr.)
Smoke Discharger (single/triple)	5	0.2/0.5	75/150
Flare Launcher (6 uses)	5	0.25	400
Chaff Dispenser (6 uses)	6	0.25	600
Thermal Smoke Discharger (6 uses)	6	0.5	1,000
Multispectral Smoke Discharger (6 uses)	7	0.5	2,000
Anti–Laser Aerosol (6 uses)	8	0.5	500

Laser Sensors

Laser sensors can be installed in any part of a vehicle. Their characteristics at various tech levels are listed in the table. The DM to detect incoming laser fire (roll 8+) is listed in the Detection DM column.

TL	M³	Cost (Cr.)	Detection DM
8	0.5	1,000	+1
9	0.25	1,500	+2
10	0.2	2,000	+3
11	0.15	2,500	+4
12	0.1	3,000	+5
13	0.1	3,500	+6

STEP FIVE: OPTIONAL COMPONENTS

Optional components include sophisticated electronics, specialist atmospheric gear and anything that is not necessary to the basic vehicle control but enhances the functionality in some way.

Sensor Equipment

A sensor system is needed if a vehicle is to be used at high speeds, otherwise there is a risk of collision or other disaster. Sensors provide a DM to skill checks in the relevant area. For example, a character making a navigation check would receive a bonus if his vehicle had good sensors, as would a pilot trying to thread his way though misty hills. Sensor DMs also apply to attempts to detect hostile vehicles and other targets.

Sensors can be used up to double their range but anything outside the Base Range should not be relied upon for accurate information. Obviously, a crew member may be able to see with the naked eye further than his sensors can provide him with useful information. For example, a driver looking out of the windscreen of his TL 5 ground car with minimal sensors can see more than 250m in good light, but in the dark he will be limited to the range of his sensor system (such as the headlights). The sensor packages are detailed as follows:

None: The vehicle has windows or vision slits but no sensor equipment or visual assistance; not even lights.

Minimal: The vehicle has a minimal set of visual aids or sensors appropriate to its function such as lights and wipers. This is enough for a ground car or primitive aircraft but is not sufficient for most high–speed craft.

Basic: The vehicle has a basic sensor fit including radar and thermal imaging/infrared sensors appropriate to the vehicle's function. Grav craft and similar high–speed vehicles need at least a basic sensor fit if they are to be operated at speed.

Comprehensive: A comprehensive sensor fit includes driver/pilot aids such as terrain–following radar, inertial navigation and automatic piloting/route finding using an external frame of reference such as satellites. Sensors are more powerful and better integrated than the basic version.

Advanced: Advanced sensors include updated and improved versions of earlier sensor packages. All data is linked into a processing unit that presents relevant data in the most efficient manner possible to avoid overloading the crew with information, whilst ensuring that they do not miss anything important.

Excellent: Excellent sensors are another step forward in terms of information gathering, processing and presentation. The system can 'learn' the preferences of a given crew member and cooperate with them in an active manner. The sensors themselves are highly advanced with good resolution and penetrative power. Cooperative data–sharing between vehicles and ground stations allows a composite viewpoint to be created, assisting vehicle crews to see 'behind' obstructions.

Sensor Upgrades

Most sensor packages can use one or more of the following upgrades that modify the range, M^3, mass and cost. Any given sensor package can have only one option that affects range. Minimal sensors cannot be modified. Range assumes no obstacles; a 5,000 km strategic radar can 'see' 5,000 km in a straight line or with the aid of satellites, but cannot see through mountains and planetary curvature.

Hardened sensors are effectively immune to electromagnetic pulses and some jamming. Any attempt to jam hardened sensors is subject to a –2 DM. Hardened sensors are used by exploration vehicles in high–radiation environments as well as military craft.

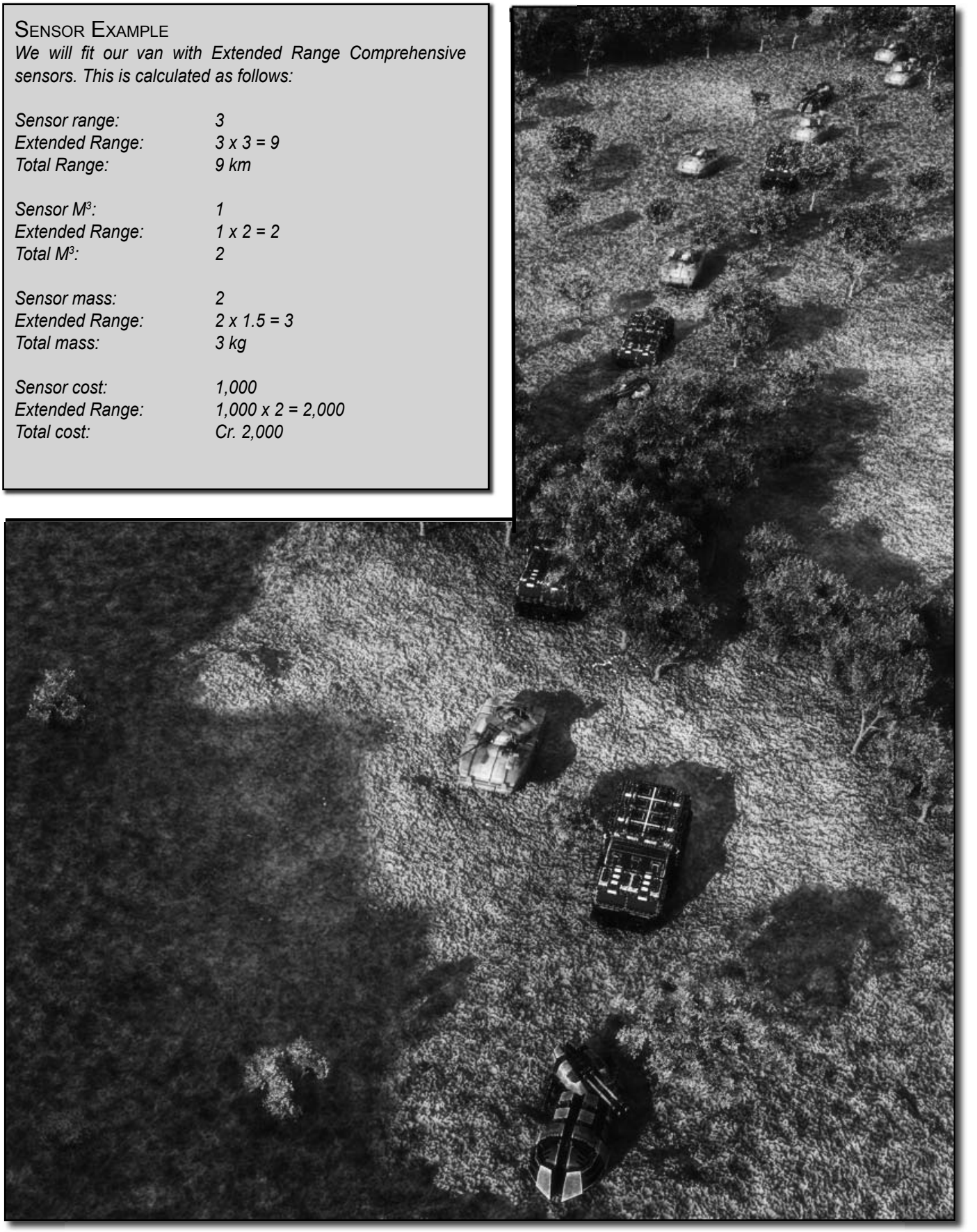
Compact sensors represent the miniaturisation of technology on more advanced worlds. The Compact upgrade reduces the size and mass of the sensors but increases the cost. This upgrade can be combined with any combination of sensor package and upgrades.

Sensor Package	TL	DM	Base Range (km)	M^3	Mass (kg)	Cost (Cr.)
None	–	0	–	–	–	–
Minimal	4	0	0.25	0.25	0.5	100
Basic	5	+1	1	0.5	1	500
Comprehensive	7	+2	3	1	2	1,000
Advanced	9	+3	5	3	2.5	2,000
Excellent	11	+4	10	5	3	4,000

SENSOR EXAMPLE

We will fit our van with Extended Range Comprehensive sensors. This is calculated as follows:

Sensor range:	*3*
Extended Range:	*3 x 3 = 9*
Total Range:	*9 km*
Sensor M^3:	*1*
Extended Range:	*1 x 2 = 2*
Total M^3:	*2*
Sensor mass:	*2*
Extended Range:	*2 x 1.5 = 3*
Total mass:	*3 kg*
Sensor cost:	*1,000*
Extended Range:	*1,000 x 2 = 2,000*
Total cost:	*Cr. 2,000*



Sensor Upgrade	TL	Sensor Range Multiplier	Sensor M^3 Multiplier	Sensor Mass Multiplier	Sensor Cost Multiplier
Extended Range	5	3	2	1.5	2
Long Range	6	10	3	2	5
Very Long Range	7	50	6	4	20
Extreme Range	8	100	12	6	100
Hardened	6	–	1.5	2	4
Compact	7	–	0.5	0.5	2

Communications Devices

A variety of communication devices are available, with their type and capability based on tech level. Communications equipment is relatively small, but antennae, dishes and other components for larger communications arrays do take up a fair amount of room.

Communications Device	TL	Range (km)	M^3	Mass (kg)	Cost (Cr.)
Radio–5	4	5	0	0.25	100
Radio–10	4	10	0	0.5	250
Radio–20	4	20	0.1	1	500
Radio–50	4	50	0.25	2.5	750
Radio–100	4	100	1	10	1,000
Radio–1,000	4	1,000	3	30	5,000
Radio–5	7	5	0	0.1	100
Radio–10	7	10	0	0.25	250
Radio–20	7	20	0.1	0.5	500
Radio–50	7	50	0.25	1	750
Radio–100	7	100	0.5	5	1,000
Radio–1,000	7	1,000	2	15	5,000
Maser–5	7	5	0.5	4	600
Maser–10	7	10	0.75	8	1,500
Maser–20	7	20	1	12	3,000
Maser–50	7	50	2	16	15,000
Maser–100	7	100	5	20	36,000
Maser–1,000	7	1,000	15	40	75,000
Laser–5	8	5	0.5	2	200
Laser –10	8	10	0.75	4	500
Laser –20	8	20	1	6	1,000
Laser –50	8	50	2	8	5,000
Laser –100	8	100	5	10	12,000
Laser –1,000	9	1,000	15	20	25,000
Meson–100	15	100	4	500	1,000,000
Meson–1,000	15	1,000	8	1,500	2,000,000
Meson–10,000	15	10,000	16	3,000	6,000,000
Meson–100,000	15	100,000	24	5,000	15,000,000

COMMUNICATION DEVICE EXAMPLE

We will add a TL 7 Radio–100 communications device. This will use up a further 0.5 M^3, add 5 kg, and costs Cr. 1,000.

Underwater Communication

Conventional methods of communication do not work underwater, so alternative means must be employed depending on the technology being used. At TL 4 submarines must be at periscope depth with raised antennae to communicate by radio. At TL 7, communication buoys connected via a cable allows communication from greater depths but the vessel's speed and manoeuvrability is limited.

With the introduction of lasers, submarines are able to communicate with the surface via satellites but this can only be achieved at shallow depths. Further advances at TL 9 allow direct two–way underwater communication over short distances.

Environmental Control Systems

Environmental control becomes possible from TL 6 onwards. Air conditioning can be considered standard and included in the cost of the hull for TL 6+ vehicles. Dedicated environmental control systems, essential for working in adverse atmospheric conditions or underwater, must be purchased separately.

A vehicle that does not have a Sealed hull cannot normally have any environmental controls other than suits or masks worn by the riders. However, it is possible to provide a piped air supply to riders' helmets. This costs half the M^3 and Credit cost but requires that the occupants wear suits and helmets at all times. These must be obtained separately. Notable exceptions to this rule are overpressure and compressor systems.

Environmental integrity is lost for most vehicles when doors, canopies and so forth are opened. This applies to sealed vehicles as well. Most vehicles are too small to carry an airlock. If airlocks are desired they must be bought as additional equipment (see page 21).

Overpressure: This system allows the vehicle's interior to be held at a slightly higher level than outside air pressure. This can only be done in a thin or standard atmosphere. The vehicle's doors and other openings are semi–sealed to keep the pressure differential from causing leaks. An overpressure system will keep atmospheric taints, chemical warfare agents and the like out of the vehicle so long as the doors are not opened. Air is provided from bottles or drawn in and scrubbed before being compressed and used. An overpressure system allows a vehicle to operate in a non–breathable atmosphere such as carbon dioxide. High (dense atmosphere, or liquids outside) or low (very thin or trace atmosphere, or vacuum) external pressures will quickly cause the system to fail.

Basic Life Support: Basic life support provides breathable air and comfortable temperature conditions for the crew. However, conditions are not ideal; After 1 day (24 hours), people living under these conditions begin to become fatigued and a cumulative DM of –1 is applied to all Skill checks each day after the first.

Improved Life Support: Improved life support allows much more comfortable conditions within the vehicle. After 3 days, a –1 DM is applied to all Skill checks every 3 full days.

Advanced Life Support: Advanced life support allows a comfortable environment to be maintained indefinitely.

Hostile Environment Life Support: Allows a vehicle to support its occupants in hostile environments such as high–radiation regions and insidious atmospheres. Other systems will break down quickly under such conditions. Requires a hostile environment adapted (Advanced Sealed) vehicle.

Intake Compressor: This device allows an internal combustion engine to operate in a thin, very thin or even trace atmosphere. In the latter case it requires several hours of compressing gas to allow one hour of operation. The air must contain oxygen for an engine to work. Unlike other systems the volume of the intake compressor is calculated from the power plant M^3, not base M^3.

Environmental System	TL	% of Base M^3	Mass per M^3 (kg)	Cost per M^3 (Cr.)
Overpressure	6	1	300	10,000
Life Support, Basic	7	1	200	50,000
Life Support, Improved	8	2	250	125,000
Life Support, Advanced	9	3	350	250,000
Life Support, Hostile Environment	10	5	400	500,000
Intake Compressor	6	5[1]	100	1,500

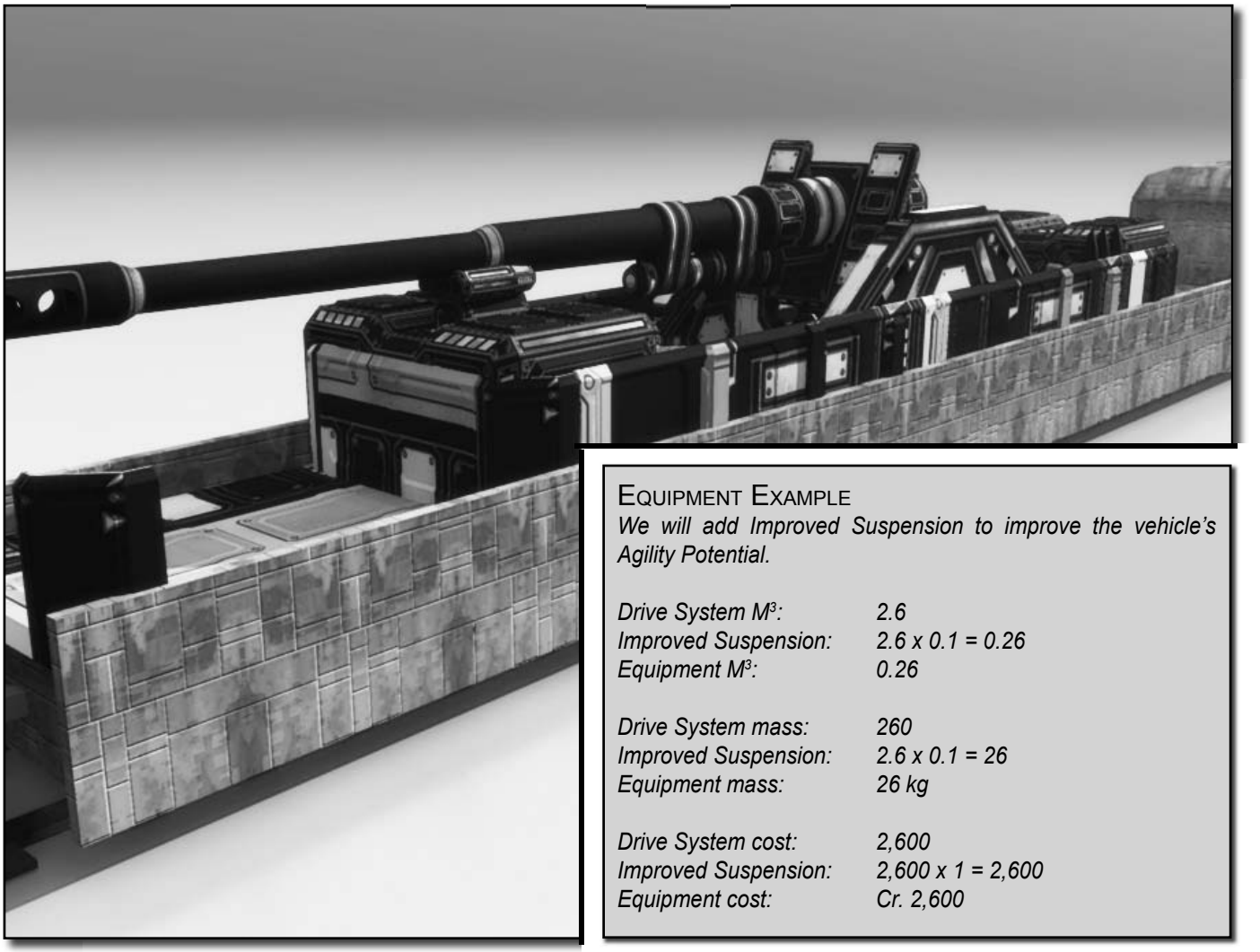
[1] The intake compressor M^3 is calculated from the power plant M^3, not base M^3.

Miscellaneous Equipment and Upgrades

Additional equipment and upgrades are available as follows:

Equipment	TL	M^3	Mass (kg)	Cost (Cr.)	Details
Airflow Devices	4	0	0.5% of hull mass	100 per Base M^3	Spoilers, wing slats and other airflow devices add 1 Agility Potential for vehicles capable of 100 kph or more.
Airlock	6	6	300	25,000	A simple two person airlock.
Airlock, Decontamination	6	12	500	75,000	A two person airlock that can remove contamination from NBC weapons and atmospheric taint effects.
Controls, Improved	5	0	0	250 per Base M^3	Adds +1 Agility potential
Controls, Excellent	6	1% of Base M^3	1% of hull mass	1,000 per Base M^3	Adds +3 Agility Potential.
Custom Components	Varies	Varies	Varies	Varies	You can add any other components as required. M^3, mass and cost will vary according to the equipment being added.
Drive Wheels	4	25% of drive system M^3	25% of drive system mass	50% of drive system.	Additional drive wheels most commonly used for 4x4 vehicles. For each set added, Multiply Offroad Speed by 1.1.
Drive, Precision	4	25% of drive system M^3	25% of drive system mass	200% of drive system.	All–wheel steering, vectored thrust or similar concepts to increase precision in handling. Adds +3 Agility potential.
Ejector Seat	4	0.5	10	5,000	A single person ejector seat with parachute. It is unsealed and requires a suit or mask.
Ejection Cocoon	7	0.75	65	50,000	A sealed ejection unit with parachute. M^3, mass and cost is per occupant.
Fuel Efficient Engine	—	—	—	Double power plant cost	Power plant uses half of the normal amount of fuel.
Fuel Efficient Engine, Improved	—	—	—	Quadruple power plant cost	Power plant uses a quarter of the normal amount of fuel.
Fuel Processor	8	Variable.	100 per M^3	10,000 per M^3	Similar to the fuel purifiers used on starships, allowing production of fuel using water. A processor will produce twenty times its volume in fuel every 24 hours.
Hangar	4	Special	100 per M^3 *	1,000 per M^3 *	Used to carry smaller craft. Volume is five times the total M^3 of all the craft carried.
Hydrofoils	6	0	1% of hull mass	1,000 per Base M^3	Foils fitted below the hull multiply Top Speed by 1.25, but only work if vehicle is capable of 30 kph or more.
Performance Tuning	6	0	0	50% of drive system and power plant per 5% speed.	A range of modifications to the engine and drive system. Maximum speed multiplier is 1.25
Suspension, Improved	5	10% of drive system M^3	10% of drive system mass	100% of drive system.	Adds +1 Agility Potential.
Suspension, Offroad	6	25% of drive system M^3	25% of drive system mass	200% of drive system.	Available for wheeled and tracked vehicles only. Multiply Top Speed and Cruise Speed by 0.8 and Offroad Speed by 1.2, after all other calculations have been completed. Gives +2 Agility Potential when offroad and –1 in normal conditions.

* The cost and weight of any carried vehicles should be added to the total.



EQUIPMENT EXAMPLE

We will add Improved Suspension to improve the vehicle's Agility Potential.

Drive System M^3:	*2.6*
Improved Suspension:	*2.6 x 0.1 = 0.26*
Equipment M^3:	*0.26*
Drive System mass:	*260*
Improved Suspension:	*2.6 x 0.1 = 26*
Equipment mass:	*26 kg*
Drive System cost:	*2,600*
Improved Suspension:	*2,600 x 1 = 2,600*
Equipment cost:	*Cr. 2,600*

STEP SIX: CREW FACILITIES

A minimum of one operator is needed for any vehicle. Large vehicles usually require additional operators for critical systems (drive system, power plant, weapons, sensors and communications). Operators are not required for systems that are not fundamental to the functioning of the vehicle, such as airlocks, sleeping space, cargo and fuel.

Each operator requires an operator station, which includes seating if applicable. Larger crews can have fewer operating stations with additional work stations as detailed in the Crew Component Table. Work stations use up less M^3 and mass than operating stations, representing the economy of scale for large crews. The mass includes the weight of the operator or passenger.

Operator functions should be assigned using common sense. It can be assumed that some operators have a main task but can handle other odd jobs as necessary. For example, a vehicle with a big power plant that carries a driver and a gunner. We can assume that the crew consists of a driver and a gunner, and that most drive system and power plant functions are controlled by the driver. Either of them can handle the radio. Larger vehicles will often have engineers and technicians, either as dedicated crew or as multifunctional personnel.

Sleeping quarters are not normally required for vehicles capable of travelling for only a short period of less than 24 hours duration. Vehicles with the ability to travel for longer will normally be equipped with sleeping facilities.

CALCULATING CREW NUMBERS

The number of crew assigned to a vehicle depends upon its type and the role of the vehicle. The crew numbers are listed for each vehicle type, with different numbers being required if a vehicle is a relatively short ranged aircraft or a long range airliner, for example.

