

Traveller Spacecraft Design

Construction

Any class A starport has a shipyard which can build any kind of ship, including a starship with Jump drives. Any class B starport can build small craft and ships which do not have Jump drives.

The Hull

Hull	Hull Code	Price (MCr.)	Hull	Hull Code	Price (MCr.)
100 tons	1	2	900 tons	9	90
200 tons	2	8	1,000 tons	A	100
300 tons	3	12	1,200 tons	C	120
400 tons	4	16	1,400 tons	E	140
500 tons	5	32	1,600 tons	G	160
600 tons	6	48	1,800 tons	J	180
700 tons	7	64	2,000 tons	L	200
800 tons	8	80			

Configuration

A ship may have any of three configurations – standard (a wedge, cone, sphere or cylinder), streamlined (a wing, disc or other lifting body allowing it to enter the atmosphere easily) or distributed (made up of several sections, and incapable of entering an atmosphere or maintaining its shape under gravity).

Streamlining a ship increases the cost of the hull by 10%. This streamlining includes fuel scoops which allow the skimming of unrefined fuel from gas giants or the gathering of water from open lakes or oceans. Streamlining may not be retrofitted; it must be included at the time of construction.

A distributed ship reduces the cost of its hull by 10%. It is completely non-aerodynamic and if it enters an atmosphere or strong gravity it will fall to the surface of the planet. It cannot mount fuel scoops.

A standard-hull ship may still enter atmosphere but is very ungainly and ponderous, capable only of making a controlled glide to the surface. Getting it back into space requires an elaborate launch setup and considerable expense. A standard-hull ship may have scoops for gathering fuel from a gas giant but the process will be much more difficult and less efficient. Larger ships of this type will often carry a specialized sub-craft to perform the actual atmospheric skimming.

Armor

Armor is added in 5% increments of the ship's tonnage.

Armor Type	TL	Protection	Cost
Titanium Steel	7	2 per 5%	5% of base hull
Crystaliron	10	4 per 5%	20% of base hull
Bonded Superdense	14	6 per 5%	50% of base hull

For example, a heavily armored warship might take Bonded Superdense armor twice. This would take up 10% of the hull's volume and cost 100% of the base cost of the hull, but give 12 points of armor.

Armor Options

Reflec (TL 10): Reflec coating on the hull increases the ship's armor against lasers by 3. Adding Reflec costs 0.1 Megacredits per ton of hull and can only be added once.

Self-Sealing (TL 9): A self-sealing hull automatically repairs minor breaches such as micrometeoroid impacts, and prevents hull hits from leading to explosive decompression. It costs 0.01 Megacredits per ton of hull.

Stealth (TL 11): A stealth coating absorbs radar and lidar beams, and also disguises heat emissions. This gives a -4 DM on any Sensors rolls to detect or lock onto the ship. Adding Stealth costs 0.1 Megacredits per ton of hull, and can only be added once.

Hull and Structure

Initial damage is applied to the Hull; once the Hull is breached, further damage goes to the Structure. When all Structure Points have been lost, the ship has been smashed to pieces. A ship has one Hull Point and one Structure Point per 50 tons of displacement.

The Engineering Section

A non-starship must have a maneuver drive and a power plant.

A starship must have a Jump drive and a power plant; a maneuver drive may also be installed, but is not required.

Drive Costs

Drive Code	J-Drive		M-Drive		P-Plant	
	Tons	MCr	Tons	MCr	Tons	MCr
A	10	10	2	4	4	8
B	15	20	3	8	7	16
C	20	30	5	12	10	24
D	25	40	7	16	13	32
E	30	50	9	20	16	40
F	35	60	11	24	19	48
G	40	70	13	28	22	56
H	45	80	15	32	25	64
J	50	90	17	36	28	72
K	55	100	19	40	31	80
L	60	110	21	44	34	88
M	65	120	23	48	37	96
N	70	130	25	52	40	104
P	75	140	27	56	43	112
Q	80	150	29	60	46	120
R	85	160	31	64	49	128
S	90	170	33	68	52	136
T	95	180	35	72	55	144
U	100	190	37	76	58	152
V	105	200	39	80	61	160
W	110	210	41	84	64	168
X	115	220	43	88	67	176
Y	120	230	45	92	70	182
Z	125	240	47	96	73	192

Drive Performance Tables

For maneuver drives, the potential is the Thrust number (Tn), which is the number of Gs acceleration available.

For Jump drives, the potential is the Jump number (Jn), or Jump range in parsecs.

The power plant rating (A-Z) must be at least equal to either the maneuver drive or Jump drive rating, whichever is higher.