There is an optimum level of crew, the number required for the vehicle to operate successfully. However it is possible to reduce or increase the numbers of crew for each section, although this will give penalty or bonus to any relevant Skill checks a crewmember may have to make. Military crews tend to have

larger than normal crews to allow for casualties or so equipment can be more easily manned around the clock with no detriment to performance. Civilian vehicles, on the other hand, tend to have reduced crew numbers, often in an effort to reduce costs.

The optimum number of crew is calculated using the following tables. In the case of hybrid vehicles the crew figure is taken from the worst of the available options (an amphibious land vehicle, for example, might choose crew from either the watercraft or land tables, always taking the worst figure for any given role).

In most cases small, personal ships, aircraft and other vehicles only require a single crew member, a pilot. Other functions (such as maintenance/engineering for a motor car) are done when the vehicle is not underway, most often at a specialist facility (a garage in the case of the car above, for example). this does not forbid additional crew in roles normally filled only in long haul craft, but they are not a requirement.

Military vehicles are slightly different, with a commander required for any vehicle expected to be involved in combat (tanks, armoured cars, APCs and so on).

Skeletal levels of crew can operate machinery and do the required tasks but are considered to fail any skill checks they would be required to make. A skeletal crew level is considered to be one half the number of crew required to achieve a –2 DM to skill checks.

Land Vehicles

		Long Haul (6+ hours)				
Role	**Short Haul**	**+2 DM**	**+1 DM**	**Optimum**	**–1 DM**	**–2 DM**
Drivers	1	2	—	1	—	—
Engineers	0	1 per 50 M^3	1 per 100 M^3	1 per 200 M^3	1 per 400 M^3	1 per 600 M^3
Stokers	1 per 100 M3	1 per 50 M^3	1 per 75 M^3	1 per 100 M^3	1 per 200 M^3	1 per 300 M^3
Communications	0	2	—	1	—	0 (Driver)
Stewards	1 per 200	1 per 50	1 per 75	1 per 100	1 per 250	1 per 500
Sensors	1 per 3 M^3	2 per 3 M^3	—	1 per 3 M^3	—	0 (Driver)

Walkers

		Long Haul (6+ hours)				
Role	**Short Haul**	**+2 DM**	**+1 DM**	**Optimum**	**–1 DM**	**–2 DM**
Drivers	1	1				
Engineers	0	1 per 50 M^3	1 per 100 M^3	1 per 200 M^3	1 per 400 M^3	1 per 600 M^3
Stokers	1 per 100 M3t	1 per 50 M^3	1 per 75 M^3	1 per 100 M^3	1 per 200 M^3	1 per 300 M^3
Communications	0	0		1	2	3
Stewards	1 per 200	1 per 50	1 per 75	1 per 100	1 per 250	1 per 500
Sensors	1 per 3 M^3	2 per 3 M^3	—	1 per 3 M^3	—	0 (Driver)

Grav Vehicles

		Long Haul (6+ hours)				
Role	**Short Haul**	**+2 DM**	**+1 DM**	**Optimum**	**–1 DM**	**–2 DM**
Drivers	1	3	—	2	—	1
Engineers	0	1 per 100 M^3	—	1 per 200 M^3	1 per 400 M^3	1 per 600 M^3
Communications	0	2	—	1	—	0 (Driver)
Stewards	1 per 100	5 per 100	1 per 75	1 per 100	1 per 250	1 per 500
Sensors	1 per 3 M^3	2 per 3 M^3	—	1 per 3 M^3	—	0 (Driver)

AIRCRAFT

		Long Haul (6+ hours)				
Role	**Short Haul**	**+2 DM**	**+1 DM**	**Optimum**	**–1 DM**	**–2 DM**
Pilots	1	2	—	2	—	1
Engineers	0	1 per 100 M^3		1 per 200 M^3	1 per 400 M^3	1 per 600 M^3
Stokers	—	—	1 per 75 M^3	1 per 100 M^3	1 per 200 M3	1 per 300 M^3
Communications	0			1		0 (Driver)
Stewards	1 per 100	3 per 100	1 per 75	1 per 100	1 per 250	1 per 500
Sensors	1 per 3 M^3	2 per 3 M^3	—	1 per 3 M^3	—	0 (Driver)

Aircraft carrying more than eight passengers will require a co-pilot. For commercial aircraft flights at least one steward will be required if there are this many passengers or more.
For bomber aircraft a bombadier/navigator will be required for all vehicles up to TL 7.
A gunner will be required for all turret anti-personnel weapons.

WATERCRAFT

		Long Haul (8+ hours)				
Role	**Short Haul**	**+2 DM**	**+1 DM**	**Optimum**	**–1 DM**	**–2 DM**
Helmsmen	1	—	—	2	—	1
Engineers	0	1 per 100 M^3	—	1 per 200 M^3	1 per 400 M^3	1 per 600 M^3
Stokers	1 per 100 M^3	1 per 50 M^3	1 per 75 M3	1 per 100 M^3	1 per 200 M^3	1 per 300 M^3
Communications	0	—	—	1		0 (Driver)
Stewards	1 per 100	5 per 100	1 per 75	1 per 100	1 per 250	1 per 500
Sensors	1 per 3 M^3	2 per 3 M^3	—	1 per 3 M^3	—	0 (Driver)

Support Crew will be required for long haul ships, with one extra crew per 10 crew members performing other dutires.
Command crew will be required on all vessels, with one extra crew per 10 crew members performing other dutires (round down). For small vessels the command crew (captain) will normally also be the helmsman. The number of command crew is calculated after any service crew have been added.

WEAPONS

Role	**+2 DM**	**+1 DM**	**+0 DM**	**–1 DM**	**–2 DM**
Anti-Personnel Weapon	—	2	1	0*	—
Main Projectile Weapon	—	3	2	1	0*
Main Energy Weapon	—	2	1	0*	—

* Assumes a crew member with a different role will take this position with the corresponding penalty (the commander or radio operator, for example).

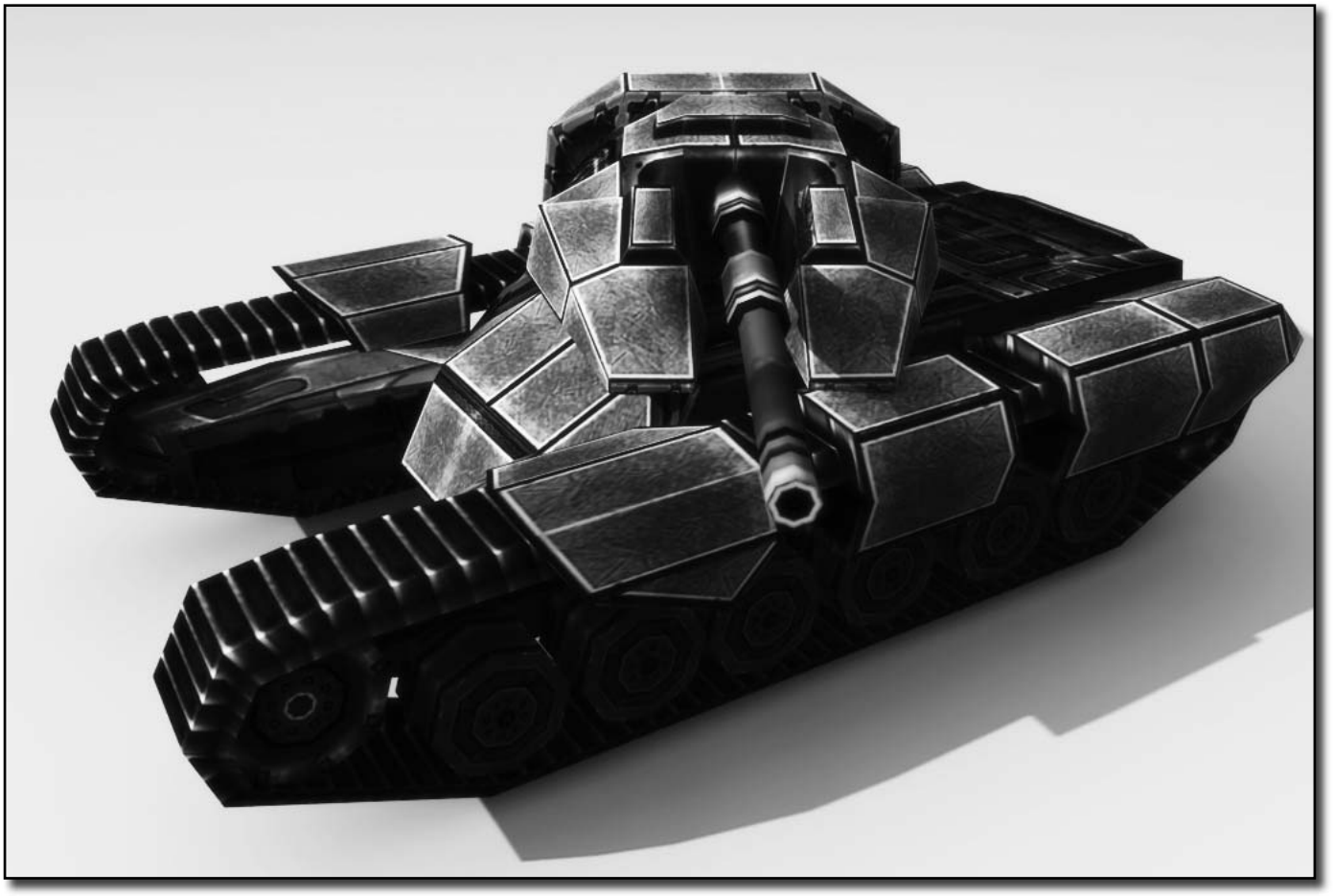
Engineers: How many crew are required for the amount of M3 of the Power Plant and Drive System.
Stokers: How many crew are required for the amount of M3 of the Steam Power Plant.
Communications: If no communications are carried then there will be no crew assigned to this role.
Sensors: If no sensors, other than basic level sensors, are carried then there wil be no crew assigned to this role.
Stewards: How many crew are required for the number of passengers.

Fixed weapons in aircraft do not require any extra crewmembers but they receive a –1DM to all skill checks.

For vehicles which have a range of twenty four hours or more the number of crew should be doubled to allow the vessel to be crewed in multiple shifts.

For short haul journeys it is possible to reduce required crew by half but this will incur a –1 DM to all skill checks. Reducing crew to below this level incurs a –2 DM.

Crew Component	M^3 Cost	Mass (kg)	Cost per M^3 (Cr.)	Details
Operator Station	1.25	125	—	One normally needed per person with a job (gunner, pilot, radio operator).
Work Station (large crews)	1.15	115	—	Vehicles with a crew of 10 people or more only require two main operator stations plus one work station for each additional crew member.
Work Station (very large crews)	1.1	110	—	Vehicles with a crew of 50 people or more require 10 operator stations plus one work station for each additional crew member.
Passenger Seat	1	100/20	—	One needed per occupant without a job. Weight of the seat is 20kg, with the passenger it is 100kg.
Sleeping Area (simple)	2 + 1 per occupant	20 per M^3	250	Simple sleeping bunks, most often used for large crews or cheap berths.
Sleeping Area (standard)	3 + 2 per occupant	30 per M^3	500	Larger quarters often used by smaller crews or command staff.
Sleeping Area (luxurious)	50 per occupant	50 per M^3	1,000	Luxurious sleeping facilities are usually available to high paying passengers and select officers on large vehicles.
Utility Area	3 + 2 per occupant	75 per M^3	1,250	Utility areas include galleys, laboratories and workshops. The cost includes basic furniture and equipment as appropriate, but specialist items must be purchased separately.



CREW EXAMPLE
Our van needs two crewmembers, one driver and one gunner using a total of 2.5 M³ (2 x 1.25 M³), and adding 300 kg (2 x 150). There is no cost for the operator stations and no other facilities are required.

STEP SEVEN: FINAL CALCULATIONS

Once all the components and equipment have been added to the vehicle, any space remaining of the Total M³ can be converted to cargo space. There is no cost for cargo space, and the price of racks, shelves and compartments are included in the hull price. One displacement ton (dTon) is equal to 13.5 M³, so a vehicle with 13.5 M³ devoted to cargo can carry 1 dTon. Mass is assumed to be 100kg for each M³ of cargo.

CARGO SPACE EXAMPLE
With our design complete the total M³ used by the vehicle's components is 13.54, which leaves 18.46 M³ remaining from the Total M³ of 32. We will allocate all of this to cargo space, which gives us 1.37 dTons of storage (18.46 ÷ 13.5).

Calculate Agility

Agility is determined by the vehicle's Base Agility (listed in the Drive System Table on page 8), which is modified by its Agility Potential. Total up all Agility Potential points including modifiers from the vehicle's configuration and other design options. The Agility Potential Table gives the modifier to be applied to Base Agility.

Agility Potential	Agility Modifier
–2 or less	–2
–1	–1
0	0
1	+1
2–3	+2
4–6	+3
7–10	+4
11+	+5

AGILITY EXAMPLE
Wheels have a Base Agility of 0 and Improved Suspension gives the van +1 Agility Potential. This gives an Agility bonus of +1, which we add to the Base Agility for a total of 1.

Calculate Mass

Multiply the vehicle's Base M³ by the Mass per M³ of the construction material (as listed in the Material Table on page 5). Apply any modifiers from the configuration and qualities, and then add the mass of all other components. The result is the Base Mass of the vehicle in kilograms (kg) and is used to determine the vehicle's speed.

MASS EXAMPLE
The vehicle's mass is calculated as follows:

Base M³:	*26*
Advanced Composites:	*26 x 90 = 2,340*
Boxed configuration:	*2,340 x 1 = 2,340*
Rugged:	*2,340 x 1.15 = 2,691*
Components:	*2,691 + 3,740 = 6,374*
Total (round up):	*6,431 kg*

Calculate Speed

Multiply the total power output (see page 9) by the Base Speed (listed in the Drive System Table on page 8). This value is then divided by the Total Mass to get the vehicle's power to weight ratio. The power to weight ratio is then multiplied by the Base Speed. Now apply any speed modifiers from the vehicle's configuration and components to get the Top Speed. Partial speed values are rounded down if less than 0.5 or rounded up if equal or greater than 0.5.

Once the Top Speed has been determined, the derived speeds can be calculated as follows:

- Cruising Speed is 75% of the vehicle's top speed.
- The Offroad Speed of a wheeled vehicle is 15% of its top speed, assuming reasonably even ground. Moving more slowly may be advisable however. Some design choices and accessories will alter this value
- Tracked and walker vehicles have an Offroad Speed equal to 50% of their Top Speed, though lower speeds are usually advisable in rough terrain.
- With the right modifications, it is possible to create a vehicle that is faster offroad than on. In this case, take the fastest speed as both its Top Speed and Offroad Speed.
- If the vehicle floats and has a propulsion that will work on water, it may have an amphibious speed. Calculate the amphibious speed as if the vehicle has the Water–Based or Water–Driven drive system, with a Base Speed of 25 kph. Some examples of this can be found in the Hybrid Vehicles chapter.
- Aircraft takeoff speeds vary considerably according to design. Assume a base takeoff speed of 100 kph plus 1 kph per 500 kg of the Total Mass, to a maximum of 300 kph. For vehicles with a Super Streamlined configuration, lower this speed by 10%.
- The Drive System table on page 8 indicated the maximum top speeds allowable for different propulsion methods.

SPEED EXAMPLE

The total power output of the power plant is 64, and the vehicle has a total mass of 6,374 kg. Wheels have a Base Speed of 100 kph, so we can use all these values to calculate our speed as follows:

Power:	*64 x 100 = 6,400*
Power to weight ratio:	*6,400 ÷ 6,431 = 0.995*
Speed:	*0.995 x 100 = 98.86*
Top Speed:	*100 kph*
75% of Top Speed:	*100 x 0.75 = 75*
Cruising Speed:	*75 kph*
15% of Top Speed:	*100 x 0.15 = 15*
Offroad Speed:	*15 kph*

Calculate Ground Pressure

For walkers and land vehicles calculate ground pressure by dividing the weight of the vehicle by the volume in litres (1,000 litres per M^3) of the drive system.

If the total is greater than 2.5 then multiply the speeds for the vehicle by 0.8. If greater than 3 multiply the speeds by 0.6. If greater than 4 then the vehicle will not be able to move across country and its speeds will be multiplied by 0.5. If greater than 5 the vehicle is unable to move except on specially prepared, strengthened ground/roads.

For the purpose of calculating the ground pressure of vehicles using a walker propulsion system double the volume of the drive system.

EXAMPLE VEHICLE

If you have been following the examples, the van we have created has the following statistics:

Armed Van (TL 7)		**M^3**	**Mass (kg)**	**Cost (Cr.)**
Hull	32 M^3 (base 26) Box configuration, Advanced Composites, Rugged, Reflec Coating	—	2,691	22,750
—	Hull: 9 Structure: 11	—	—	—
Drive System	Wheels	2.6	260	2,600
Power Plant	Internal Combustion–7 Power output: 64 Fuel Consumption: 10 per hour	4	300	5,400
Fuel	70 litres (7 hours operation)	0. 07	70	—
Armour	Light Alloys 10 (15 vs. lasers)	0.52	832	1,300
Weapons	Light Autocannon (external dorsal turret, TL7 stabilisation) Ammunition: 20 attacks	1.16	98.13	14,063
Sensors	Comprehensive Extended Range (9 km +2 DM)	2	3	2,000
Communications	Radio 100 km	0.5	5	1,000
Equipment	Improved Suspension	0.26	26	2,600
Crew	2	—	—	—
Operating Stations	2	2.5	300	—
Cargo	1.37 dTons	18.46	1,846	—
Agility	+1 DM	—	—	—
Speed	Cruise: 75 kph Top: 100 kph Offroad: 15 kph	—	—	—
Total	—	32	6,431	51,713
Ground Pressure	2.49	—	—	—

LAND VEHICLES

ALL TERRAIN ASSAULT VEHICLE

The All Terrain Assault Vehicle is an open topped, super-offroad, vehicle. It has a pintle mount weapon and space for three passengers.

ATAV (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	8 M³, Open configuration, Advanced Composites, Very Rugged	—	907.2	12,000
—	Hull: 3 Structure: 4	—	—	—
Drive System	Wheels	0.8	80	800
Power Plant	Internal Combustion–7 Power output: 32 Fuel Consumption: 5 per hour	2	150	2,700
Fuel	45 litres (9 hours operation)	0.04	45	—
Armour	Advanced Composites 12	0.08	432	400
Weapons	Light Autocannon (dorsal external traversing, TL 7 stabilisation) Ammunition: 25 attacks	1.35	108	14,063
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 50 km (TL 7)	0.25	1	750
Equipment	Drive Wheels (4x4)	0.2	20	400
—	Improved Suspension	0.08	8	800
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	1.25	250	—
Passengers	3	1.5	300	—
Cargo	0.015 dTons	0.20	20	—
Agility	+1 DM	—	—	—
Speed	Cruise: 82 kph Top: 110 kph Offroad: 18 kph	—	—	—
Total	—	8	2,331	32,013
Ground Pressure	2.91	—	—	—

ALL TERRAIN FORTRESS

The All Terrain Fortress is a large, slow moving vehicle with multiple armaments. It is used to provide supporting fire and also serves as defensive weapon station.

ATF (TL 9)		M³	Mass (kg)	Cost (Cr.)
Hull	78 M³, Standard configuration, Advanced Composites, Very Rugged	—	9,828	117,000
—	Hull: 29 Structure: 33	—	—	—
Drive System	Tracks	15.6	7,800	78,000
Power Plant	Nuclear Fission–9 Power output: 570 Fuel Consumption: N/A	30	4,500	270,000
Armour	Advanced Composites 20 (30/25/25/18/18/4)	1.56	8,424	7,800
Weapons	35mm Rail Gun (dorsal external traversing, TL 9 stabilisation) Ammunition: 35 attacks	9.415	12,797	1,875,000
—	Heavy Autocannon (dorsal external traversing, TL 9 stabilisation) Ammunition: 20 attacks	1.8625	743.65	178,125
—	Light Tac Missile (Anti-Air) (dorsal external traversing) Ammunition: 5 attacks	0.96	67.9	4,500
—	Light Tac Missile (Anti-Armour) (dorsal external traversing) Ammunition: 5 attacks	0.96	77.6	6,000
Sensors	Advanced Long Range, Compact (50 km +3 DM)	4.5	2.5	20,000
Communications	Laser 50 km	2	8	5,000
Crew	7 (commander, driver, 4 gunners, loader)	—	—	—
Operating Stations	7	8.75	875	—
Cargo	0.177 dTons	2.39	239	—
Agility	+1 DM	—	—	—
Speed	Cruise: 27 kph Top: 36 kph Offroad: 18 kph	—	—	—
Total	—	78	45,363	2,561,425
Ground Pressure	2.91	—	—	—

ALL TERRAIN GUN TRANSPORT

The All Terrain Gun Transport is essentially a tracked weapons platform that provides mobile defence. The technology level determines the type of weapon, from heavy artillery to powerful fusion guns.

ATGT (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	9 M³, Standard configuration, Steel	—	900	1,800
—	Hull: 2 Structure: 3	—	—	—
Drive System	Tracks	1.8	900	9,000
Power Plant	Internal Combustion–6 Power output: 28 Fuel Consumption: 6 per hour	2	150	2,400
Fuel	60 litres (10 hours operation)	0.06	60	—
Armour	3	0	0	0
Weapons	Heavy Autocannon (dorsal external traversing, TL 6 stabilisation) Ammunition: 20 attacks	1.975	911.25	178,125
Sensors	Basic, Compact (1 km +1 DM)	0.25	0.5	1,000
Communications	Radio 20 km (TL 4)	0.1	1	500
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.023 dTons	0.315	315	
Agility	+1 DM	—	—	—
Speed	Cruise: 22 kph Top: 29 kph Offroad: 14 kph	—	—	—
Total	—	9	3,488	191,925
Ground Pressure	1.94	—	—	—

ATGT (TL 9)		M³	Mass (kg)	Cost (Cr.)
Hull	15 M³, Standard configuration, Advanced Composites	—	1,350	7,500
—	Hull: 4 Structure: 5	—	—	—
Drive System	Tracks	3	1,500	15,000
Power Plant	Internal Combustion–8 Power output: 36 Fuel Consumption: 4 per hour	2	140	3,000
Fuel	40 litres (10 hours operation)	0.04	40	—
Armour	4	0	0	0
Weapons	Light Tac Missile (anti-armour) (dorsal external traversing) Ammunition: 6 attacks	1.2	92	6,000
Sensors	Comprehensive Very Long Range (150 km +2 DM)	6	8	20,000
Communications	Radio 50 km (TL 7)	0.25	1	750
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 29 kph Top: 38 kph Offroad: 19 kph	—	—	—
Total	—	14.99	3,381	52,250
Ground Pressure	1.13	—	—	—

ATGT (TL 14)		M^3	Mass (kg)	Cost (Cr.)
Hull	25 M^3, Standard configuration, Bonded Superdense	—	5,000	250,000
—	Hull: 18 Structure: 21	—	—	—
Drive System	Tracks	5	2,500	25,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 176 Fuel Consumption: 8 per hour	8	1,000	19,200
Fuel	80 litres (10 hours operation)	0.08	80	—
Armour	8	0	0	0
Weapons	Fusion Z Gun (dorsal external traversing, TL 10 stabilisation) Ammunition: N/A	1.98	4,125	15,000,000
Sensors	Excellent Extended Range, Compact (30 km +4 DM)	5	2.25	16,000
Communications	Laser 50 km	2	8	5,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 29 kph Top: 39 kph Offroad: 20 kph	—	—	—
Total	—	24.56	12,965	15,315,200
Ground Pressure	2.59	—	—	—

ALL TERRAIN VEHICLE

An enclosed, pressurised all-terrain ground vehicle. The vehicle is capable of floating on calm water, and has a suite of built-in sensors and communications equipment making it ideal for exploration. An ATV can have a turret weapon fitted but does not normally come with a weapon.

ATV (TL 12)		M³	Mass (kg)	Cost (Cr.)
Hull	48 M³, Standard configuration, Advanced Composites, Sealed	—	4,320	36,000
—	Hull: 15 Structure: 15	—	—	—
Drive System	Tracks	9.6	4,800	48,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 594 Fuel Consumption: 9 per hour	18	2,250	43,200
Fuel	72 litres (8 hours operation)	0.07	72	—
Armour	Crystilaron 13 (18/18/18/8/8/8)	0.36	2,700	3,600
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Environmental	Basic Life Support	0.48	96	24,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Passengers	5	5	500	—
Cargo	0.833 dTons	11.24	1,124	—
Agility	+1 DM	—	—	—
Speed	Cruise: 100 kph Top: 120 kph Offroad: 67 kph	—	—	—
Total	—	48	15,933	159,800
Ground Pressure	1.66	—	—	—

AMMUNITION CARRIER

Ammunition carriers are a workhorse vehicle for many military forces, used to transport supplies and equipment to the front lines. Modified versions are also used by medics to safely travel into hostile territories to treat and retrieve the wounded.

Ammunition Carrier (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	48 M³ (base 40), Boxed configuration, Steel, Rugged	—	4,600	11,200
—	Hull: 11 Structure: 12	—	—	—
Drive System	Wheels	4	400	4,000
Power Plant	Internal Combustion–6 Power output: 112 Fuel Consumption: 24 per hour	8	600	9,600
Fuel	120 litres (5 hours operation)	0.12	120	—
Armour	Steel 9 (15/9/9/9/3/3)	0.4	2,400	800
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 50 km	0.25	2.5	750
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Passengers	2	2	200	—
Cargo	2.35 dTons	31.73	3,173	—
Agility	+0 DM	—	—	—
Speed	Cruise: 58 kph Top: 77 kph Offroad: 12 kph	—	—	—
Total	—	48	11,621	26,450
Ground Pressure	2.91	—	—	—

ANTI-PERSONNEL TANK

Anti-Personnel Tanks are armoured vehicles designed specifically to take out large numbers of enemy troops in trenches and fortified positions. The APT has side mounted flame throwers and a pintle mounted light machine gun.

APT (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	29 M³ (base 36), Super Sloped configuration, Steel, Rugged	—	4,140	18,900
—	Hull: 10 Structure: 11	—	—	—
Drive System	Tracks	7.2	3,600	36,000
Power Plant	Internal Combustion–6 Power output: 227.5 Fuel Consumption: 26 per hour	13	975	15,600
Fuel	260 litres (10 hours operation)	0.26	260	—
Armour	Steel 18 (23/20/20/17/14/14)	0.72	4,320	1,440
Weapons	Light Machinegun (dorsal unpowered traversing) Ammunition: 35 attacks	0.25	15.75	3,000
—	Improved Flamethrower (left internal traversing, TL 6 stabilisation) Ammunition: 40 attacks	1.58	33.9	3,150
—	Improved Flamethrower (right internal traversing, TL 6 stabilisation) Ammunition: 40 attacks	1.58	33.9	3,150
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 10 km (TL 4)	0	0.5	250
Crew	3 (driver, 2 gunners)	—	—	—
Operating Stations	3	3.75	375	—
Cargo	0.004 dTons	0.16	16	—
Agility	+1 DM	—	—	—
Speed	Cruise: 45 kph Top: 59 kph Offroad: 30 kph	—	—	—
Total	—	29	13,771	81,990
Ground Pressure	1.91	—	—	—

ARMOURED CAR

The armoured car performs a similar function to the light tank (see page 34) but are more commonplace on lower technology worlds. These vehicles are lightly armoured and fast making them ideal for scouting and ground reconnaissance.

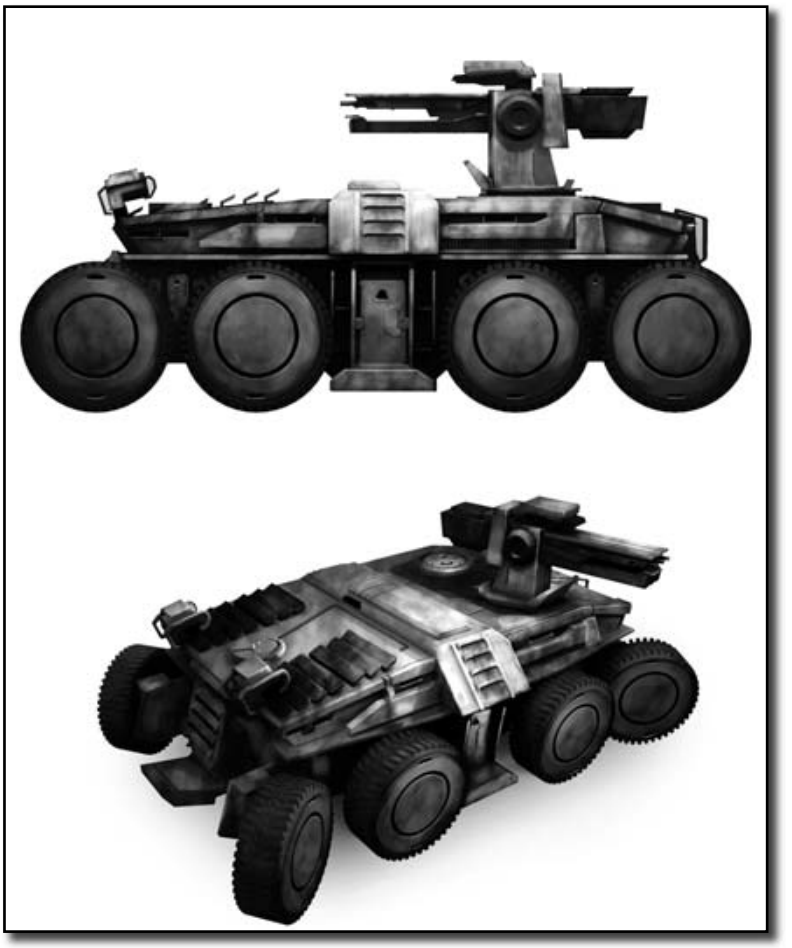
Armoured Car (TL 5)		M³	Mass (kg)	Cost (Cr.)
Hull	9 M³, Standard configuration, Steel, Rugged	—	1,035	3,150
—	Hull: 3 Structure: 4	—	—	—
Drive System	Wheels	0.9	90	900
Power Plant	Internal Combustion–5 Power output: 24 Fuel Consumption: 8 per hour	2	160	2,000
Fuel	48 litres (6 hours operation)	0.05	48	—
Armour	Steel 9 (15/10/10/7/6/6)	0.09	540	180
Weapons	Light Machinegun (dorsal external traversing) Ammunition: 60 attacks	0.575	22.75	4,500
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 100 km	1	10	1,000
Crew	2 (commander, driver)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.121 dTons	1.63	163	—
Agility	+0 DM	—	—	—
Speed	Cruise: 62 kph Top: 82 kph Offroad: 12 kph	—	—	—
Total	—	8.73	2,319	11,830
Ground Pressure	2.58	—	—	—

ARMOURED FIGHTING VEHICLE

A heavily armoured AFV, known as an Armoured Fighting Vehicle, equipped with a turret weapon. The term AFV is also used generically for any heavily armoured combat vehicle.

AFV (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	24 M³ (base 26), Sloped configuration, Advanced Composites	—	2,340	15,600
—	Hull: 8 Structure: 9	—	—	—
Drive System	Wheels	2.6	260	2,600
Power Plant	Internal Combustion–7 Power output: 56 Fuel Consumption: 8.75 per hour	3.5	262.5	4,725
Fuel	70 litres (8 hours operation)	0.07	70	—
Armour	Advanced Composites 22 (32/27/27/22/12/12)	0.52	2,808	2,600
Weapons	Light Autocannon (dorsal external traversing, TL 7 stabilisation) Ammunition: 55 attacks	3.2625	168	14,063
Sensors	Comprehensive (3 km +2 DM)	1	2	1,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Improved Controls	0	0	6,500
—	Drive Wheels (8x8)	1.95	195	3,900
—	Offroad Suspension	0.65	65	5,200
Crew	3 (commander, driver, gunner)	—	—	—
Operating Stations	3	3.75	375	—
Passengers	6	6	600	—
Cargo	0.014 dTons	0.19	19	—
Agility	+0 DM (+2 DM offroad)	—	—	—
Speed	Cruise: 37 kph Top: 50 kph Offroad: 15 kph	—	—	—
Total	—	23.99	7,169	57,188
Ground Pressure	2.76	—	—	—

AFV (TL 12)		M^3	Mass (kg)	Cost (Cr.)
Hull	36 M^3, Standard configuration, Advanced Composites	—	3,240	18,000
—	Hull: 12 Structure: 12	—	—	—
Drive System	Tracks	7.2	3,600	36,000
Power Plant	Nuclear Fusion–12 Power output: 288 Fuel Consumption: 12 per hour	12	1, 800	180,000
Fuel	108 litres (9 hours operation)	0.11	108	—
Armour	Superdense 18 (33/22/22/17/7/7)	0.36	3,240	18,000
Weapons	12mm Light Gauss Cannon (dorsal external traversing, TL 10 stabilisation) Ammunition: 35 attacks	3.99	1,781.25	5,625,000
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 50 km	2	8	5,000
Crew	2 (commander/gunner, driver)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	6	6	600	—
Cargo	0.025 dTons	0.34	34	—
Agility	+1 DM	—	—	—
Speed	Cruise: 60 kph Top: 81 kph Offroad: 40 kph	—	—	—
Total	—	36	12,863	5,886,000
Ground Pressure	1.79	—	—	—

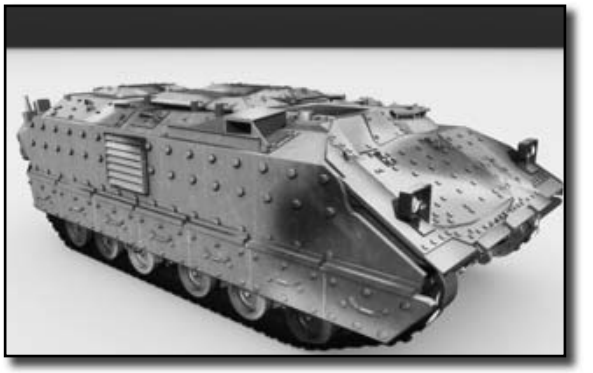


ARMOURED PERSONNEL CARRIER

The Armoured Personnel Carrier is a common sight in most mechanised military forces. These vehicles allow a squad of troops to be safely transported to and from the battlefield.

APC (TL 5)		M^3	Mass (kg)	Cost (Cr.)
Hull	30 M^3, Standard configuration, Steel, Rugged	—	3,450	10,500
—	Hull: 8 Structure: 10	—	—	—
Drive System	Tracked	6	3,000	30,000
Power Plant	Internal Combustion–5 Power output: 157.5 Fuel Consumption: 28 per hour	10.5	840	10,500
Fuel	168 litres (6 hours operation)	0.17	168	—
Armour	Steel 9 (12/10/10/8/7/7)	0.3	1,800	600
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 50 km (TL 4)	0.25	2.5	750
Crew	2	—	—	—
Operating Stations	2 (commander, driver)	2.5	250	—
Passengers	10	10	1,000	—
Agility	+0 DM	—	—	—
Speed	Cruise: 32 kph Top: 43 kph Offroad: 22 kph	—	—	—
Total	—	29.97	10,511	52,450
Ground Pressure	1.75	—	—	—

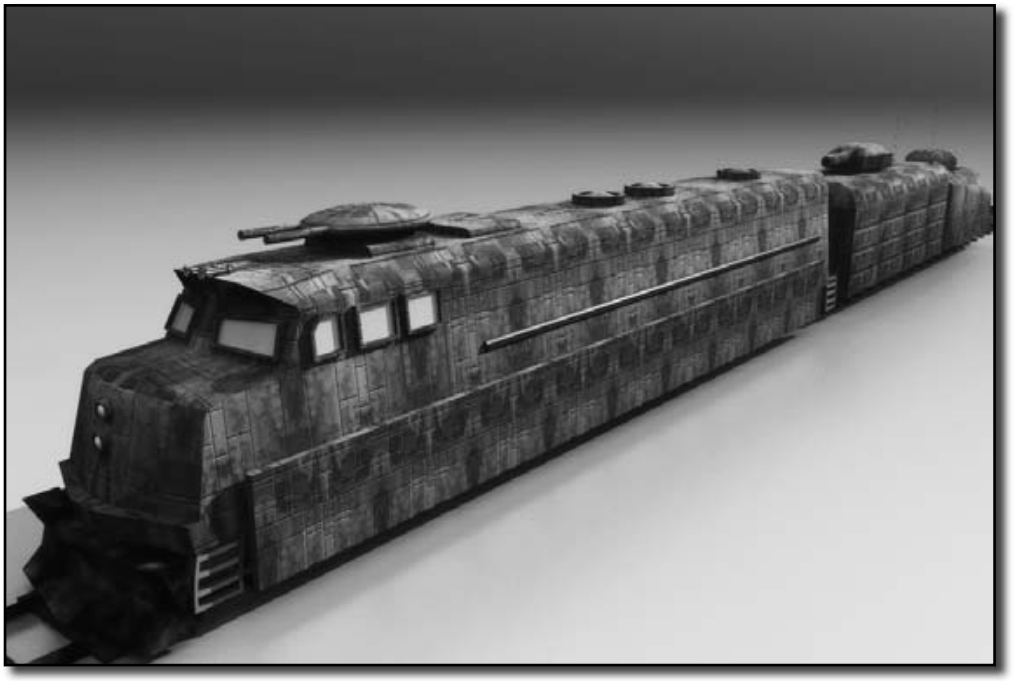
APC (TL 7)		M^3	Mass (kg)	Cost (Cr.)
Hull	30 M^3, Standard configuration, Advanced Composites, Rugged	—	3,105	26,250
—	Hull: 8 Structure: 10	—	—	—
Drive System	Wheels	3	300	3,000
Power Plant	Internal Combustion–7 Power output: 128 Fuel Consumption: 20 per hour	8	600	10,800
Fuel	160 litres (8 hours operation)	0.16	160	—
Armour	Advanced Composites 12 (20/16/16/12/4/4)	0.3	1,620	1,500
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 50 km (TL 7)	0.25	1	750
Equipment	Drive Wheels (6x6)	1.5	150	3,000
	Offroad Suspension	0.75	75	6,000
Crew	2 (commander, driver)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	12	12	1,200	—
Cargo	0.073 dTons	1.29	129	—
Agility	+0 DM	—	—	—
Speed	Cruise: 81 kph Top: 108 kph Offroad: 29 kph	—	—	—
Total	—	30	7,591	51,400
Ground Pressure	2.53	—	—	—



ARMOURED TRAIN

Trains are used to transport troops and supplies over long distances. Specially designed carriages are also used to transport vehicles and large weapons. Some trains also include carriages designed to engage enemy forces, rather than just goods or passenger transport.

Armoured Train (TL 6)		M^3	Mass (kg)	Cost (Cr.)
Hull	400 M^3, Standard configuration, Steel	—	40,000	80,000
—	Hull: 100 Structure: 100	—	—	—
Drive System	Wheels	40	4,000	40,000
Power Plant	Steam–6 Power output: 1,800 Fuel Consumption: 300 per hour	150	10,000	45,000
Fuel	7,200 litres (12 hours operation)	7.2	7,200	—
Armour	Steel 15 (16/16/16/16/16/10)	8	48,000	16,000
Weapons	60mm Antitank Gun (dorsal internal traversing, TL 6 stabilisation) Ammunition: 60 attacks	11.85	3,128	126,000
	60mm Antitank Gun (dorsal internal traversing, TL 6 stabilisation) Ammunition: 60 attacks	11.85	3,128	126,000
	2 x Light Machinegun (dorsal unpowered traversing) Ammunition: 10 attacks each	0	14	6,000
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 50 km (TL 7)	0.25	1	750
Crew	10 (commander, driver, 2 stokers, 4 gunners, 2 loaders)	—	—	—
Operating Stations	10	12.5	1,250	—
Passengers	27	27	2,700	—
Cargo	9.733 dTons	131.1	13,110	—
Agility	+0 DM	—	—	—
Speed	Cruise: 61 kph Top: 81 kph	—	—	—
Total	—	400	132,532	439,850
Ground Pressure	3.31	—	—	—



ASSAULT-CYCLE

A semi-enclosed, one-man armoured motorcycle that moves at very high speeds, while allowing the rider to fire twin LMGs at targets that it passes by.

Assault-cycle (TL 8)		**M³**	**Mass (kg)**	**Cost (Cr.)**
Hull	3 M³, Cycle configuration, Advanced Composites	—	243	1,500
—	Hull: 1 Structure: 1	—	—	—
Drive System	Wheels	0.3	30	300
Power Plant	Internal Combustion–8 Power output: 18 Fuel Consumption: 2 per hour	1	70	1,500
Fuel	20 litres (10 hours operation)	0.02	20	—
Armour	Advanced Composites 4	—	—	—
Weapons	Twin Light Machinegun (front external fixed, TL 8 stabilisation) Ammunition: 110 attacks	1.06	36.4	7,500
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Crew	1	—	—	—
Operating Stations	1	0.31	125	—
Agility	+2 DM	—	—	—
Speed	Cruise: 257 kph Top: 343 kph Offroad: 51 kph	—	—	—
Total	—	2.94	525	10,900
Ground Pressure	1.75	—	—	—

ASSAULT TANK

This formidable tank is a heavy vehicle designed to take on enemy armour. The most notable feature of the assault tank is the turret mounted twin cannon, which can fire one or both barrels as required.

Assault Tank (TL 8)		M³	Mass (kg)	Cost (Cr.)
Hull	80 M³, Streamlined configuration, Advanced Composites	—	7,200	52,000
—	Hull: 25 Structure: 25	—	—	—
Drive System	Tracked	16	8,000	80,000
Power Plant	Internal Combustion–8 Power output: 1,012.5 Fuel Consumption: 60 per hour	45	3,150	67,500
Fuel	450 litres (7.5 hours operation)	0.45	450	—
Armour	Advanced Composites 28 (45,35,35,23,15,15)	2.4	12,960	12,000
Weapons	Twin 120mm Cannon (dorsal external traversing, TL 8 stabilisation) Ammunition: 25 attacks (each gun)	7.68	7,875	1,500,000
Sensors	Comprehensive Compact (3 km +2 DM)	0.5	1	2,000
Communications	Radio 20 km (TL 7)	0.1	0.5	500
Equipment	Improved Controls	0	0	20,000
Crew	6 (commander, driver, sensors, gunner, 2 loaders)	—	—	—
Operating Stations	6	7.5	750	—
Cargo	0.004 dTons	0.37	37	—
Agility	+2 DM	—	—	—
Speed	Cruise: 54 kph Top: 72 kph Offroad: 36 kph	—	—	—
Total	—	80	40,424	1,734,000
Ground Pressure	2.53	—	—	—

MISSILE TANK

Missile tanks are medium sized vehicles with missiles instead of guns. They are used in supporting roles in both offence and defence.

Missile Tank (TL 8)		M³	Mass (kg)	Cost (Cr.)
Hull	72 M³ (base 80), Sloped configuration, Advanced Composites, Rugged	—	8,280	84,000
—	Hull: 28 Structure: 30	—	—	—
Drive System	Tracks	16	8,000	80,000
Power Plant	Internal Combustion–8 Power output: 630 Fuel Consumption: 37.3 per hour	28	1,960	42,000
Fuel	560 litres (15 hours operation)	0.56	560	—
Armour	Advanced Composites 20 (30/25/25/20/10/10)	1.6	8,640	8,000
Weapons	2 x Medium Missile (dorsal internal traversing) Ammunition: 12 attacks each	11.4	505.2	7,200
Sensors	Comprehensive Very Long Range (30 km +2 DM)	6	8	20,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Crew	3 (commander, driver, gunner)	—	—	—
Operating Stations	3	3.75	375	—
Cargo	0.31 dTons	4.19	419	—
Agility	+1 DM	—	—	—
Speed	Cruise: 59 kph Top: 79 kph Offroad: 40 kph	—	—	—
Total	—	72	28,752	242,200
Ground Pressure	1.80	—	—	—

BATTLE TANK

Battle tanks are a large type of tank, their size required to accommodate a second independent turret. The rear turret is raised giving it a full 360 degree firing arc, the front turret is restricted to a 180 degree firing arc. This arrangement gives full coverage, with additional firepower in the front arc where both weapons can fire at the same target if necessary.

Battle Tank (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	96 M^3 (base 120), Super Sloped configuration, Advanced Composites, Very Rugged	—	15,120	270,000
—	Hull: 45 Structure: 49	—	—	—
Drive System	Tracks	24	12,000	120,000
Power Plant	Internal Combustion–8 Power output: 855 Fuel Consumption: 50.7 per hour	38	2,660	57,000
Fuel	405 litres (8 hours operation)	0.41	405	—
Armour	Advanced Composites 20 (35/25/25/20/9/6)	2.4	12,960	12,000
Weapons	75mm Cannon (front dorsal internal traversing, TL 8 stabilisation) Ammunition: 30 attacks	10.4	2,587.5	360,000
—	120mm Cannon (main dorsal internal traversing, TL 8 stabilisation) Ammunition: 35 attacks	11.2	4,687.5	900,000
Sensors	Comprehensive Hardened (3 km +2 DM)	1.5	4	4,000
Communications	Radio 50 km (TL 7)	0.25	1	750
Crew	6 (commander, driver, 2 gunners, 2 loaders)	—	—	—
Operating Stations	6	7.5	750	—
Cargo	0.025 dTons	0.34	34	—
Agility	+1 DM	—	—	—
Speed	Cruise: 45 kph Top: 60 kph Offroad: 30 kph	—	—	—
Total	—	96	51,209	1,723,750
Ground Pressure	2.13	—	—	—

HEAVY TANK

Heavy tanks are large armoured vehicles with powerful weaponry. They are primarily used for breakthrough attacks and engaging heavily fortified positions, but can also be used in defensive roles.

Heavy Tank (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	87 M³ (base 108), Super Sloped configuration, Steel, Very Rugged	—	15,120	97,200
—	Hull: 33 Structure: 36	—	—	—
Drive System	Tracks	21.6	10,800	108,000
Power Plant	Internal Combustion–6 Power output: 612.5 Fuel Consumption: 70 per hour	35	2,625	42,000
Fuel	1050 litres (15 hours operation)	1.05	1,050	—
Armour	Steel 25 (45/30/30/20/15/10)	3.24	19,440	6,480
Weapons	60mm Antitank Gun (dorsal internal traversing, TL 6 stabilisation) Ammunition: 95 attacks	16.03	4,337	126,000
Sensors	Basic Extended Range, Hardened (3 km +1 DM)	1.5	3	4,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	5 (commander, driver, co-driver, gunner, loader)	—	—	—
Operating Stations	5	6.25	625	—
Cargo	0.099 dTons	1.33	133	—
Agility	+1 DM	—	—	—
Speed	Cruise: 24 kph Top: 33 kph Offroad: 16 kph	—	—	—
Total	—	87	54,143	384,680
Ground Pressure	2.51	—	—	—

LIGHT TANK

A lightly armoured tank with a single turret mounted weapon. They are used for a variety of roles including scouting, intercepting and supporting heavier vehicles.

Light Tank (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	33 M³ (base 36), Sloped configuration, Advanced Composites	—	3,240	21,600
—	Hull: 12 Structure: 12	—	—	—
Drive System	Tracks	7.2	3,600	36,000
Power Plant	Internal Combustion–6 Power output: 262.5 Fuel Consumption: 30 per hour	15	1,125	18,000
Fuel	270 litres (9 hours operation)	0.27	270	—
Armour	Advanced Composites 13	0.36	1,944	1,800
Weapons	Light Autocannon (dorsal internal traversing, TL 7 stabilisation) Ammunition: 45 attacks	4.92	148	16,875
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	3 (commander, driver, gunner)	—	—	—
Operating Stations	3	3.75	375	—
Agility	+1 DM	—	—	—
Speed	Cruise: 66 kph Top: 88 kph Offroad: 44 kph	—	—	—
Total	—	33	10,713	97,775
Ground Pressure	1.49	—	—	—

MAIN TANK

Main tanks are the mainstay tank of most military forces. They are well armoured and have both a turret mounted weapon and a smaller pintle mount. Main tanks are also known as Main Battle Tanks (MBTs) and are employed by higher technology forces to replace the older medium and heavy tanks (see pages 38 and 41 respectively), able to perform the role of both.

Main Tank (TL 7)		M^3	Mass (kg)	Cost (Cr.)
Hull	80 M^3 (base 100), Super Sloped configuration, Advanced Composites, Rugged	—	10,350	131,250
—	Hull: 35 Structure: 38	—	—	—
Drive System	Tracks	20	10,000	100,000
Power Plant	Internal Combustion–7 Power output: 720 Fuel Consumption: 60 per hour	36	2,700	48,600
Fuel	540 litres (9 hours operation)	0.54	540	—
Armour	Advanced Composites 24 (40/32/32/20/10/10)	2	10,800	10,000
Weapons	75mm Cannon (dorsal internal traversing, TL 7 stabilisation) Ammunition: 55 attacks	14.7	4,458	360,000
—	Light Machinegun (dorsal external traversing) Ammunition: 10 attacks	0.08	8.75	4,500
Decoys	Smoke Discharger	0.2	0	75
Sensors	Comprehensive (3 km +2 DM)	1	2	1,000
Communications	Radio 20 km (TL 7)	0.1	0.5	500
Crew	4 (commander, driver, gunner, loader)	—	—	—
Operating Stations	4	5	500	—
Agility	+1 DM	—	—	—
Speed	Cruise: 51 kph Top: 67 kph Offroad: 34 kph	—	—	—
Total	—	79.62	38,684	655,925
Ground Pressure	1.93	—	—	—

Main Tank (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	80 M^3 (base 100), Super Sloped configuration, Advanced Composites, Rugged	—	10,350	131,250
—	Hull: 35 Structure: 38	—	—	—
Drive System	Tracks	20	10,000	100,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 957 Fuel Consumption: 14.5	29	3,625	69,600
Fuel	145 litres (10 hours operation)	0.15	145	—
Armour	Crystaliron 34 (46/38/38/34/26/22)	2	15,000	20,000
Weapons	35mm Rail Gun (dorsal internal traversing, TL 10 stabilisation) Ammunition: 40 attacks	19.95	13,519	2,250,000
Decoys	Smoke Discharger (triple)	0.5	0	150
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 20 km	1	6	1,000
Equipment	Performance Tuning 10%	0	0	169,600
Crew	4 (commander, driver, gunner, loader)	—	—	—
Operating Stations	4	5	500	—
Cargo	0.004 dTons	0.9	90	—
Agility	+1 DM	—	—	—
Speed	Cruise: 43 kph Top: 57 kph Offroad: 28 kph	—	—	—
Total	—	80	53,236	2,745,600
Ground Pressure	2.66	—	—	—

MEDIUM TANK

Medium tanks are designed to have a balance of armour, mobility and weaponry. They can perform numerous roles to an acceptable standard, excelling at none. Until the main tank (see page 40) is available, the medium tank performs most tactical functions with other types of tank in supporting roles.

Medium Tank (TL 6)		M^3	Mass (kg)	Cost (Cr.)
Hull	64 M^3 (base 79), Super Sloped configuration, Steel, Rugged	—	9,085	41,475
—	Hull: 21 Structure: 24	—	—	—
Drive System	Tracks	15.8	7,900	79,000
Power Plant	Internal Combustion–6 Power output: 507.5 Fuel Consumption: 58 per hour	29	2,175	34,800
Fuel	261 litres (4.5 hours operation)	0.26	261	—
Armour	Steel 18 (30/23/23/18/8/6)	1.58	9,480	3,160
Weapons	60mm Antitank Gun (dorsal internal traversing, TL 6 stabilisation) Ammunition: 55 attacks	11.25	2,956	126,000
—	Light Machinegun (dorsal unpowered traversing) Ammunition: 10 attacks	0	7	3,000
Sensors	Basic Compact Extended Range (3 km +1 DM)	0.5	0.75	2,000
Communications	Radio 20 km (TL 4)	0.1	1	500
Crew	4 (commander, driver, gunner, loader)	—	—	—
Operating Stations	4	5	500	—
Agility	+1 DM	—	—	—
Speed	Cruise: 42 kph Top: 56 kph Offroad: 28 kph	—	—	—
Total	—	63.49	32,366	289,935
Ground Pressure	2.05	—	—	—

MOBILE COMMAND CENTRE

The Mobile Command Centre is exactly what its name suggests, a large tactical vehicle used to command military forces in the battle zone. Using the very best sensors and communications equipment, the MCC can monitor both friendly and enemy forces and redeploy as necessary. The MCC is lightly armoured and has several gun emplacements to defend against enemy attacks.

MCC (TL 8)		M³	Mass (kg)	Cost (Cr.)
Hull	167 M³ (base 185), Sloped configuration, Advanced Composites, Rugged	—	19,147.5	194,250
—	Hull: 64 Structure: 71	—	—	—
Drive System	Tracks	37	18,500	185,000
Power Plant	Nuclear Fusion–8 Power output: 1,300 Fuel Consumption: 65 per hour	65	13,000	650,000
Fuel	650 litres (10 hours operation)	0.65	650	—
Armour	Advanced Composites 31 (38/31/31/31/31/24)	5.55	29,970	27,750
Weapons	120mm Cannon (dorsal external traversing, TL 8 stabilisation) Ammunition: 20 attacks	3.04	3,563	750,000
—	Gatling Laser (dorsal external traversing, TL 8 stabilisation) Ammunition: N/A	1.44	7,875	1,406,500
—	Medium Missile (dorsal external traversing) Ammunition: 4 attacks	1.50	94.8	3,000
Laser Sensor	TL 8 +1 DM	0.5	0	1,000
Sensors	Comprehensive Extreme Range, Hardened, Compact (300 km +2 DM)	9	12	800,000
Communications	Laser 100 km	5	10	12,000
Equipment	2 x Computer/1	0	10	200
Crew	10 (commander, driver, communication & sensor operators, 3 gunners, 3 loaders)	—	—	—
Operating Stations	2 plus workstations	11.3	1,130	—
Passengers	6	6	600	—
Utility Areas	1 (8 occupants)	19	1,425	23,750
Cargo	0.150 dTons	2.02	202	—
Agility	+1 DM	—	—	—
Speed	Cruise: 29 kph Top: 39 kph Offroad: 19 kph	—	—	—
Total	—	167	96,189	4,053,450
Ground Pressure	2.60	—	—	—

SCOUT BUGGY

This fast offroad buggy is equipped with sensors and is used primarily for fast reconnaissance missions where speed is required over stealth.

Scout Buggy (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	8 M³, Standard configuration, Light Alloys	—	640	2,000
—	Hull: 3 Structure: 3	—	—	—
Drive System	Wheels	0.8	80	800
Power Plant	Internal Combustion–6 Power output: 28 Fuel Consumption: 6 per hour	2	150	2,400
Fuel	60 litres (10 hours operation)	0.06	60	—
Armour	Steel 8	0.08	480	160
Sensors	Basic Extended Range (3 km +1 DM)	1	1.5	1,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Equipment	Excellent Controls	0.08	6.4	8,000
—	Drive Wheels (4x4)	0.2	20	400
—	Offroad Suspension	0.2	20	1,600
Crew	2 (commander, driver)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.006 dTons	0.08	8	—
Agility	+1 DM (+3 DM offroad)	—	—	—
Speed	Cruise: 98 kph Top: 130 kph Offroad: 26 kph	—	—	—
Total	—	8	1,726	17,360
Ground Pressure	2.16	—	—	—

SURVEILLANCE ALL TERRAIN VEHICLE

The Surveillance All Terrain Vehicle is a small and lightly armoured vehicle with advanced sensors and stealth technology. Its primary role is for reconnaissance, but it is also used as a tactical command centre where MCCs (see page 42) are not available or practical.

SATV (TL 9)		M³	Mass (kg)	Cost (Cr.)
Hull	7 M³, Standard configuration, Advanced Composites, Stealth Coating	—	630	4,375
—	Hull: 5 Structure: 3	—	—	—
Drive System	Wheels	0.7	70	700
Power Plant	Hydrogen Fuel Cell–9 Power output: 20 Fuel Consumption: 1 per hour	1	125	2,100
Fuel	12 litres (12 hours operation)	0.01	12	—
Armour	4	0	0	0
Laser Sensor	TL 9 +2 DM	0.25	0	1,500
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Drive Wheels (4x4)	0.18	18	350
Crew	2 (driver, sensor operator)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.027 dTons	0.36	36	—
Agility	+0 DM	—	—	—
Speed	Cruise: 131 kph Top: 174 kph Offroad: 29 kph	—	—	—
Total	—	7	1,147	14,025
Ground Pressure	1.64	—	—	—

WALKERS

CHAMELEON

The chameleon is a small stealth walker designed for reconnaissance and stealth attacks (occasionally supporting larger walkers). It is lightly armoured with minimal weaponry to increase its mobility and reduce its chance of being detected.

Chameleon (TL 12)		M³	Mass (kg)	Cost (Cr.)
Hull	20 M³, Standard configuration, Advanced Composites, Stealth Coating	—	1,800	12,500
—	Hull: 8 Structure: 10	—	—	—
Drive System	Walker	1	1,000	50,000
Power Plant	Nuclear Fusion–12 Power output: 300 Fuel Consumption: 12.5 per hour	12.5	1,875	187,500
Fuel	75 litres (6 hours operation)	0.075	75	—
Armour	4	0	0	0
Weapons	Light Autocannon (front external fixed, TL 10 stabilisation) Ammunition: 40 attacks	2.13	115	9,375
Decoys	Multispectral Smoke Discharger (6 uses)	0.5	0	2,000
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 20km	1	6	1,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 28 kph Top: 37 kph Offroad: 19 kph	—	—	—
Total	—	19.95	4,997	266,375
Ground Pressure	2.49	—	—	—

CHIMERA

This medium sized walker is a well balanced war vehicle equipped with a variety of weapons. The chimera is a versatile walker that can be used in both offensive and defensive roles, as well as escorting heavier vehicles. The amount of weaponry on this walker requires a separate gunner for maximum effect.

Chimera (TL 14)		M^3	Mass (kg)	Cost (Cr.)
Hull	26 M^3, Standard configuration, Bonded Superdense, Rugged	—	5,980	455,000
—	Hull: 20 Structure: 26	—	—	—
Drive System	Walker	1.3	1,300	65,000
Power Plant	Nuclear Fusion–12 Power output: 384 Fuel Consumption: 16 per hour	16	2,400	360,000
Fuel	160 litres (10 hours operation)	0.16	160	—
Armour	Bonded Superdense 24 (40/24/24/8/8/40)	0.26	3,120	26,000
Weapons	VRF Gauss Gun (dorsal external traversing, TL 10 stabilisation) Ammunition: 20 attacks	1.46	2,662.5	375,000
—	Plasma A Gun (front external fixed, TL 10 stabilisation) Ammunition: N/A	1.32	3,300	1,250,000
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 20km	1	6	1,000
Equipment	Wide Suspension	—	650	32,500
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 5 kph Top: 7 kph Offroad: 4 kph	—	—	—
Total	—	25.5	19,830	2,568,500
Ground Pressure	3.81	—	—	—

DRAGON

The dragon is primarily designed as an anti-fortification walker. It is lightly armoured to give it its much needed mobility, and it is armed with a flame thrower for maximum impact against enemy troops.

Dragon (TL 9)		M^3	Mass (kg)	Cost (Cr.)
Hull	24 M^3, Standard configuration, Advanced Composites, Very Rugged	—	3,024	36,000
—	Hull: 9 Structure: 10	—	—	—
Drive System	Walker	1.2	1,200	60,000
Power Plant	Nuclear Fusion–9 Power output: 396 Fuel Consumption: 18 per hour	18	3,600	225,000
Fuel	180 litres (10 hours operation)	0.18	180	—
Armour	Advanced Composites 12 (20/12/12/4/4/20)	0.24	1,296	1,200
Weapons	Advanced Flamethrower (dorsal external traversing, TL 9 stabilisation) Ammunition: 40 attacks	0.77	31.65	4,688
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 5km	0.5	2	200
Equipment	Wide Suspension	—	600	30,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 18 kph Top: 25 kph Offroad: 13 kph	—	—	—
Total	—	23.64	10,060	331,088
Ground Pressure	2.10	—	—	—

HYDRA

The hydra is a heavy support walker armed only with missile and rockets. Although it can release a devastating volley at multiple targets, it is vulnerable at short range and is usually accompanied by medium vehicles.

Hydra (TL 10)		M³	Mass (kg)	Cost (Cr.)
Hull	29 M³, Standard configuration, Crystaliron, Rugged	—	4,168.75	50,750
—	Hull: 12 Structure: 15	—	—	—
Drive System	Walker	1.45	1,450	72,500
Power Plant	Hydrogen Fuel Cell–9 Power output: 495 Fuel Consumption: 8.25 per hour	16.5	2,026.5	34,650
Fuel	132 litres (16 hours operation)	0.13	132	—
Armour	6	0	0	0
Weapons	70mm Strafing Rocket Pod (7 pack) (dorsal external traversing) Ammunition: 8 attacks	3.3	120.8	6,000
—	Light Tac Missile (Anti-Personnel) (dorsal external fixed) Ammunition: 4 attacks	0.7	37	1,800
Sensors	Advanced Extended Range, Hardened, Compact (15 km +3 DM)	4.5	3.75	32,000
Communications	Laser 20km	1	6	1,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 23 kph Top: 31 kph Offroad: 15 kph	—	—	—
Total	—	28.83	8,070	198,700
Ground Pressure	2.78	—	—	—

LEVIATHAN

This large walker can operate on land and underwater. Not only can it attack underwater vessels and facilities but it is well known for launching surprise attacks on coastal targets; a unit of leviathans emerging from the sea is a terrifying sight and can take out gun emplacements before the enemy has time to react.

Leviathan (TL 12)		M^3	Mass (kg)	Cost (Cr.)
Hull	36 M^3, Standard configuration, Superdense, Very Rugged, Sealed	—	7,560	810,000
—	Hull: 22 Structure: 24	—	—	—
Drive System	Walker	1.8	1,800	90,000
Power Plant	Nuclear Fusion–12 Power output: 516 Fuel Consumption: 21.5 per hour	21.5	3,225	322,500
Fuel	129 litres (6 hours operation)	0.13	129	—
Armour	Superdense 21 (35/21/21/7/7/35)	0.36	3,240	18,000
Weapons	12mm Light Gauss Cannon (front external traversing, TL 10 stabilisation) Ammunition: 40 attacks	4.59	1,931.75	5,625,000
—	2 x Light Tac Missile (Anti-Armour) (dorsal internal fixed) Ammunition: 2 attacks each	0.95	60.8	12,000
Sensors	Excellent Hardened, Compact (10 km +4 DM)	3.75	3	32,000
Communications	Laser 20km	1	6	1,000
Equipment	Wide Suspension	—	900	4,500
Environmental	Life Support, Basic	0.36	72	18,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 10 kph Top: 14 kph Offroad: 7 kph	—	—	—
Total	—	35.69	19,053	6,933,000
Ground Pressure	2.65	—	—	—

MANTIS

The mantis is a small lightly armed walker, most often used as scouting vehicle. A common tactic with these walkers is to deploy a large number (often called a 'swarm') to assault larger and less mobile vehicles.

Mantis (TL 11)		**M^3**	**Mass (kg)**	**Cost (Cr.)**
Hull	18 M^3, Standard configuration, Crystaliron	—	2,250	18,000
—	Hull: 5 Structure: 6	—	—	—
Drive System	Walker	0.9	900	45,000
Power Plant	Hydrogen Fuel Cell–9 Power output: 330 Fuel Consumption: 5.5 per hour	11	1,375	23,100
Fuel	55 litres (10 hours operation)	0.055	55	—
Armour	6	0	0	0
Weapons	Light Autocannon (front external fixed, TL 10 stabilisation) Ammunition: 20 attacks	0.93	125	9,375
Sensors	Excellent Compact (10 km +4 DM)	2.5	1.5	8,000
Communications	Laser 20km	1	6	1,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 26 kph Top: 34 kph Offroad: 17 kph	—	—	—
Total	—	17.64	4,838	104,475
Ground Pressure	2.69	—	—	—

SCORPION

The scorpion is a medium sized walker armed with a plasma gun. These walkers often make up the bulk of walker squadrons and are normally supported by heavy vehicles.

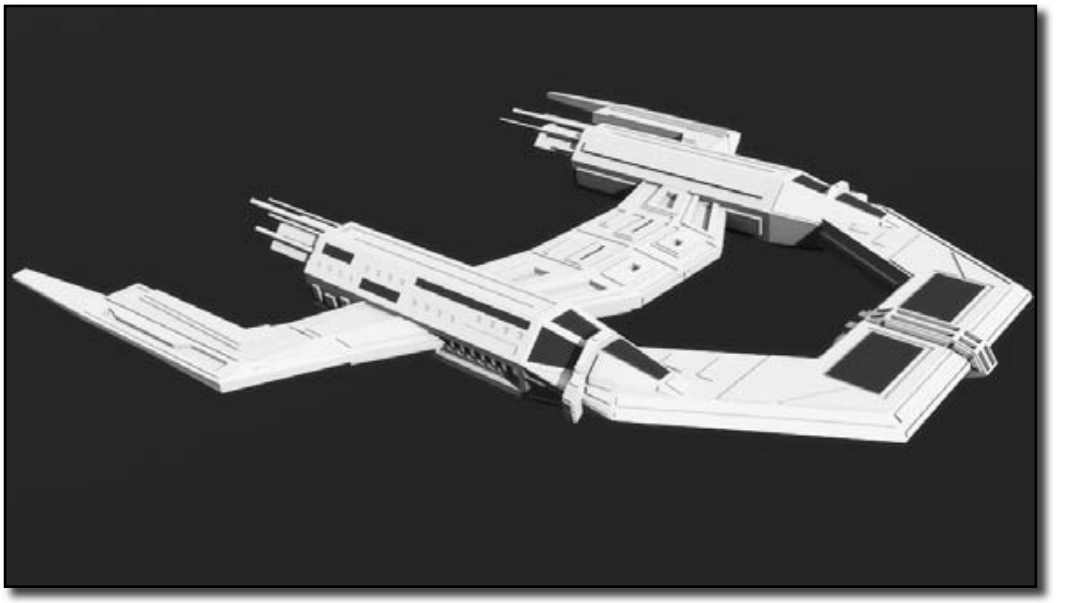
Scorpion (TL 12)		M³	Mass (kg)	Cost (Cr.)
Hull	26 M³, Standard configuration, Crystaliron, Reflec Coating	—	3,250	32,500
—	Hull: 9 Structure: 11	—	—	—
Drive System	Walker	1.3	1,300	65,000
Power Plant	Nuclear Fusion–12 Power output: 444 Fuel Consumption: 18.5 per hour	18.5	2,775	277,500
Fuel	185 litres (10 hours operation)	0.185	185	—
Armour	Crystaliron 18 (23 vs. lasers) (24/20/20/10/10/24)	0.26	1,950	2,600
Weapons	Plasma A Gun (front external traversing, TL 10 stabilisation) Ammunition: N/A	1.98	4,125	1,875,000
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 10km	0.75	4	500
Equipment	Improved Controls	0	0	6,500
—	Wide Suspension	—	650	32,500
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+2 DM	—	—	—
Speed	Cruise: 12 kph Top: 15 kph Offroad: 8 kph	—	—	—
Total	—	25.73	14,365	2,296,100
Ground Pressure	2.81	—	—	—

Grav Vehicles

Covert Grav Vehicle

The Covert Grav Vehicle is the latest in stealth vehicle design, replacing the older spy planes (see page 74). The CGV uses stealth technology to avoid detection and is fitted with the very best sensors to gather a variety of information from enemy territory. These features, combined with the speed and versatility of grav technology, make the CGV the ultimate spy vehicle.

CGV (TL 12)		M^3	Mass (kg)	Cost (Cr.)
Hull	9 M^3, Super Streamlined configuration, Superdense, Sealed, Stealth Coating	—	1,350	168,750
—	Hull: 4 Structure: 6	—	—	—
Drive System	Grav	0.45	67.5	225,000
Power Plant	Nuclear Fusion–12 Power output: 60 Fuel Consumption: 2.5 per hour	2.5	375	37,500
Fuel	25 litres (10 hours operation)	0.025	25	—
Armour	7	0	0	0
Laser Sensor	TL 12 +5 DM	0.1	0	3,000
Sensors	Excellent Compact (10 km +4 DM)	2.5	1.5	8,000
Communications	Laser 5km	0.5	2	200
Environmental	Life Support, Basic	0.09	18	4,500
Equipment	Improved Controls	0	0	2,250
—	Performance Tuning 10%	0	0	262,500
Crew	2 (driver, sensor operator)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.024 dTons	0.33	33	—
Agility	+1 DM	—	—	—
Speed	Cruise: 1,166 kph Top: 1,555 kph	—	—	—
Total	—	9	2,122	704,950



G/BOMBER

The grav bomber has replaced the attack helicopter in a ground attack role. This vehicle carries a substantial array of air-to-ground weapons capable of destroying most ground targets, be they infantry, armoured vehicles or structures. A limited amount of air-to-air weaponry is also included to defend against enemy aircraft.

G/Bomber (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	33 M^3, Streamlined configuration, Crystaliron, Rugged, Sealed	—	4,743.75	112,613
—	Hull: 14 Structure: 17	—	—	—
Drive System	Grav	1.65	247.5	825,000
Power Plant	Nuclear Fusion–9 Power output: 396 Fuel Consumption: 18 per hour	18	3,600	225,000
Fuel	90 litres (5 hours operation)	0.09	90	—
Armour	Crystaliron 12 (15/6/6/15/18/12)	0.17	1,237.5	1,650
Weapons	VRF Gauss Gun (front external fixed, TL 10 stabilisation) Ammunition: 50 attacks	3.24	4,050	250,000
—	4 x Light Tac Missile (Anti-Armour) (left external fixed)	0.2	64	16,000
—	4 x Light Tac Missile (Anti-Armour) (right external fixed)	0.2	64	16,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced Long Range, Compact (50 km +3 DM)	4.5	2.5	20,000
Communications	Laser 50 km	2	8	5,000
Environmental	Life Support, Basic	0.33	66	16,500
Equipment	Ejection Seat	0.5	10	5,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Cargo	0 dTons	—	—	—
Agility	+0 DM	—	—	—
Speed	Cruise: 913 kph Top: 1,218 kph	—	—	—
Total	—	32.38	14,308	1,493,363

G/Bomber (TL 14)		M³	Mass (kg)	Cost (Cr.)
Hull	34 M³, Streamlined configuration, Superdense, Rugged, Sealed	—	5,865	580,125
—	Hull: 27 Structure: 33	—	—	—
Drive System	Grav	1.7	255	850,000
Power Plant	Nuclear Fusion–12 Power output: 504 Fuel Consumption: 21 per hour	21	3,150	315,000
Fuel	147 litres (7 hours operation)	0.15	147	—
Armour	Bonded Superdense 24 (24/12/12/24/24/48)	0.34	4,080	34,000
Weapons	VRF Gauss Gun (front external fixed, TL 10 stabilisation) Ammunition: 25 attacks	1.64	2,550	250,000
—	4 x Plasma Missile (ventral external fixed)	0.4	32	12,800
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Excellent Extended Range, Compact (30 km +4 DM)	5	2.25	16,000
Communications	Laser 20km	1	6	1,000
Environmental	Life Support, Basic	0.34	68	17,000
Equipment	Ejection Cocoon	0.75	65	50,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+0 DM	—	—	—
Speed	Cruise: 1,018 kph Top: 1,357 kph	—	—	—
Total	—	33.82	16,345	2,126,525

G/CARRIER

This armed personnel carrier is commonly used by many military forces throughout the Imperium.

G/Carrier (TL 10)		M³	Mass (kg)	Cost (Cr.)
Hull	32 M³ (base 26), Box configuration, Crystaliron	—	3,250	20,800
—	Hull: 9 Structure: 11	—	—	—
Drive System	Grav	1.3	195	650,000
Power Plant	Nuclear Fusion–9 Power output: 187 Fuel Consumption: 8.5 per hour	8.5	1,700	106,250
Fuel	85 litres (10 hours operation)	0.09	85	—
Armour	Crystaliron 24	0.52	3,900	5,200
Weapons	Plasma A Gun (ventral external traversing, TL 10 stabilisation) Ammunition: N/A	1.98	4,125	1,875,000
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 50km	2	8	5,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	12	12	1,200	—
Cargo	0.12 dTons	1.61	161	—
Agility	+0 DM	—	—	—
Speed	Cruise: 377 kph Top: 503 kph	—	—	—
Total	—	32	14,875	2,666,250

G/Carrier (TL 15)		M^3	Mass (kg)	Cost (Cr.)
Hull	33 M^3 (base 27), Box configuration, Superdense, Sealed	—	4,050	162,000
—	Hull: 12 Structure: 14	—	—	—
Drive System	Grav	1.35	202.5	675,000
Power Plant	Nuclear Fusion–15 Power output: 210 Fuel Consumption: 7.5 per hour	7.5	825	131,250
Fuel	90 litres (12 hours operation)	0.09	90	—
Armour	Bonded Superdense 28	0.54	6,480	54,000
Weapons	Fusion Z Gun (ventral external traversing, TL 10 stabilisation) Ammunition: N/A	1.98	4,125	15,000,000
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 50km	2	8	5,000
Environmental	Life Support, Basic	0.27	54	13,500
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	14	14	1,400	—
Cargo	0.121 dTons	1.27	127	—
Agility	+0 DM	—	—	—
Speed	Cruise: 358 kph Top: 477 kph	—	—	—
Total	—	33	17,613	16,044,750

G/FIGHTER

Grav fighters are the mainstay of modern air forces. These fast and agile craft fulfil a variety of roles including escort, interception and attack.

G/Fighter (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	20 M^3, Super Streamlined configuration, Crystaliron, Sealed, Reflec Coating	—	2,500	75,000
—	Hull: 8 Structure: 8	—	—	—
Drive System	Grav	1	150	500,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 176 Fuel Consumption: 8 per hour	8	1,000	19,200
Fuel	80 litres (10 hours operation)	0.08	80	—
Armour	6 (11 vs. lasers)	0	0	0
Weapons	Laser Cannon (front external fixed, TL 10 stabilisation) Ammunition: N/A	1.32	4,125	1,250,000
—	6 x Light Tac Missile (Anti-Air) (ventral external fixed)	0.3	144	18,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced Long Range Compact (50 km +3 DM)	4.5	2.5	20,000
Communications	Laser 50km	2	8	5,000
Environmental	Life Support, Basic	0.2	40	10,000
Equipment	Ejection Cocoon	0.75	65	50,000
—	Excellent Controls	0.2	25	20,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+2 DM	—	—	—
Speed	Cruise: 799 kph Top: 1,065 kph	—	—	—
Total	—	19.85	8,265	1,967,800

G/Fighter (TL 12)		M³	Mass (kg)	Cost (Cr.)
Hull	20 M³, Super Streamlined configuration, Superdense, Sealed, Reflec Coating	—	3,000	375,000
—	Hull: 10 Structure: 10	—	—	—
Drive System	Grav	1	150	500,000
Power Plant	Nuclear Fusion–12 Power output: 240 Fuel Consumption: 10 per hour	10	1,500	150,000
Fuel	80 litres (8 hours operation)	0.08	80	—
Armour	7 (12 vs. lasers)	0	0	0
Weapons	12mm Light Gauss Cannon (front external fixed, TL 10 stabilisation) Ammunition: 20 attacks	0.92	1,155	3,750,000
—	2 x Light Tac Missile (Anti-Air) (ventral external fixed)	0.1	28	6,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced Long Range Compact (50 km +3 DM)	4.5	2.5	20,000
Communications	Laser 20km	1	6	1,000
Environmental	Life Support, Basic	0.2	40	10,000
Equipment	Ejection Seat	0.50	10	5,000
—	Excellent Controls	0.2	30	20,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+2 DM	—	—	—
Speed	Cruise: 1,469 kph Top: 1,959 kph	—	—	—
Total	—	20	6,127	4,837,600

G/TANK

Grav tanks are heavily armoured vehicles with devastating weaponry. They are much slower than other grav vehicles but provide the main attacking force, with fighters and similar vehicles providing support as required.

G/Tank (TL 10)		M³	Mass (kg)	Cost (Cr.)
Hull	26 M³ (base 32), Super Sloped configuration, Crystaliron, Very Rugged	—	5,600	144,000
—	Hull: 15 Structure: 16	—	—	—
Drive System	Grav	1.6	240	800,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 154 Fuel Consumption: 7 per hour	7	875	16,800
Fuel	49 litres (7 hours operation)	0.05	49	—
Armour	Crystaliron 50 (60/50/50/50/30/60)	0.96	7,200	9,600
Weapons	Plasma A Gun (dorsal internal traversing, TL 10 stabilisation) Ammunition: N/A	9.9	4,125	2,250,000
Sensors	Advanced Hardened Compact (5 km +3 DM)	2.25	2.5	16,000
Communications	Laser 20km	1	6	1,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.056 dTons	0.74	–	—
Agility	+0 DM	—	—	—
Speed	Cruise: 252 kph Top: 336 kph	—	—	—
Total	—	26	18,348	3,237,400

G/Tank (TL 12)		M^3	Mass (kg)	Cost (Cr.)
Hull	34 M^3 (base 42), Super Sloped configuration, Superdense, Very Rugged	—	8,820	945,000
—	Hull: 24 Structure: 29	—	—	—
Drive System	Grav	2.1	315	1,050,000
Power Plant	Nuclear Fusion–12 Power output: 216 Fuel Consumption: 9 per hour	9	1,350	135,000
Fuel	81 litres (9 hours operation)	0.08	81	—
Armour	Superdense 59 (79/49/54/54/49/69)	1.26	11,340	63,000
Weapons	12mm Light Gauss Cannon (dorsal internal traversing, TL 10 stabilisation) Ammunition: 30 attacks	8.55	1,931	6,750,000
Sensors	Excellent Hardened (10 km +4 DM)	7.5	6	16,000
Communications	Laser 20km	1	6	1,000
Equipment	Ejection Cocoon	1.5	130	100,000
Environmental	Life Support, Basic	0.42	84	21,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.017 dTons	0.09	9	—
Agility	+0 DM	—	—	—
Speed	Cruise: 266 kph Top: 355 kph	—	—	—
Total	—	33.99	24,327	9,081,000

G/Tank (TL 14)		M^3		Cost (Cr.)
Hull	32 M^3 (base 40), Super Sloped configuration, Superdense, Very Rugged, Sealed	—	8,400	1,350,000
—	Hull: 36 Structure: 39	—	—	—
Drive System	Grav	2	300	1,000,000
Power Plant	Nuclear Fusion–12 Power output: 264 Fuel Consumption: 11 per hour	11	1,650	165,000
Fuel	88 litres (8 hours operation)	0.09	88	—
Armour	Bonded Superdense 66 (86/56/61/61/56/76)	1.2	14,400	120,000
Weapons	Fusion Z Gun (dorsal internal traversing, TL 10 stabilisation) Ammunition: N/A	9.9	4,125	18,000,000
Sensors	Excellent, Hardened, Compact (30 km +4 DM)	3.75	3	32,000
Communications	Laser 20km	1	6	1,000
Environmental	Life Support, Basic	0.4	80	40,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.012 dTons	0.16	16	—
Agility	+0 DM	—	—	—
Speed	Cruise: 271 kph Top: 361 kph	—	—	—
Total	—	32	29,318	20,708,000

GRAV ASSAULT VEHICLE

The Grav Assault Vehicle is a lightly armoured fast attack vehicle. GAVs are usually used for scouting or attacks on distributed ground troops where bombers would have little effect. It is armed with a gatling laser and a missile launcher on a single ventral turret. The GAV can also be armed with EMP missiles to disrupt enemy sensors before the main attacking force arrives.

(TL 11)		M^3	Mass (kg)	Cost (Cr.)
Hull	17 M^3, Super Streamlined configuration, Crystaliron, Reflec Coating	—	2,125	42,500
—	Hull: 6 Structure: 8	—	—	—
Drive System	Grav	0.85	127.5	425,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 154 Fuel Consumption: 7 per hour	7	875	16,800
Fuel	70 litres (10 hours operation)	0.07	70	—
Armour	Crystaliron 18 (23 vs. lasers)	0.17	1,275	1,700
Weapons	Light Autocannon (ventral external traversing, TL 10 stabilisation) Ammunition: 25 attacks	1.395	99	14,063
—	5 x Light Tac Missile (Anti-Personnel) (ventral external traversing)	0.38	63	13,500
Sensors	Excellent Compact (10 km +4 DM)	2.5	1.5	8,000
Communications	Laser 50km	2	8	5,000
Equipment	Airflow Device: Wing Slats	0	10.63	1,700
—	Improved Controls	0	0	4,250
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+2 DM	—	—	—
Speed	Cruise: 1,177 kph Top: 1,570 kph	—	—	—
Total	—	16.87	4,905	532,513

GRAVCOPTER

Fast and agile, the gravcopter uses two small gravitic generators located to either side of the passenger cabin to propel itself across the sky. It is lightly armoured and armed, mainly used to deliver troops to hard-to-reach places very quickly.

Gravcopter (TL 9)		M^3	Mass (kg)	Cost (Cr.)
Hull	28 M^3, Streamlined configuration, Advanced Composites, Sealed	—	2,520	27,300
—	Hull: 9 Structure: 9	—	—	—
Drive System	Grav	1.4	210	700,000
Power Plant	Hydrogen Fuel Cell–9 Power output: 120 Fuel Consumption: 6 per hour	6	750	12,600
Fuel	72 litres (12 hours operation)	0.07	72	—
Armour	4	0	0	0
Weapons	Light Autocannon (ventral external traversing, TL 9 stabilisation) Ammunition: 40 attacks	2.32	132	14,063
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Comprehensive Compact (3 km +2 DM)	0.5	1	2,000
Communications	Laser 20km	1	6	1,000
Environmental	Life Support, Basic	0.28	56	14,000
Equipment	Improved Controls	0	0	7,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	12	12	1,200	—
Cargo	0.124 dTons	1.68	168	—
Agility	+1 DM	—	—	—
Speed	Cruise: 738 kph Top: 984 kph	—	—	—
Total	—	28	5,365	778,563

Gravcopter (TL 12)		M³	Mass (kg)	Cost (Cr.)
Hull	30 M³, Streamlined configuration, Superdense, Sealed	—	4,500	292,500
—	Hull: 14 Structure: 16	—	—	—
Drive System	Grav	1.5	225	750,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 198 Fuel Consumption: 9 per hour	9	1,125	21,600
Fuel	108 litres (12 hours operation)	0.11	108	—
Armour	7	0	0	0
Weapons	Advanced Support Weapon (left external traversing, TL 10 stabilisation) Ammunition: 40 attacks	0.38	13	5,156
—	Advanced Support Weapon (right external traversing, TL 10 stabilisation) Ammunition: 40 attacks	0.38	13	5,156
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Laser 20km	1	6	1,000
Environmental	Life Support, Basic	0.3	60	15,000
Equipment	Improved Controls	0	0	7,500
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	12	12	1,200	—
Cargo	0.08 dTons	1.08	108	—
Agility	+1 DM	—	—	—
Speed	Cruise: 854 kph Top: 1,139 kph	—	—	—
Total	—	30	7,649	1,102,512

GRAV-CYCLE

This gravitic version of the assault-cycle (see page 33) is much more versatile than its predecessor, boasting greater armament, speed, and versatility. There is also space for a passenger, who can fire personal weaponry if required.

Grav-cycle (TL 12)		M³	Mass (kg)	Cost (Cr.)
Hull	3 M³, Cycle configuration, Superdense	—	338	7,500
—	Hull: 1 Structure: 1	—	—	—
Drive System	Grav	0.15	22.5	75,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 22 Fuel Consumption: 1 per hour	1	125	2,400
Fuel	20 litres (20 hours operation)	0.02	20	—
Armour	7	—	—	—
Weapons	2 x Advanced Support Weapon (front external fixed, TL 10 stabilisation) Ammunition: 40 attacks each	0.71	23	6,875
Sensors	Basic (1 km +1 DM)	0.5	1	500
Crew	1	—	—	—
Operating Stations	1	0.31	125	—
Passengers	1	0.25	100	—
Agility	+2 DM	—	—	—
Speed	Cruise: 874 kph Top: 1,166 kph	—	—	—
Total	—	2.94	755	92,275

GUNSKIFF

A mobile gun platform that allows passengers to fire their weaponry over a somewhat precarious railing. Sometimes used to ferry troops, but most often used as firepower platforms. Gunskiffs are a favourite of the Aslan, who also use them to deploy assault troops.

Gunskiff (TL 9)		M^3	Mass (kg)	Cost (Cr.)
Hull	20 M^3, Open configuration, Advanced Composites	—	1,620	10,000
—	Hull: 7 Structure: 7	—	—	—
Drive System	Grav	1	150	500,000
Power Plant	Hydrogen Fuel Cell–9 Power output: 50 Fuel Consumption: 2.5 per hour	2.5	312.5	5,250
Fuel	50 litres (20 hours operation)	0.05	50	—
Armour	Advanced Composites 20	0.4	2,160	2,000
Weapons	Light Autocannon (front external traversing, TL 9 stabilisation) Ammunition: 25 attacks	1.42	102	14,063
Sensors	Advanced (5 km +3 DM)	3	2.5	2,000
Communications	Laser 50 km	2	8	5,000
Equipment	Improved Controls	0	0	5,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	1.25	250	—
Passengers	15	7.5	1,500	—
Cargo	0.08 dTons	0.88	88	—
Agility	+1 DM	—	—	—
Speed	Cruise: 240 kph Top: 320 kph	—	—	—
Total	—	20	6,243	543,313

HEAVY GRAV TRANSPORT

The Heavy Grav Transport is a large, lightly armoured vehicle used to transport supplies, troops and vehicles. Ramps at the front and rear provide easy access for vehicles and cargo loaders, whilst the sliding side doors can be used for rapid troop deployment.

HGT (TL 11)		M^3	Mass (kg)	Cost (Cr.)
Hull	264 M^3 (base 220), Box configuration, Crystaliron, Rugged, Reflec Coating	—	31,625	385,000
—	Hull: 91 Structure: 99	—	—	—
Drive System	Grav	11	1,650	5,500,000
Power Plant	Nuclear Fusion–9 Power output: 660 Fuel Consumption: 30 per hour	30	6,000	375,000
Fuel	360 litres (12 hours operation)	0.36	360	—
Armour	Crystaliron 24 (29 vs. lasers)	4.4	33,000	44,000
—	VRF Gauss Gun (dorsal external traversing, TL 10 stabilisation) Ammunition: 60 attacks	4.66	5,063	375,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Excellent (10 km +4 DM)	5	3	4,000
Communications	Laser 50km	2	8	5,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	60	60	6,000	—
Cargo	10.853 dTons	143.83	14,383	—
Agility	+0 DM	—	—	—
Speed	Cruise: 201 kph Top: 268 kph	—	—	—
Total	—	264	98,342	6,688,600

HOVERTRAK

A bit of a misnomer, the hovertrak anti-armour tank has no 'trak' portion at all. It was originally named for the tracked version of its chassis, now obsolete with the advent of its hovering capabilities. Fully enclosed and supporting a small anti-personnel weapon, the main reason the hovertrak exists is to support its powerful anti-tank cannon turret. Few mercenary units can afford these vehicles, but those who can will never be without a job.

Hovertrak (TL 12)		**M³**	**Mass (kg)**	**Cost (Cr.)**
Hull	26 M³ (base 33), Super Sloped configuration, Superdense, Rugged, Sealed	—	5,692.5	649,688
—	Hull: 18 Structure: 22	—	—	—
Drive System	Grav	1.65	247.5	825,000
Power Plant	Nuclear Fusion–12 Power output: 120 Fuel Consumption: 5 per hour	5	750	75,000
Fuel	300 litres (60 hours operation)	0.3	300	—
Armour	Superdense 25	0.33	2,970	16,500
Weapons	12mm Light Gauss Cannon (dorsal internal traversing, TL 10 stabilisation) Ammunition: 60 attacks	10.95	2,531	6,750,000
—	Advanced Support Weapon (dorsal unpowered traversing) Ammunition: 10 attacks	0	5	2,750
Sensors	Excellent Compact (10 km +4 DM)	2.5	1.5	8,000
Communications	Laser 50km	2	8	5,000
Environmental	Life Support, Basic	0.33	66	16,500
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.061 dTons	0.44	44	—
Agility	+0 DM	—	—	—
Speed	Cruise: 280 kph Top: 373 kph	—	—	—
Total	—	26	12,866	8,348,438

Aircraft

Assault Station

This huge mobile base uses massive rotors to keep it airborne and a number of manoeuvre jets provide the propulsion. The assault station carries a number of aircraft on the top deck and inside hangar bays. Turret weapons and troops are stationed onboard to repel any potential attack.

Assault Station (TL 9)		M³	Mass (kg)	Cost (Cr.)
Hull	5,000 M³, Airframe configuration, Advanced Composites, Sealed	—	405,000	5,625,000
—	Hull: 1,563 Structure: 1,563	—	—	—
Drive System	Rotors	1,000	80,000	25,000,000
—	Jet	750	75,000	26,250,000
Power Plant	Nuclear Fission–9 Power output: 2,850 Fuel Consumption: N/A	100	15,000	900,000
Armour	Advanced Composites 12	50	270,000	250,000
Weapons	2 x 35mm Rail Gun (dorsal external traversing) Ammunition: 30 attacks	15.4	20,925	3,000,000
—	6 x Laser Cannon (dorsal external traversing) Ammunition: N/A	10.8	47,250	9,000,000
—	2 x 35mm Rail Gun (ventral external traversing) Ammunition: 30 attacks	15.4	20,925	3,000,000
—	4 x Laser Cannon (ventral external traversing) Ammunition: N/A	7.2	31,500	6,000,000
Sensors	Advanced Extreme Range, Hardened (500 km +3 DM)	54	30	800,000
Communications	Laser 1,000 km	15	20	25,000
Crew	207 (4 pilots, 38 engineers (+2 DM), 36 sensors, 28 gunners, 8 loaders, 2 communications, 48 aircraft engineers and weaponeers, 19 support, 24 officers)	—	—	—
Operating Stations	100 plus workstations	242.7	24,270	—
Passengers	54 (24 crew for aircraft, 30 troops)	54	5,400	—
Sleeping Areas	20 simple (250 occupants), 10 standard (10 occupants)	340	7,300	97,500
Utility Areas	Officers lounge, officers mess, galley, medical bay, workshop (150 occupants)	315	23,625	393,750
Hangars	Hangar for 12 aircraft of up to 30 M³ each	1,800	180,000	180,000
Cargo	17.074 dTons	230.5	23,050	—
Agility	+1 DM	—	—	—
Speed	Cruise: 109 kph Top: 145 kph	—	—	—
Total	—	5,000	1,229,295	80,521,250

ATTACK HELICOPTER

The attack helicopter is designed for anti-tank missions and to provide close air support to ground troops. Air-to-air missiles can also be fitted to provide some defence against other aircraft, but this role is usually filled by fixed wing fighters (see page 69).

Attack Helicopter (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	28 M³, Airframe configuration, Advanced Composites	—	2,268	21,000
—	Hull: 9 Structure: 9	—	—	—
Drive System	Rotors	5.6	448	140,000
Power Plant	Turbine–7 Power output: 468 Fuel Consumption: 58.5 per hour	13	1,170	52,000
Fuel	234 litres (4 hours operation)	0.234	234	—
Armour	Advanced Composites 12	0.28	1,512	1,400
Weapons	Twin Light Autocannon (front external fixed, TL 7 stabilisation) Ammunition: 30 attacks	3.15	205	18,750
—	4 x 70mm Strafing Rocket Pod (7 pack) (ventral external fixed)	0.4	64	16,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Comprehensive Extended Range, Hardened, Compact (9 km +2 DM)	1.5	3	16,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Improved Controls	0	0	7,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.19 dTons	0.58	58	—
Agility	+2 DM	—	—	—
Speed	Cruise: 318 kph Top: 400 kph	—	—	—
Total	—	27.99	6,217	273,750

Attack Helicopter (TL 9)		M³	Mass (kg)	Cost (Cr.)
Hull	29 M³, Airframe configuration, Advanced Composites, Rugged	—	2,701.35	38,063
—	Hull: 10 Structure: 12	—	—	—
Drive System	Rotors	5.8	464	145,000
Power Plant	Turbine–9 Power output: 588 Fuel Consumption: 56 per hour	14	1,120	63,000
Fuel	168 litres (3 hours operation)	0.17	168	—
Armour	Advanced Composites 12	0.29	1,566	1,450
Weapons	30mm Cannon (front external fixed, TL 9 stabilisation) Ammunition: 20 attacks[1]	2.52	2,906	500,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced Hardened, Compact (5 km +3 DM)	2.25	2.5	16,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Improved Controls	0	0	7,250
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.08 dTons	0.72	72	—
Agility	+2 DM	—	—	—
Speed	Cruise: 268 kph Top: 357 kph	—	—	—
Total	—	29	9,265	772,363

[1] The 30mm cannon used on this aircraft has the capabilities of the standard 120mm cannon in the weapons table on page 13.

CARRY-ALL

The carry-all is a huge helicopter with four rotors positioned at the corner of its expansive crew and cargo compartment. Although this aircraft is slow, it is a good way to transport a company of troops safely to its destination. The passenger space can also be used to transport vehicles, which may in turn have passengers inside them.

Carry-All (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	440 M^3, Airframe configuration, Light Alloys	—	31,680	165,000
—	Hull: 121 Structure: 121	—	—	—
Drive System	Rotors	88	7,040	2,200,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 7,260 Fuel Consumption: 55 per hour	165	20,625	396,000
Fuel	660 litres (12 hours operation)	0.66	660	—
Armour	Crystaliron 14	4.4	33,000	44,000
Weapons	2 x VRF Gauss Gun (front internal traversing, TL 10 stabilisation) Ammunition: 55 attacks	13.8	9,525	900,000
—	2 x VRF Gauss Gun (rear internal traversing, TL 10 stabilisation) Ammunition: 35 attacks	13.8	9,525	900,000
Sensors	Advanced (5 km +3 DM)	3	2.5	2,000
Communications	Laser 50 km	2	8	5,000
Crew	6 (pilot, co-pilot, 4 gunners)	—	—	—
Operating Stations	6	7.5	750	—
Passengers	100	100	10,000	—
Cargo	3.115 dTons	41.84	4,304	—
Agility	+1 DM	—	—	—
Speed	Cruise: 241 kph Top: 322 kph	—	—	—
Total	—	440	127,000	4,612,000

DIVE BOMBER

Designed to give close support to ground troops or make precision attacks against fortified positions or naval vessels the dive bomber makes its presence felt in early mechanised warfare.

Dive Bomber (TL 5)		M³	Mass (kg)	Cost (Cr.)
Hull	17 M³, Airframe configuration, Steel	—	1,530	5,100
—	Hull: 4 Structure: 5	—	—	—
Drive System	Propeller	0.85	51	12,750
Power Plant	Internal Combustion–5 Power output: 102 Fuel Consumption: 34 per hour	8.5	680	8,500
34	340 litres (10 hours operation)	0.34	340	—
Armour	Steel 9	0.17	1,020	340
Weapons	Light Machinegun (rear internal traversing) Ammunition: 40 attacks	0.68	17	5,400
—	2 x Medium Bomb (left external fixed)	0.8	900	2,400
—	2 x Medium Bomb (right external fixed)	0.8	900	2,400
—	Heavy Bomb (ventral external fixed) Ammunition: 1 attack	0.8	1,200	4,000
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 50 km (TL 4)	0.25	2.5	750
Crew	2 (pilot, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 250 kph Top: 333 kph	—	—	—
Total	—	16.19	6,892	42,140

LIGHT BOMBER

Light bombers are designed to attack enemy ground troops in a tactical role and tend to have a limited payload. They are phased out in favour of fighter-bombers which excel in the ground attack role.

Light Bomber (TL 4)		M³	Mass (kg)	Cost (Cr.)
Hull	30 M³, Airframe configuration, Iron, Rugged	—	3,415.5	11,813
—	Hull: 7 Structure: 8	—	—	—
Drive System	Propeller	1.5	90	22,500
Power Plant	Internal Combustion–4 Power output: 162.5 Fuel Consumption: 43.3 per hour	13	1,170	10,400
Fuel	390 litres (9 hours operation)	0.39	390	—
Armour	Iron 5	0.3	1,980	450
Weapons	5 x Medium Bomb (ventral internal fixed)	10	2,250	19,200
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 287 kph Top: 383 kph	—	—	—
Total	—	28.94	9,556	65,463

FIGHTER

Fighters are small fast planes designed for air-to-air combat and are a key factor for military forces to gain air superiority. Fighters perform a variety of roles, each with different design requirements; those listed here are the mainstay fighters, but also refer to the fighter-bomber (page 70) and the interceptor (page 71).

Fighter (TL 5)		M^3	Mass (kg)	Cost (Cr.)
Hull	16 M^3, Airframe configuration, Steel	—	1,440	4,800
—	Hull: 4 Structure: 4	—	—	—
Drive System	Propeller	0.8	48	12,000
Power Plant	Internal Combustion–5 Power output: 60 Fuel Consumption: 24 per hour	6	480	6,000
Fuel	144 litres (6 hours operation)	0.14	144	—
Armour	Steel 15	0.32	1,920	640
Weapons	Eight Light Machineguns (front internal fixed) Ammunition: 55 attacks	5.6	156.8	28.800
Communications	Radio 100 km (TL 4)	1	10	1,000
Equipment	Ejector Seat	0.5	10	5,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 234 kph Top: 311 kph	—	—	—
Total	—	15.61	4,334	29,469

Jet Fighter (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	16 M³, Airframe configuration, Steel	—	1,440	4,800
—	Hull: 4 Structure: 4	—	—	—
Drive System	Jet	2.4	240	84,000
Power Plant	Internal Combustion–6 Power output: 49 Fuel Consumption: 10.5 per hour	3.5	262.5	4,200
Fuel	42 litres (4 hours operation)	0.04	42	—
Armour	Steel 15	0.32	1,920	640
Weapons	Light Autocannon (front external fixed, TL 6 stabilisation) Ammunition: 30 attacks	3.15	105	11,250
—	Light Autocannon (right external fixed, TL 6 stabilisation) Ammunition: 30 attacks	3.15	105	11,250
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Communications	Radio 100 km (TL 4)	1	10	1,000
Equipment	Ejector Seat	0.5	10	5,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 539- kph Top 719 kph	—	—	—
Total	—	15.56	4,260	122,740

Jet Fighter (TL 8)		M³	Mass (kg)	Cost (Cr.)
Hull	40 M³, Super Airframe configuration, Advanced Composites, Sealed	—	2,520	75,000
—	Hull: 13 Structure: 13	—	—	—
Drive System	Jet	6	600	210,000
Power Plant	Turbine–8 Power output: 546 Fuel Consumption: 63 per hour	14	1,260	59,500
Fuel	189 litres (3 hours operation)	0.19	189	—
Armour	Advanced Composites 20	0.8	4,320	4,000
Weapons	Twin Heavy Autocannon (front internal fixed, TL 8 stabilisation) Ammunition: 25 attacks	10.4	1,080	285,000
—	8x Medium Missile (ventral external fixed)	0.8	192	16,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
	Flare Launcher (6 uses)	0.25	0	400
Sensors	Comprehensive Long Range, Hardened, Compact (30 km +2 DM)	2.25	4	40,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Environmental	Life Support, Basic	0.4	80	20,000
Equipment	Ejector Seat	1	20	10,000
—	Improved Controls	0	0	10,000
Crew	2	—	—	—
Operating Stations	2	2.5	250	—
Agility	+2 DM	—	—	—
Speed	Cruise: 2,681 kph Top: 3,574 kph	—	—	—
Total	—	39.34	10,502	731,500

Jet Fighter (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	60 M^3, Super Airframe configuration, Crystaliron, Sealed	—	5,250	225,000
—	Hull: 23 Structure: 23	—	—	—
Drive System	Jet	9	900	315,000
Power Plant	Turbine–10 Power output: 1,260 Fuel Consumption: 112 per hour	28	2,240	140,000
Fuel	336 litres (3 hours operation)	0.34	336	—
Armour	Crystaliron 30	1.2	6,480	6,000
Weapons	VRF Gauss Gun (front internal fixed, TL 10 stabilisation) Ammunition: 85 attacks	8.2	6,150	300,000
—	8 x Light Tac Missile (Anti-Air) (ventral external fixed)	0.4	112	16,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
	Flare Launcher (6 uses)	0.25	0	400
Sensors	Comprehensive Extended Range, Hardened, Compact (9 km +2 DM)	1.5	3	16,000
Communications	Laser 50 km	2	8	5,000
Environmental	Life Support, Basic	0.6	120	30,000
Equipment	Ejector Cocoon	1.5	130	100,000
—	Excellent Controls	0.6	52.5	60,000
Crew	2	—	—	—
Operating Stations	2	2.50	250	—
Agility	+2 DM	—	—	—
Speed	Cruise: 2,949 kph Top: 3,932 kph	—	—	—
Total	—	56.34	22,032	1,214,000

FIGHTER-BOMBER

This type of fighter is designed for both air-to-air and air-to-ground attacks. Modern versions are often called strike fighters and use air-to-ground missiles instead of bombs. Fighter-bombers remove the need for fighter escorts and are primarily used for short range missions such as air strikes.

Fighter-Bomber (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	36 M³, Airframe configuration, Advanced Composites, Rugged	—	3,353	47,250
—	Hull: 13 Structure: 14	—	—	—
Drive System	Jet	5.4	540	189,000
Power Plant	Turbine–7 Power output: 396 Fuel Consumption: 49.5 per hour	11	990	44,000
Fuel	198 litres (4 hours operation)	0.19	198	—
Armour	Advanced Composites 9	0.36	1,944	1,800
Weapons	Twin Light Autocannon (ventral internal fixed, TL 7 stabilisation) Ammunition: 45 attacks	7.95	265	18,750
—	2 x Medium Missile (left external fixed)	0.2	48	4,000
—	2 x Medium Missile (right external fixed)	0.2	48	4,000
—	6 x Heavy Bomb (ventral external fixed)	4.8	7,200	24,000
Sensors	Comprehensive Extended Range, Hardened, Compact (9 km +2 DM)	1.5	3	16,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	2 x Ejector Seat	1	20	10,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 1,249 kph Top: 1,665 kph	—	—	—
Total	—	35.16	14,864	359,800

INTERCEPTOR

Interceptors are lightly armoured short range aircraft that are designed to seek and destroy enemy aircraft, particularly bombers.

Interceptor (TL 6)		M^3	Mass (kg)	Cost (Cr.)
Hull	35 M^3, Airframe configuration, Light Alloys	—	2,520	13,125
—	Hull: 9 Structure: 10	—	—	—
Drive System	Jet	5.25	525	183,750
Power Plant	Turbine–6 Power output: 330 Fuel Consumption: 50 per hour	10	1,080	42,000
Fuel	200 litres (4 hours operation)	0.20	200	—
Armour	Light Alloys 8	0.35	1,680	875
Weapons	Twin Light Autocannon (front internal fixed, TL 6 stabilisation) Ammunition: 75 attacks	12	400	22,500
—	8 x Light Tac Missile (Anti-Air) (ventral external fixed)	0.4	112	19,200
Sensors	Basic Long Range, Hardened (10 km +1 DM)	2.25	4	10,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Equipment	2 x Ejector Seat	1	20	10,000
Crew	2	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 2,274 kph Top: 3,033 kph	—	—	—
Total	—	34.95	6,801	302,450

Interceptor (TL 9)		M^3	Mass (kg)	Cost (Cr.)
Hull	40 M^3, Super Airframe configuration, Advanced Composites, Sealed	—	2,520	45,000
—	Hull: 14 Structure: 14	—	—	—
Drive System	Jet	6	600	210,000
Power Plant	Turbine–9 Power output: 588 Fuel Consumption: 56 per hour	14	1,120	63,000
Fuel	168 litres (3 hours operation)	0.17	168	—
Armour	Advanced Composites 20	0.8	4,320	4,000
Weapons	Heavy Autocannon (front internal fixed, TL 9 stabilisation) Ammunition: 75 attacks	9.38	1,688	142,500
—	4 x Light Tac Missile (Anti-Air) (ventral external fixed)	0.2	56	12,000
Sensors	Advanced Extended Range, Hardened, Compact (15 km +3 DM)	4.5	3.75	32,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Ejector Cocoon	1.5	130	100,000
Crew	2 (pilot, navigator)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 2,792 kph Top: 3,722 kph	—	—	—
Total	—	39.55	10,861	609,500

JET HELICOPTER

These helicopters work just like a traditional helicopter with the addition of jet propulsion used to provide bursts of speed over short distances. Using the jet doubles fuel consumption but significantly increases the helicopter's speed. Jet helicopters are primarily designed for fast assault missions, often used in place of interceptors where jet planes are not practical.

Jet Helicopter (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	30 M^3, Super Airframe configuration, Advanced Composites	—	1,890	37,500
—	Hull: 9 Structure: 10	—	—	—
Drive System	Rotors	6	480	150,000
—	Jet	4.5	450	157,500
Power Plant	Turbine–8 Power output: 208 Fuel Consumption: 72 per hour	8	720	34,000
Fuel	216 litres (3 hours operation)	0.22	216	—
Armour	4	0	0	0
Weapons	Twin Light Autocannon (front external fixed, TL 8 stabilisation) Ammunition: 15 attacks	1.32	212	18,750
—	6 x Medium Missile (ventral external fixed)	0.6	144	12,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Comprehensive Very Long Range, Hardened, Compact (150 km +2 DM)	4.5	8	160,000
Communications	Laser 50 km	2	8	5,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+1 DM	—	—	—
Speed (normal)	Cruise: 220 kph Top: 294 kph	—	—	—
Speed (jet burst)	Cruise: 400 kph Top: 400 kph	—	—	—
Total	—	29.89	4,378	575,350

SCOUT HELICOPTER

The scout helicopter is lightly armed for fast reconnaissance missions. For situations where heavy ground resistance is expected, scout helicopters are often escorted by attack helicopters (see page 64).

Scout Helicopter (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	24 M³, Super Airframe configuration, Advanced Composites, Lightweight	—	1,209.6	45,000
—	Hull: 6 Structure: 6	—	—	—
Drive System	Rotors	4.8	384	120,000
Power Plant	Turbine–7 Power output: 192 Fuel Consumption: 72 per hour	8	720	32,000
Fuel	360 litres (5 hours operation)	0.36	360	—
Armour	4	0	0	0
Weapons	Light Autocannon (front external fixed, TL 7 stabilisation) Ammunition: 25 attacks	1.88	113	9,375
Sensors	Comprehensive Long Range, Hardened (30 km +2 DM)	4.5	8	20,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Crew	3 (pilot, co-pilot, sensor operator)	—	—	—
Operating Stations	3	3.75	375	—
Cargo	0.068 dTons	0.21	21	—
Agility	+1 DM	—	—	—
Speed	Cruise: 279 kph Top: 372 kph	—	—	—
Total	—	24	3,196	227,375

SPY PLANE

Spy planes are extremely fast aircraft used for surveillance in enemy territory. These aircraft employ stealth technology and use advanced sensors for reconnaissance.

Spy Plane (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	65 M^3, Super Airframe configuration, Advanced Composites, Sealed, Stealth Coating	—	4,095	152,344
—	Hull: 20 Structure: 22	—	—	—
Drive System	Jet	9.75	975	341,250
Power Plant	Turbine–8 Power output: 663 Fuel Consumption: 76.5 per hour	17	1,530	72,750
Fuel	1,836 litres (24 hours operation)	1.84	1,836	—
Armour	4	0	0	0
Sensors	Comprehensive Extreme Range, Hardened (300 km +2 DM)	18	24	400,000
Communications	Laser 100 km	5	10	12,000
Environmental	Life Support, Improved	1.3	325	162,500
Equipment	Ejector Cocoon	1.5	130	100,000
—	Excellent Controls	0.65	41	65,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+3 DM	—	—	—
Speed	Cruise: 3,709 kph Top: 4,946 kph	—	—	—
Total	—	57.54	9,216	1,305,844

STEALTH BOMBER

These planes are strategic bombers that employ stealth technology to avoid detection by enemy forces. The stealth bomber is primarily designed to destroy anti-aircraft emplacements where conventional bombers would have less success.

Stealth Bomber (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	50 M^3, Super Airframe configuration, Advanced Composites, Stealth Coating	—	3,150	78,125
—	Hull: 15 Structure: 17	—	—	—
Drive System	Jet	7.5	750	262,500
Power Plant	Turbine–8 Power output: 390 Fuel Consumption: 45 per hour	10	900	42,500
Fuel	360 litres (8 hours operation)	0.36	360	—
Armour	Advanced Composites 12	0.50	2,700	2,500
Weapons	4 x Medium Missile (ventral internal fixed)	2	96	9,600
	5 x Heavy Bomb (ventral internal fixed)	20	6,000	24,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
	Flare Launcher (6 uses)	0.25	0	400
Sensors	Comprehensive Extended Range, Hardened (9 km +2 DM)	3	6	8,000
Communications	Laser 50 km	2	8	5,000
Equipment	Ejector Seat	1	20	10,000
Crew	2 (pilot. co-pilot)	—	—	—
Operating Stations	2	2.50	250	—
Agility	+1 DM	—	—	—
Speed	Cruise: 1,412 kph Top: 1,883 kph	—	—	—
Total	—	49.36	14,240	443,225

STRATEGIC BOMBER

Strategic bombers are large planes with turret weapons to defend against enemy fighters. They are slower than most conventional aircraft but delivers an impressive bomb payload.

Strategic Bomber (TL 5)		M³	Mass (kg)	Cost (Cr.)
Hull	46 M³, Airframe configuration, Steel	—	4,140	13,800
—	Hull: 11 Structure: 12	—	—	—
Drive System	Propeller	2.3	138	34,500
Power Plant	Internal Combustion–5 Power output: 217.5 Fuel Consumption: 38.7 per hour	14.5	1,160	14,500
Fuel	387 litres (10 hours operation)	0.39	387	—
Armour	Steel 9	0.46	2,760	920
Weapons	Light Machinegun (front internal traversing) Ammunition: 30 attacks	0.68	13	5,400
—	Light Machinegun (rear internal traversing) Ammunition: 30 attacks	0.68	13	5,400
—	Light Machinegun (dorsal internal traversing) Ammunition: 30 attacks	0.68	13	5,400
—	Light Machinegun (ventral internal traversing) Ammunition: 30 attacks	0.68	13	5,400
—	4 x Medium Bomb (ventral internal fixed)	8	1,800	5,760
—	2 x Heavy Bomb (ventral internal fixed)	8	2,400	9,600
Sensors	Basic Long Range Compact (10 km +1 DM)	0.75	1	5,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	6 (pilot, co-pilot/bomber, 4 gunners)	—	—	—
Operating Stations	6	7.5	750	—
Agility	+1 DM	—	—	—
Speed	Cruise: 270 kph Top: 360 kph	—	—	—
Total	—	45.62	13,598	106,680

Strategic Bomber (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	150 M^3, Airframe configuration, Advanced Composites, Sealed	—	12,150	168,750
—	Hull: 46 Structure: 48	—	—	—
Drive System	Jet	22.5	2,250	787,500
Power Plant	Turbine–8 Power output: 975 Fuel Consumption: 112.5 per hour	25	2,250	106,250
Fuel	2,138 litres (19 hours operation)	2.14	2,138	—
Armour	4	0	0	0
Weapons	Light Autocannon (front external traversing, TL 8 stabilisation) Ammunition: 25 attacks	1.44	108	14,063
—	Light Autocannon (rear external traversing, TL 8 stabilisation) Ammunition: 25 attacks	1.44	108	14,063
—	Light Autocannon (dorsal external traversing, TL 8 stabilisation) Ammunition: 25 attacks	1.44	108	14,063
—	Light Autocannon (ventral external traversing, TL 8 stabilisation) Ammunition: 25 attacks	1.44	108	14,063
—	20 x Heavy Bomb (ventral internal fixed)	80	24,000	96,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
	Flare Launcher (6 uses)	0.25	0	400
Sensors	Comprehensive Long Range, Compact (30 km +2 DM)	1.5	2	10,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Ejector Seats	3	60	30,000
Environmental	Basic	1.5	300	75,000
Crew	6 (pilot, co-pilot, 4 gunners)	—	—	—
Operating Stations	6	7.5	750	—
Agility	+1 DM	—	—	—
Speed	Cruise: 965 kph Top: 1,287 kph	—	—	—
Total	—	149.9	47,337	1,331,752

TRANSPORT HELICOPTER

The transport helicopter is designed for troop deployment and to give covering fire. The sides can be opened, allowing troops to quickly disembark and lay down covering fire using small arms or pintle mounted weapons.

Transport Helicopter (TL 5)		M³	Mass (kg)	Cost (Cr.)
Hull	36 M³, Airframe configuration, Steel	—	3,240	10,800
—	Hull: 9 Structure: 9	—	—	—
Drive System	Rotors	7.2	576	180,000
Power Plant	Turbine–5 Power output: 360 Fuel Consumption: 60 per hour	12	1,200	36,000
Fuel	540 litres (9 hours operation)	0.54	540	—
Armour	Steel 9	0.36	2,160	900
Weapons	Light Machinegun (left unpowered traversing) Ammunition: 10 attacks	0	8.75	3,000
—	Light Machinegun (right unpowered traversing) Ammunition: 10 attacks	0	8.75	3,000
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 50 km (TL 4)	0.25	2.5	750
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	12	12	1,200	—
Cargo	0.048 dTons	0.65	65	—
Agility	+1 DM	—	—	—
Speed	Cruise: 164 kph Top: 219 kph	—	—	—
Total	—	36	9,252	234,950

TRANSPORT PLANE

Transport planes are lightly armoured and serve a number of roles in the military. These large planes can carry supplies, troops and vehicles, and can also be used as drop planes to deploy troops into the battle zone. Heavy cargo and vehicles are loaded via a large ramp at the rear of the plane.

Transport Plane (TL 4)		M³	Mass (kg)	Cost (Cr.)
Hull	100 M³, Airframe configuration, Iron, Rugged	—	11,385	39,375
—	Hull: 22 Structure: 24	—	—	—
Drive System	Propeller	5	300	75,000
Power Plant	Internal Combustion–4 Power output: 187.5 Fuel Consumption: 50 per hour	15	1,350	12,000
Fuel	1,200 litres (24 hours operation)	1.20	1,200	—
Armour	2	—	—	—
Communications	Radio 50 km (TL 4)	0.25	2.5	750
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	20	20	2,000	—
Cargo	4.078 dTons	56.05	5,605	—
Agility	+1 DM	—	—	—
Speed	Cruise: 143 kph Top: 191 kph	—	—	—
Total	—	100	22,093	127,125

Transport Plane (TL 7)		M^3	Mass (kg)	Cost (Cr.)
Hull	500 M^3, Airframe configuration, Advanced Composites, Rugged	—	46,575	656,250
—	Hull: 172 Structure: 188	—	—	—
Drive System	Jet	75	7,500	2,625,000
Power Plant	Turbine–7 Power output: 1,872 Fuel Consumption: 234 per hour	52	4,680	208,000
Fuel	4,680 litres (20 hours operation)	4.68	4,680	—
Armour	4	—	—	—
Sensors	Comprehensive (3 km +2 DM)	1	2	1,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Passengers	40	40	4,000	—
Cargo	24.02 dTons	324.32	32,432	—
Agility	+1 DM	—	—	—
Speed	Cruise: 876 kph Top: 1,169 kph	—	—	—
Total	—	160	100,124	3,491,250

VTOL FIGHTER

Vertical Take Off and Landing is essential in situations where runways are not available. Although this role is often filled by helicopters, there are situations when a fighter is needed. VTOL fighters are primarily used on carriers serving as mobile staging points to attack enemy territory.

VTOL Fighter (TL 7)		M^3	Mass (kg)	Cost (Cr.)
Hull	70 M^3, Super Airframe configuration, Advanced Composites, Rugged	—	5071.5	153,125
—	Hull: 24 Structure: 27	—	—	—
Drive System	Jet	10.5	1,050	367,500
Power Plant	Turbine–7 Power output: 576 Fuel Consumption: 72 per hour	16	1,440	64,000
Fuel	288 litres (4 hours operation)	0.29	288	—
Armour	Advanced Composites 20	1.40	7,560	7,000
Weapons	Twin Light Autocannon (front internal fixed, TL 7 stabilisation) Ammunition: 55 attacks each	9.15	305	22,500
—	2 x Medium Missile (left external fixed)	0.2	48	4,000
—	2 x Medium Missile (right external fixed)	0.2	48	4,000
—	6 x Heavy Bomb (ventral internal)	24	7,200	28,800
Sensors	Comprehensive, Hardened (3 km +2 DM)	1.5	4	4,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	2 x Ejector Seat	1	20	10,000
—	Precision Drive	2.63	262.5	735,000
Crew	2 (pilot, co-pilot)	—	—	—
Operating Stations	2	2.5	250	—
Agility	+3 DM	—	—	—
Speed	Cruise: 1,261 kph Top: 1,681 kph	—	—	—
Total	—	69.87	23,552	1,400,925

ZEPPELIN

Zeppelins (sometimes referred to as dirigibles) employ a large reinforced balloon to provide lift and a number of vectored propellers to power and turn the vehicle. The lift provided by the gasbag doubles the effectiveness of the propellers. The zeppelin is most often used by military forces in low technology cultures. These military aircraft are armed with light turret weapons and bombs, serving a similar role to strategic bombers (see page 76).

Zeppelin (TL 5)		M³	Mass (kg)	Cost (Cr.)
Hull	44 M³, Airframe configuration, Steel	—	3,960	13,200
—	Hull: 11 Structure: 11	—	—	—
Drive System	Propeller	2.2	132	33,000
—	Gasbag	4.4	110	440
Power Plant	Internal Combustion–5 Power 24 Fuel Consumption: 8 per hour	2	160	2,000
Fuel	320 litres (40 hours operation)	0.32	320	—
Armour	Steel 3	0	—	—
Weapons	Light Machinegun (left external traversing) Ammunition: 35 attacks	0.33	16	4,500
—	Light Machinegun (right external traversing) Ammunition: 35 attacks	0.33	16	4,500
—	7 x Medium Bomb (ventral internal fixed)	14	3,150	10 080
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Communications	Radio 100 km (TL 4)	1	10	1,000
Equipment	Precision Drive	0.55	33	66,000
Crew	16 (pilot, co-pilot, 2 gunners, commander, communications, 8 repair crew (gasbag), 2 support)	—	—	—
Operating Stations	4 + 12 workstations	18.2	1,820	—
Cargo	0.479 dTons	0.30	24	—
Agility	+3 DM	—	—	—
Speed	Cruise: 42 kph Top: 55 kph	—	—	—
Total	—	43	9,758	124,740

Watercraft

Battle Sub

These submersibles are deployed from larger vessels or underwater facilities for short range attacks on submarines and underwater structures. The battle sub fulfils a similar role to fighter aircraft, capable of fast attacks and providing support to larger vessels.

Battle Sub (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	22 M^3, Streamlined configuration, Light Alloys, Sealed	—	1,760	10,725
—	Hull: 6 Structure: 7	—	—	—
Drive System	Submersible	2.2	330	11,000
Power Plant	Nuclear Fusion–8 Power output: 220 Fuel Consumption: 10 per hour	10	2,000	100,000
Fuel	70 litres (7 hours operation)	0.07	70	—
Armour	Advanced Composites 10	0.22	1,188	1,100
Weapons	2 x Smart Torpedo (front external fixed, TL 8 stabilisation) Ammunition: 4 attacks each	4.44	1,776	7,000
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Comprehensive (3 km +2 DM)	1	2	1,000
Communications	Radio 10 km (TL 7)	0	0.25	250
Environmental	Life Support, Basic	0.22	44	11,000
Equipment	Improved Controls	0	0	5,500
Crew	2 (pilot, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.029 dTons	1.1	110	—
Agility	–1 DM	—	—	—
Speed	Cruise: 29 kph Top: 39 kph	—	—	—
Total	—	22	7,530	148,175

BATTLEFOIL

These armed hydrofoils are used for fast assaults and interception missions. Foils are mounted under the hull, designed to lift the vessel at high speeds. Once this lift has been achieved, the reduced drag greatly increases the top speed but reduces the manoeuvrability.

Battlefoil (TL 7)		M^3	Mass (kg)	Cost (Cr.)
Hull	2,000 M3, Super Streamlined configuration, Advanced Composites, Waterproof	—	180,000	2,400,000
—	Hull: 625 Structure: 625	—	—	—
Drive System	Water-Driven	200	30,000	1,000,000
Power Plant	Internal Combustion-7 Power output: 19,200 Fuel Consumption: 1,000 per hour	800	60,000	1,080,000
Fuel	120,000 litres (5 days operation)	120	120,000	—
Armour	Advanced Composites 12	20	108,000	100,000
Weapons	Twin Light Autocannon (dorsal internal traversing, TL 7 stabilisation) Ammunition: 350 attacks	46.43	1,516.25	33,750
—	2 x Medium Missile (dorsal internal traversing) Ammunition: 6 attacks	6	276	3,600
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Comprehensive, Very Long Range (150 km +2 DM)	6	8	20,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Excellent Controls	20	1,800	2,000,000
—	Hydrofoils	0	1,800	2,000,000
Crew	55 (5 officers, 4 helmsmen, 16 gunners, 20 engineers, 4 sensors, 2 communications, 4 support)	—	—	—
Operating Stations	25 plus workstations	65.75	6,575	—
Sleeping Areas	14 standard (55 occupants)	152	4,560	76,000
Utility Areas	Mess, Briefing Room, Medical Room	119	8,925	148,750
Cargo	32.89 dTons	444	44,400	—
Agility	+1 DM	—	—	—
Speed	Cruise: 77 kph Top: 103 kph	—	—	—
Total	—	1999.9	567,865	8,863,700

COASTAL SUBMARINE

A small submarine designed to defend home coastal waters, its small size allowing it to operate in shallow waters.

Coastal Submarine (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	1,000 M^3, Super Streamlined configuration, Crystaliron, Sealed	—	125,000	3,000,000
—	Hull: 375 Structure: 375	—	—	—
Drive System	Submersible	100	15,000	500,000
Power Plant	Nuclear Fusion–9 Power output: 13,035 Fuel Consumption: 263 per hour	395	79,000	4,937,500
Fuel	2,104 litres (8 hours operation)	2.10	2,104	—
Armour	Crystaliron 18	10	75,000	100,000
Weapons	4 x Smart Torpedo (front internal fixed) Ammunition: 4 attacks each	37	2,960	16,800
—	2 x Light Tac Missile (Anti-Air) (dorsal internal fixed) Ammunition: 4 attacks each	1.85	103.6	7,200
—	2 x Light Tac Missile (Anti-Armour) (dorsal internal fixed) Ammunition: 4 attacks each	1.85	118.4	9,600
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced (5 km +3 DM)	3	2.5	2,000
Communications	Laser 100 km	5	10	12,000
Equipment	Fuel Processors	1	100	10,000
Environmental	Life Support, Advanced	30	10,500	7,500,000
Crew	50 (4 officers, 4 helmsmen, 2 communications, 2 sensors, 24 gunners, 10 engineers, 4 support)	—	—	—
Operating Stations	30 plus 20 workstations	59.5	5,950	—
Sleeping Areas	5 standard (5 occupants)	25	750	12,500
	5 simple (45 occupants)	55	1,100	13,750
Utility Areas	Officers mess, galley, medical bay, workshop (65 occupants)	142	10,650	177,500
Cargo	9.73 dTons	131.42	13,142	—
Agility	–2 DM	—	—	—
Speed	Cruise: 44 kph Top: 58 kph	—	—	—
Total	—	1,000	341,491	16,302,450

COMBAT SUBMARINE

Combat submarines have a variety of uses including attacking enemy vessels, escort duties and blockade running. Later submarines (usually nuclear powered) are also capable of launching missiles at land based targets.

Combat Submarine (TL 6)		M^3	Mass (kg)	Cost (Cr.)
Hull	1,200 M^3, Super Streamlined configuration, Light Alloys, Sealed	—	96,000	900,000
—	Hull: 330 Structure: 330	—	—	—
Drive System	Submersible	120	18,000	600,000
Power Plant	Internal Combustion–6 Power output: 10,500 Fuel Consumption: 375 per hour	500	37,500	600,000
Fuel	252,000 litres (4 weeks operation)	252	252,000	—
Armour	Light Alloys 8	12	57,600	30,000
Weapons	4 x Heavy Torpedo (front internal fixed) Ammunition: 2 attacks each	30.4	11,400	13,200
	2 x Heavy Torpedo (rear internal fixed) Ammunition: 2 attacks each	15.2	5,700	6,600
—	60mm Anti-tank Gun (dorsal external traversing, TL 6 stabilisation) 60 shots	6.17	3,128.4	105,000
Sensors	Basic Long Range (10 km +1 DM)	1.5	2	2,500
Communications	Radio 100 km (TL 4)	1	10	1,000
Equipment	Fuel Efficient Engine	—	—	1,200,000
Crew	60 (5 officers, 4 helmsmen, 14 engineers, 28 gunners, 2 communications, 2 sensors, 5 support)	—	—	—
Operating Stations	25 plus work stations	71.5	7,150	—
Sleeping Areas	5 standard (5 occupants)	25	750	12,500
—	5 simple (55 occupants)	65	1,300	16,250
Cargo	7.424 dTons	100.23	10,023	—
Agility	–2 DM	—	—	—
Speed	Cruise: 24 kph Top: 32 kph	—	—	—
Total	—	1,200	500,563	3,487,050

CORVETTE

The smallest ocean going surface warship in many navies the corvette is outclassed by larger ships but still fulfils a valuable role as an escort to larger vessels or mercantile ships.

Corvette (TL 6)		M^3	Mass (kg)	Cost (Cr.)
Hull	3,800 M^3, Super Streamlined configuration, Steel, Waterproof	—	380,000	1,824,000
—	Hull: 950 Structure: 950	—	—	—
Drive System	Water-Driven	380	57,000	1,900,000
Power Plant	Turbine–6 Power output: 30,800 Fuel Consumption: 2,333 per hour	700	63,000	2,450,000
Fuel	1,175,832 litres (3 weeks operation)	1,175.83	1,175,832	—
Armour	Steel 9	38	228,000	76,000
Weapons	2 x Twin Heavy Autocannon (dorsal internal traversing, TL 6 stabilisation) Ammunition: 110 attacks each	63.5	9,382.5	855,000
—	6 x Heavy Torpedo (dorsal internal fixed) Ammunition: 2 attacks each	45.6	16,800	16,500
Sensors	Basic Extended Range (3 km +1 DM)	1	1.5	1,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	93 (4 helmsmen, 22 engineers, 48 gunners, 2 communications, 2 sensor operators, 7 support, 8 officers)	—	—	—
Operating Stations	60 plus work stations	112.95	11,295	—
Sleeping Areas	35 standard (93 occupants)	291	8,730	145,500
Utility Areas	Officers lounge, officers mess, galley, medical bay, workshop, laundry (60 total occupants)	128	9,590	160,000
Cargo	63.93 dTons	863	86,300	—
Agility	–2 DM	—	—	—
Speed	Cruise: 29 kph Top: 38 kph	—	—	—
Total	—	3,799.88	2,045,941	7,429,000

Corvette (TL 9)		M^3	Mass (kg)	Cost (Cr.)
Hull	3,700 M^3, Standard Configuration, Advanced Composites, Waterproof	—	333,000	2,220,000
—	Hull: 1,157 Structure: 1,157	—	—	—
Drive System	Water-Driven	370	55,500	1,850,000
Power Plant	Nuclear Fusion–9 Power output: 31,350 Fuel Consumption: 633.33 per hour	950	190,000	11,875,000
Fuel	11,400 litres (18 hours operation)	11.4	11,400	—
Armour	Advanced Composites 12	37	199,800	185,000
Weapons	2 x 35mm Rail Gun (dorsal internal traversing, TL 9 stabilisation) Ammunition: 350 attacks each	214.55	157,893.75	4,500,000
—	2 x Light Tac Missile (Anti-Air) (dorsal internal traversing) Ammunition: 6 attacks each	3	161	10,800
—	6 x Smart Torpedo (dorsal internal fixed) Ammunition: 3 attacks each	42	3,360	20,160
Sensors	Advanced Extreme Range, Hardened (15 km +3 DM)	54	15	800,000
Communications	Laser 100 km	5	10	12,000
Hangar	Grav copter (see page xx)	140	19,239	918,563
Equipment	Fuel Processor	1	100	10,000
Crew	121 (10 officers, 4 helmsmen, 28 engineers, 40 gunners, 2 communication 22 sensor operators, 9 support, 2 grav copter crew, 4 grav copter support)	—	—	—
Operating Stations	65 plus workstations	143.35	14,335	—
Sleeping Areas	35 standard (121 occupants)	347	10,410	173,500
Utility Areas	Officers lounge, mess, galley, medical bay, 2 workshop, laundry	263	19,725	328,750
Cargo	82.87 dTons	1,118.7	111,870	—
Agility	–2 DM	—	—	—
Speed	Cruise: 42 kph Top: 56 kph	—	—	—
Total	—	3,700	1,126,819	22,903,773

FRIGATE

Frigates are the workhorses of many fleets performing many details in a modern task force. Although smaller than many major fleet assets they are formidable fighting machines in their own right.

Frigate (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	7,000 M³, Super Streamlined configuration, Light Alloys, Waterproof	—	560,000	3.640,000
—	Hull: 1,925 Structure: 1,925	—	—	—
Drive System	Water-Driven	700	105,000	3,500,000
Power Plant	Turbine–7 Power output: 90,000 Fuel Consumption: 2,700 per hour	1,500	135,000	6,000,000
Fuel	1,360,800 litres (3 weeks operation)	1,360.8	1,360,800	—
Armour	Advanced Composites 26	210	1,134,000	1,050,000
Weapons	2 x Twin 75mm Cannon (dorsal internal traversing, TL 7 stabilisation) Ammunition: 400 attacks each	279.6	77,231.2	960.000
—	2 x Twin Heavy Autocannon (dorsal internal traversing, TL 7 stabilisation) Ammunition: 300 attacks each	134.75	23,692.5	3,591,000
—	4 x Medium Missile (dorsal internal traversing) Ammunition: 6 attacks each	12	552	14,400
—	8 x Heavy Torpedo (dorsal internal fixed) Ammunition: 2 attacks each	60.8	22,800	21,120
Sensors	Comprehensive Long Range, Hardened (30 km +2 DM)	4.5	8	20,000
Communications	Radio 1,000 km (TL 7)	2	15	5,000
Hangar	2 attack helicopters (see page xx)	280	41,493	805,500
Crew	166 (15 officers, 4 helmsmen, 44 engineers, 2 communications, 2 sensors, 72 gunners, 13 support, 6 helicopter crew, 8 helicopter support)	—	—	—
Operating Stations	100 plus workstations	194	19,400	—
Sleeping Areas	70 standard (166 occupants)	542	16,260	271,000
Utility Areas	Officers lounge, officers mess, galley, medical bay, 2 workshops, laundry	353	26,475	441,250
Cargo	101.23 dTons	1366.55	136,655	—
Agility	–2 DM	—	—	—
Speed	Cruise: 45 kph Top: 60 kph	—	—	—
Total	—	7,000	3,659,382	15,720,230

Frigate (TL 10)		M³	Mass (kg)	Cost (Cr.)
Hull	6,500 M³, Super Streamlined configuration, Light Alloys, Waterproof	—	520,000	3,900,000
—	Hull: 1,788 Structure: 1,788	—	—	—
Drive System	Water-Driven	650	97,500	3,250,000
Power Plant	Nuclear Fusion–9 Power output: 79,200 Fuel Consumption: 900 per hour	1,800	270,000	22,500,000
Fuel	21,600 litres (24 hours operation)	21.6	21,600	—
Armour	Crystaliron 38	195	1,053,000	1,950,000
Weapons	2 x Twin VRF Gauss Gun (dorsal internal traversing, TL 10 stabilisation) Ammunition: 300 attacks each	106	77,850	3,600,000
—	2 x Twin 35mm Rail Gun (dorsal internal traversing, TL 10 stabilisation) Ammunition: 300 attacks each	371	272,475	1,800,000
—	2 x Light Tac Missile (Anti-Air) (dorsal internal traversing) Ammunition: 6 attacks each	3.08	164.5	13,500
—	2 x Light Tac Missile (Anti-Armour) (dorsal internal traversing) Ammunition: 6 attacks each	3.08	188	18,000
Sensors	Advanced Long Range, Hardened (50 km +3 DM)	13.5	10	40,000
Communications	Laser 1,000 km	15	20	25,000
Equipment	Fuel Processor	1.5	150	15,000
Hangar	2 Grav Copters (see page xx)	280	38,478	1,837,126
Crew	161 (14 officers, 4 helmsmen, 60 gunners (+1 DM), 50 engineers (+2 DM), 6 sensors, 2 communications, 13 support, 4 small craft crew, 8 small craft engineers and support)	—	—	—
Operating Stations	160 plus 140 workstations	354	35,400	—
Sleeping Areas	87 standard (161 occupants)	583	17,490	291,500
Utility Areas	Officers lounge, officers mess, galley, medical bay, 2 workshops, laundry	341	25,575	426,250
Cargo	129.63 dTons	1,750	175,000	—
Agility	–2 DM	—	—	—
Speed	Cruise: 55 kph Top: 74 kph	—	—	—
Total	—	6,487.76	2,604,901	39,666,376

GALLEON

The galleon is one of the earliest warships. These large vessels are multi-decked sailing ships with three to five masts. Cannons are situated down each side so the ship must manoeuvre to a broadside position to gain an optimal firing position.

Galleon (TL 3)		M^3	Mass (kg)	Cost (Cr.)
Hull	1,600 M^3, Super Streamlined configuration, Wood/ Organic Materials, Waterproof	—	136,000	384,000
—	Hull: 200 Structure: 200	—	—	—
Drive System	Water-Based	32	800	3,200
Power Plant	Wind Power–1 Power output: 3,500 Fuel Consumption: N/A	700	14,000	35,000
Armour	Wood/Organic Materials 3	16	81,600	16,000
Weapons	12 x 9lb Cannon (left internal fixed) Ammunition: 100 attacks each	110.4	6,237.6	37,440
—	12 x 9lb Cannon (right internal fixed) Ammunition: 100 attacks each	110.4	6,237.6	37,440
Crew	210 (32 sailors, 96 gunners, 4 helmsmen, 13 support, 14 officers, 51 marines)	—	—	—
Operating Stations	10 plus 200 work stations	232.5	23,250	—
Sleeping Areas	5 standard (5 occupants)	25	750	12,500
—	15 simple (205 occupants)	125	2,500	31,250
Utility Areas	Officers mess, galley (50 occupants)	106	7,950	132,500
Cargo	9.644 dTons	130.2	13,020	—
Agility	–2 DM	—	—	—
Speed	Cruise: 18 kph Top: 24 kph	—	—	—
Total	—	1,587.5	292,345	689,330

HOSPITAL SHIP

This short ranged ship is designed primarily to ferry troops from a hostile shore to larger and better equipped vessels nearby.

Hospital Ship (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	4,200 M³, Streamlined configuration, Steel, Waterproof	—	420,000	1,310,400
—	Hull: 1,050 Structure: 1,050	—	—	—
Drive System	Water-Driven	420	63,000	2,100,000
Power Plant	Turbine–6 Power output: 22,000 Fuel Consumption: 1,666.7 per hour	500	45,000	1,750,000
Fuel	360,000 litres (9 days operation)	360	360,000	—
Armour	3	0	0	0
Sensors	Basic Extended Range (3 km +1 DM)	1	1.5	1,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	22 (4 helmsmen, 10 engineers, 2 communications, 2 sensors, 2 support, 2 officers) plus 49 medical staff	—	—	—
Operating Stations	60 plus work stations	87.10	8,710	—
Passengers	100	100	10,000	—
Sleeping Areas	15 standard (71 occupants)	187	5,610	93,500
—	5 standard (100 occupants) (wards)	215	6,450	107,500
Utility Areas	Officers mess, galley, workshop, medical bays	2,200	165,000	2,750,000
Cargo	9.3 dTons	125.55	12,555	—
Agility	–2 DM	—	—	—
Speed	Cruise: 34 kph Top: 45 kph	—	—	—
Total	—	4,196.7	1,096,337	8,113,400

MOTOR TORPEDO BOAT

A fast attack craft designed to strike much larger vessels before using its speed to escape retaliation for its attacks.

Motor Torpedo Boat (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	95 M³, Standard configuration, Light Alloys, Lightweight, Waterproof	—	6,080	42,750
—	Hull: 18 Structure: 19	—	—	—
Drive System	Water-Driven	9.5	1,425	47,500
Power Plant	Internal Combustion–6 Power output: 735 Fuel Consumption: 84 per hour	42	3,150	50,400
Fuel	1,680 litres (20 hours operation)	1.68	1,680	—
Armour	2	0	0	0
Weapons	2 x Heavy Torpedo (front internal fixed) Ammunition: 1 attack each	4	3,000	4,400
—	2 x Light Autocannon (dorsal internal traversing, TL 6 stabilisation) Ammunition: 120 attacks each	19.05	521.25	33,750
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 10 km (TL 4)	0	0.5	250
Crew	12 (commander, helmsman, engineer, communications, sensors, 6 gunners, support)	—	—	—
Operating Stations	12	15	1,500	—
Cargo	0.237 dTons	3.2	320	—
Agility	–2 DM	—	—	—
Speed	Cruise: 63 kph Top: 84 kph	—	—	—
Total	—	94.93	17,678	179,550

RIVER IRONCLAD

These steam powered warships are heavily armoured vessels that sit low in the water. Ironclads are armed with heavy artillery and are capable of attacking ships and close range land targets. They are mostly used for battle close to shore or upon rivers and lakes, their seaworthiness being marginal, at best.

River Ironclad (TL 4)		M^3	Mass (kg)	Cost (Cr.)
Hull	520 M^3, Streamlined configuration, Iron, Rugged, Waterproof	—	65,780	212,940
—	Hull: 115 Structure: 125	—	—	—
Drive System	Water-Driven	52	7,800	260,000
Power Plant	Steam–4 Power output: 2,070 Fuel Consumption: 575 per hour	230	34,500	57,500
Fuel	41,400 litres (3 days operation)	41.4	41,400	—
Armour	Iron 10	10.4	68,600	15,600
Weapons	4 x 9lb Cannon (left internal traversing) Ammunition: 50 attacks each	24.8	1,288.2	18,720
—	4 x 9lb Cannon (right internal traversing) Ammunition: 50 attacks each	24.8	1,288.2	18,720
Sensors	Minimal (0.25 km +0 DM)	0.25	0.5	100
Crew	55 (5 officers, 4 helmsmen, 4 engineers, 6 stokers, 32 gunners, 4 support)	—	—	—
Operating Stations	10 plus work stations	64.25	6,425	—
Sleeping Areas	2 Standard (5 occupants)	16	480	4,000
	1 Simple (30 occupants)	32	640	16,000
Cargo	1.015 dTons	13.7	1,370	—
Agility	–2 DM	—	—	—
Speed	Cruise: 15 kph Top: 20 kph	—	—	—
Total	—	520	230,612	603,580

SUBMERSIBLE CARRIER

This large submarine is well armoured and is designed to carry small short range vessels such as battle subs (see page 81) and submersible fighters (see page 100).

Submersible Carrier (TL 9)		M^3	Mass (kg)	Cost (Cr.)
Hull	5,100 M^3, Streamlined configuration, Advanced Composites, Sealed	—	459,000	4,972,500
—	Hull: 1,594 Structure: 1,594	—	—	—
Drive System	Submersible	510	76,500	2,550,000
Power Plant	Nuclear Fusion–9 Power output: 52,800 Fuel Consumption: 600 per hour	1,200	240,000	15,000,000
Fuel	18,000 litres (30 hours operation)	18	18,000	—
Armour	Advanced Composites 20	102	550,800	510,000
Weapons	2 x Smart Torpedo (front internal fixed) Ammunition: 6 attacks each	27.5	2,200	6,720
Decoys	Chaff Dispenser (6 uses)	0.25	0	600
Sensors	Advanced Long Range (50 km +3 DM)	9	5	10,000
Communications	Laser 100 km	5	10	12,000
Environmental	Life Support, Advanced	153	53,550	38,250,000
Equipment	Fuel Processor	1	100	10,000
Hangar/Dock	Equipped to handle 10 battle subs	1,100	110,000	550,000
Crew	137 (12 officers, 4 helmsmen, 8 gunners, 36 engineers, 4 sensors, 2 comms, 20 small craft crew, 40 small craft support, 11 support)	—	—	—
Operating Stations	80 plus work stations	165.55	16,555	—
Sleeping Areas	36 standard (137 occupants)	382	11,460	191,000
Utility Areas	Officers mess, galley, medical bay, 2 workshops, pilots' ready room	292	21,900	365,000
Cargo	84.05 dTons	1,134.7	113,470	—
Agility	–2 DM	—	—	—
Speed	Cruise: 32 kph Top: 43 kph	—	—	—
Total	—	5,100	1,673,550	62,427,820

TRIREME

The trireme is a warship used by low technology cultures and derives its name from the three banks of oars used to propel the vessel. These ships are fast and agile but unarmed, instead they board other vessels to allow the soldiers and archers carry out the attack.

Trireme (TL 1)		**M^3**	**Mass (kg)**	**Cost (Cr.)**
Hull	300 M^3, Streamlined configuration, Wood/Organic Materials, Lightweight, Waterproof	—	20,400	70,200
—	Hull: 26 Structure: 26	—	—	—
Drive System	Water-Based	6	150	600
Power Plant	Wind Power–1 Power output: 120 Fuel Consumption: N/A	30	600	1,500
—	Manual Power Power output: 75 Fuel Consumption: N/A	(150)	0	0
Armour	Wood/Organic Materials 1	0	0	0
Equipment	Improved Controls	0	0	75,000
Crew	30 with 150 oarsmen	—	—	—
Operating Stations	10 plus work stations	166.5	16,650	—
Passengers	70	70	7,000	—
Cargo	0.259 dTons	5.9	35	—
Agility	–1 DM	—	—	—
Speed (sails)	Cruise: 5 kph Top: 6 kph	—	—	—
Speed (oars)	Cruise: 3 kph Top: 4 kph	—	—	—
Speed (combined)	Cruise: 8 kph Top: 10 kph	—	—	—
Total	—	278.4	44,835	72,540

HYBRID VEHICLES

AMPHIBIOUS APC

The main purpose of the vehicle is to land a maximum number of troops during amphibious beach landings and river crossings, providing a measure of protection whilst doing so.

Amphibious APC (TL 7)		M³	Mass (kg)	Cost (Cr.)
Hull	36 M³ (base 30), Box configuration, Light Alloys, Rugged, Waterproof	—	2,760	12,600
—	Hull: 9 Structure: 11	—	—	—
Drive System	Wheels	3	300	3,000
—	Water-Driven	3	450	15,000
Power Plant	Internal Combustion–7 Power output: 112 Fuel Consumption: 17.5 per hour	7	525	9,450
Fuel	210 litres (12 hours operation)	0.21	210	—
Armour	Advanced Composites 16 (26/21/21/8/16/8)	0.6	3,240	3,000
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Drive Wheels (8x8)	2.25	225	4,500
—	Improved Suspension	0.3	30	3,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Passengers	15	16	1,600	—
Cargo	0.133 dTons	1.39	139	—
Agility	+1 DM	—	—	—
Speed (land)	Cruise: 52 kph Top: 70 kph Offroad: 14 kph	—	—	—
Speed (water)	Cruise: 18 kph Top: 24 kph	—	—	—
Total	—	36	9,610	52,050
Ground Pressure	3.20	—	—	—

Amphibious APC (TL 10)		M³	Mass (kg)	Cost (Cr.)
Hull	36 M³ (base 30), Box configuration, Crystaliron, Sealed	—	3,750	36,000
—	Hull: 11 Structure: 12	—	—	—
Drive System	Wheels	3	300	3,000
—	Water-Driven	3	450	15,000
Power Plant	Nuclear Fusion–9 Power output: 165 Fuel Consumption: 7.5 per hour	7.5	1,500	93,750
Fuel	45 litres (6 hours)	0.045	45	—
Armour	Crystaliron 18 (28/23/23/8/18/8)	0.3	2,250	3,000
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Equipment	Drive Wheels (8x8)	2.25	225	4,500
—	Improved Suspension	0.3	30	3,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Passengers	15	15	1,500	—
Cargo	0.148 dTons	2	200	—
Agility	+1 DM	—	—	—
Speed (land)	Cruise: 71 kph Top: 95 kph Offroad: 19 kph	—	—	—
Speed (water)	Cruise: 24 kph Top: 32 kph	—	—	—
Total	—	35.65	10,381	159,750
Ground Pressure	3.46	—	—	—

AMTRACK

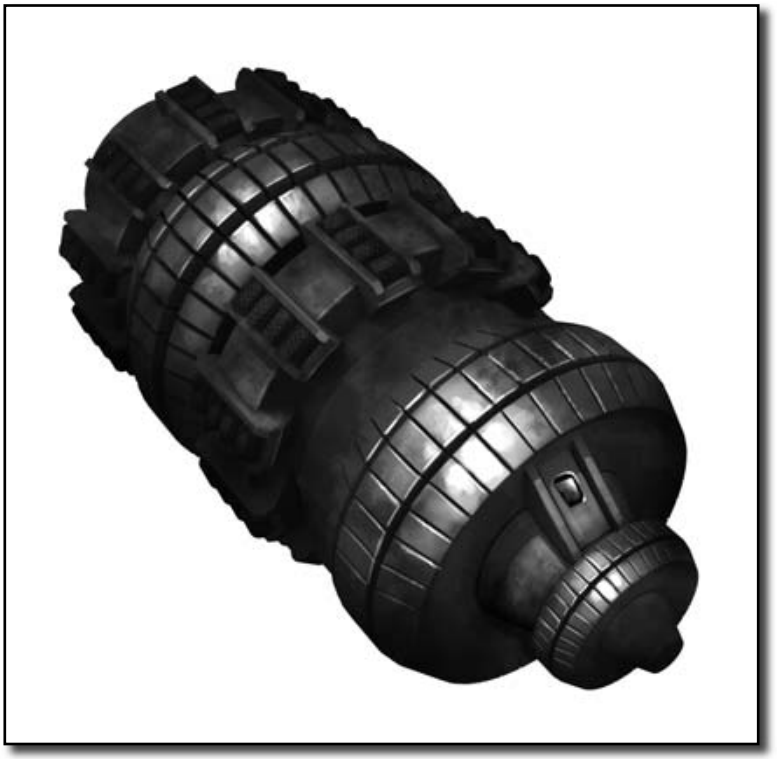
The amtrack is an amphibious light tank. Although not as heavily armed as other tanks, this tank has a great tactical advantage in locations where conventional tanks would be cut off by large bodies of water.

Amtrack (TL 7)		M^3	Mass (kg)	Cost (Cr.)
Hull	34 M^3(base 38), Sloped configuration, Advanced Composites, Waterproof	—	3,420	27,360
—	Hull: 11 Structure: 13	—	—	—
Drive System	Tracks	7.6	3,800	38,000
—	Water-Driven	3.4	510	17,000
Power Plant	Internal Combustion–7 Power output: 240 Fuel Consumption: 20 per hour	12	900	16,200
Fuel	240 litres (12 hours operation)	0.24	240	—
Armour	Advanced Composites 13 (27/15/15/10/7/7)	0.38	2,052	1,900
Weapons	Light Autocannon (dorsal internal traversing, TL 7 stabilisation) Ammunition: 60 attacks	5.81	228	16,875
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Crew	2 (driver, gunner)	—	—	—
Operating Stations	2	2.5	250	—
Cargo	0.059 dTons	1.07	107	—
Agility	+1 DM	—	—	—
Speed (land)	Cruise: 56 kph Top: 75 kph Offroad: 38 kph	—	—	—
Speed (water)	Cruise: 32 kph Top: 42 kph	—	—	—
Total	—	34	11,513	118,835
Ground Pressure	1.51	—	—	—

ASSAULT CAPSULE

A cylindrical vehicle designed for tunnelling under enemy lines to deliver soldiers, the assault capsule can take a squad through solid rock extremely quickly. Using a dozen spinning plasma-cutting devices, the capsule liquefies the ground as it draws itself through. It can be used above ground like a slow-moving car, but it is better suited for underground travel.

Assault Capsule (TL 12)		**M³**	**Mass (kg)**	**Cost (Cr.)**
Hull	17 M³ (base 14), Box configuration, Light Alloys, Rugged	—	1,568	4,900
—	Hull: 4 Structure: 6	—	—	—
Drive System	Tracks	2.8	1,400	14,000
Power Plant	Hydrogen Fuel Cell–10 Power output: 33 Fuel Consumption: 1.5 per hour	1.5	187.5	3,600
Fuel	30 litres (20 hours operation)	0.03	30	—
Armour	Superdense 14 (28/14/14/7/14/7)	0.14	1,260	7,000
Sensors	Basic, Compact (1 km +1 DM)	0.25	0.5	1,000
Communications	Radio 10 km (TL 7)	0	0.25	250
Environmental	Life Support, Basic	0.17		
Equipment	Drill (custom)	2.8	560	3,500
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Passengers	8	8	800	—
Agility	+1 DM	—	—	—
Speed (land)	Cruise: 15 kph Top: 20 kph Offroad: 10 kph	—	—	—
Speed (underground)	Cruise: 3 kph Top: 3 kph	—	—	—
Total	—	16.94	5,931	34,250
Ground Pressure	1.93	—	—	—



ASSAULT CARRIER

A fast open topped hovercraft used to transport troops and small vehicles over land and water. The roll-on/roll-off design allows for quick deployment and the carrier is able to lay down suppressing fire from its two turret mounted weapons.

Assault Carrier (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	94 M^3, Open configuration, Advanced Composites, Rugged	—	8,756	82,250
—	Hull: 32 Structure: 36	—	—	—
Drive System	Hover	14.1	1,057.5	2,820,000
Power Plant	Internal Combustion–8 Power output: 162 Fuel Consumption: 18 per hour	9	630	13,500
Fuel	216 litres (12 hours operation)	0.22	216	—
Armour	Advanced Composites 13 (20/.13/13/13/—/6)	0.94	5,076	4,700
Weapons	Light Autocannon (front external traversing, TL 8 stabilisation) Ammunition: 60 attacks	3.54	225	14,062
—	Light Autocannon (front external traversing, TL 8 stabilisation) Ammunition: 60 attacks	3.54	225	14,062
Sensors	Comprehensive (3 km +2 DM)	1	2	1,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Crew	3	—	—	—
Operating Stations	3 (driver, 2 gunners)	3.75	375	—
Passengers	14	14	1,400	—
Cargo	3.216 dTons	43.41	4,341	—
Agility	-1 DM	—	—	—
Speed	Cruise: 85 kph Top: 113 kph	—	—	—
Total	—	94	22,309	2,950,574

ATC

The Armed Transport Craft is an armed transport plane that can land on water to provide supplies, troops or vehicles to locations where a standard transport plane cannot land. The ATC also has dorsal and ventral turret weapons to defend against enemy attacks.

ATC (TL 5)		M³	Mass (kg)	Cost (Cr.)
Hull	160 M³, Airframe configuration, Steel, Waterproof	—	14,400	57,600
—	Hull: 40 Structure: 40	—	—	—
Drive System	Propeller	8	480	120,000
Power Plant	Internal Combustion–5 Power output: 600 Fuel Consumption: 106.7 per hour	40	3,200	40,000
Fuel	1,920 litres (18 hours operation)	1.92	1,920	—
Armour	Steel 9	1.6	9,600	3,200
Weapons	Light Machinegun (dorsal external traversing) Ammunition: 40 attacks	0.375	17.15	4,500
—	Light Machinegun (ventral external traversing) Ammunition: 40 attacks	0.375	17.15	4,500
Sensors	Basic Extended Range (3 km +1 DM)	1	1.5	1,000
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	4 (pilot, co-pilot, 2 gunners)	—	—	—
Operating Stations	4	5	500	—
Passengers	20	20	2,000	—
Cargo	5.98 dTons	80.73	8,073	—
Agility	+1 DM	—	—	—
Speed	Cruise: 252 kph Top: 336 kph	—	—	—
Total	—	160	40,219	231,800

SEA FIGHTER

As its name suggests, this fighter plane can take off and land on water. Sea fighters tend to be used only where there is not enough room to land a full squadron of conventional fighters on the ground.

Sea Fighter (TL 6)		M³	Mass (kg)	Cost (Cr.)
Hull	14 M³, Airframe configuration, Steel, Waterproof	—	1,260	5,040
—	Hull: 3 Structure: 4	—	—	—
Drive System	Propeller	0.7	42	10,500
Power Plant	Internal Combustion–6 Power output: 70 Fuel Consumption: 15 per hour	5	375	6,000
Fuel	150 litres (10 hours operation)	0.15	150	—
Armour	Steel 15	0.28	1,680	560
Weapons	Light Autocannon (front internal fixed, TL 6 stabilisation) Ammunition: 40 attacks	4.29	143	11,250
—	70mm Strafing Rocket Pod (7 pack) (ventral external fixed, TL 6 stabilisation) Ammunition: 4 attacks	0.48	76.96	5,000
Sensors	Basic (1 km +1 DM)	0.5	1	500
Communications	Radio 100 km (TL 4)	1	10	1,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM	—	—	—
Speed	Cruise: 431 kph Top: 574 kph	—	—	—
Total	—	13.65	2,743	34,850

SUBMERSIBLE FIGHTER

The submergible fighter is capable of travelling and firing in the air and underwater. Although these fighters are not as effective as 'purebred' vehicles, their versatility makes them a good choice where a limited number of craft are required to perform a variety of missions.

Submersible Fighter (TL 8)		M^3	Mass (kg)	Cost (Cr.)
Hull	32 M^3, Airframe configuration, Advanced Composites, Sealed	—	2,592	36,000
—	Hull: 5 Structure: 5	—	—	—
Drive System	Jet	4.8	480	168,000
—	Submarine	3.2	480	16,000
Power Plant	Turbine–8 Power output: 156 Fuel Consumption: 54 per hour	6	540	25,500
Fuel	324 litres (6 hours operation)	0.32	324	—
Armour	Advanced Composites 20	0.64	3,456	3,200
Weapons	Twin Light Autocannon (front internal fixed, TL 8 stabilisation) Ammunition: 60 attacks	10.8	360	67,500
—	Smart Torpedo (ventral external fixed, TL 8 stabilisation) Ammunition: 1 attack	0.625	250	3,500
Sensors	Comprehensive Extended Range (9 km +2 DM)	2	3	2,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Environmental	Life Support, Basic	0.32	64	16,000
Equipment	Ejection Cocoon	1.5	130	100,000
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM (–2 DM water)	—	—	—
Speed (air)	Cruise: 830 kph Top: 1,107 kph	—	—	—
Speed (water)	Cruise: 16 kph Top: 22 kph	—	—	—
Total	—	31.96	8,809	438,700

Submersible Fighter (TL 10)		M^3	Mass (kg)	Cost (Cr.)
Hull	45 M^3, Super Airframe configuration, Light Alloys, Sealed	—	2,520	42,188
—	Hull: 5 Structure: 6	—	—	—
Drive System	Jet	6.75	675	202,500
—	Submarine	4.5	675	22,500
Power Plant	Hydrogen Fuel Cell–10 Power output: 495 Fuel Consumption: 7.5 per hour	15	1,875	36,000
Fuel	90 litres (12 hours operation)	0.09	90	—
Armour	Crystaliron 30	0.90	6,750	9,000
Weapons	VRF Gauss Gun (front internal fixed, TL 10 stabilisation) Ammunition: 60 attacks	6.60	4,950	300,000
—	Smart Torpedo (ventral internal fixed, TL 10 stabilisation) Ammunition: 3 attacks	7.43	594	3,500
Sensors	Advanced, Compact (5 km +3 DM)	1.5	1.25	4,000
Communications	Radio 100 km (TL 7)	0.5	5	1,000
Environmental	Life Support, Basic	0.45	90	22,500
Crew	1	—	—	—
Operating Stations	1	1.25	125	—
Agility	+1 DM (–2 DM water)	—	—	—
Speed (air)	Cruise: 1,264 kph Top: 1,686 kph	—	—	—
Speed (water)	Cruise: 25 kph Top: 33 kph	—	—	—
Total	—	44.97	18,350	643,188

Hull

	M^3	Mass (kg)	Cost (Cr)

Drive System

	M^3	Mass (kg)	Cost (Cr)

Power Plant

	M^3	Mass (kg)	Cost (Cr)

Power Output
Fuel Consumption

Hull Points
Structure Points
Agility
Top Speed
Cruising Speed
Offroad Speed
Total Mass
Total Cost
Ground Pressure

	M^3	Mass (kg)	Cost (Cr)
Fuel			
Armour			
Cargo			

Weapons

	Ammo	M^3	Mass (kg)	Cost (Cr)

Armour Facing Value

	Value
Dorsal	
Ventral	
Front	
Rear	
Left/Port	
Right/Starboard	

Personnel

	M	Mass (kg)	Cost (Cr)
Crew			
Operating Stations			
Workstations			
Passengers			
Utility Areas			

Additional Equipment

	M^3	Mass (kg)	Cost (Cr)

INDEX

Supplement 6: Military Vehicles

Sometimes battle dress is just not enough. Upgrading the vehicle creation system from Civilian Vehicles, Military Vehicles gives you the armour and weaponry you need for mass destruction. From simple scout skimmers to heavy self-propelled guns, to giant walking mecha, Military Vehicles contains everything a Traveller needs for self-defence on the road, in the wilderness and in the skies.

US $24.95

ISBN 978-1-906508-56-2