Fuel

Fuel needed for a Jump depends on the size of the ship and the length of the Jump and is calculated as $0.1 \times \text{tonnage} \times \text{Jump distance}$. A single Jump of that distance consumes that much fuel.

The amount of fuel required by the power plant depends on the rating of the power plant. The fuel amounts listed will power the ship for two weeks, which is the bare minimum for a Jump-capable starship.

Performance by Hull Volume

	100	200	300	400	500	600	700	800	900	1000
A	2	1	-	-	-	-	-	-	-	-
B	4	2	1	1	-	-	-	-	-	-
C	6	3	2	1	1	1	-	-	-	-
D	-	4	2	2	1	1	1	1	-	-
E	-	5	3	2	2	1	1	1	1	1
F	-	6	4	3	2	2	1	1	1	1
G	-	-	4	3	2	2	2	2	1	1
H	-	-	5	4	3	2	2	2	2	2
J	-	-	6	4	3	3	2	2	2	2
K	-	-	-	5	4	3	3	3	2	2
L	-	-	-	5	4	3	3	3	3	3
M	-	-	-	6	4	4	3	3	3	3
N	-	-	-	6	5	4	4	4	3	3
P	-	-	-	-	5	4	4	4	4	4
Q	-	-	-	-	6	5	4	4	4	4
R	-	-	-	-	6	5	5	5	4	4
S	-	-	-	-	6	5	5	5	5	5
T	-	-	-	-	-	6	5	5	5	5
U	-	-	-	-	-	6	6	5	5	5
V	-	-	-	-	-	6	6	6	5	5
W	-	-	-	-	-	-	6	6	6	5
X	-	-	-	-	-	-	6	6	6	6
Y	-	-	-	-	-	-	6	6	6	6
Z	-	-	-	-	-	-	6	6	6	6

Performance by Hull Volume

	1200	1400	1600	1800	2000
F	1	-	-	-	-
G	1	1	-	-	-
H	1	1	1	-	-
J	2	1	1	1	-
K	2	2	1	1	1
L	2	2	2	1	1
M	3	2	2	2	1
N	3	3	2	2	2
P	3	3	3	2	2
Q	4	3	3	3	2
R	4	4	3	3	3
S	4	4	4	3	3
T	5	4	4	4	3
U	5	4	4	4	4
V	5	5	4	4	4
W	5	5	4	4	4
X	5	5	5	4	4
Y	5	5	5	4	4
Z	6	5	5	5	4

The Main Compartment

The ship's main compartment contains all non-drive features of the ship, including the bridge, ship's computer, the staterooms, the low passage berths, the cargo hold and other items.

Bridge

The size of the bridge varies depending on the size of the ship:

Ship Size	Bridge Size
200 tons or less	10 tons
300 tons – 1000 tons	20 tons
1,100 – 2000 tons	40 tons
More than 2,000 tons	60 tons

The cost for this bridge is MCr. 0.5 per 100 tons of ship.

Computer

The computer is identified by its model number; the computer table indicates details of price, capacity, and tech level available.

Computer	TL	Rating	Cost
Model 1	7	5	Cr. 30,000
Model 2	9	10	Cr. 160,000
Model 3	11	15	MCr. 2
Model 4	12	20	MCr. 5
Model 5	13	25	MCr. 10
Model 6	14	30	MCr. 20
Model 7	15	35	MCr. 30

Computer Options

Jump Control Specialization (bis): A computer's rating can be increased by 5 for the purposes of running Jump Control programs only. This increases the computer's cost by 50%.

Hardened Systems (fib): A computer and its connections can be hardened against attack by electromagnetic pulse weapons. A hardened system is immune to EMP, but costs 50% more.

Both options can be applied to the same computer by doubling its cost (+100%).

Electronics

A ship comes with a basic communications, sensor and emissions-control electronics suite, but more advanced systems can be installed. The Dice Modifier applies to jamming and counter-jamming attempts.

System	TL	DM	Includes	Tons	Cost
Standard	8	-4	Radar, Lidar	Included in bridge	Included in bridge
Basic Civilian	9	-2	Radar, Lidar	1	Cr. 50,000
Basic Military	10	+0	Radar, Lidar, Jammers	2	MCr. 1
Advanced	11	+1	Radar, Lidar, Densitometer, Jammers	3	MCr. 2
Very Advanced	12	+2	Radar, Lidar, Densitometer, Jammers, Neural Activity Sensor	5	MCr. 4

Staterooms

Each stateroom is sufficient for one person, displaces 4 tons, and costs Cr. 500,000. No stateroom can contain more than two persons, as it would strain the ship's life support equipment. The tonnage and cost of the staterooms includes the life support systems needed to keep the crew alive.

Low Passage Berths

One low passage berth carries one low passenger, costs Cr. 50,000, and displaces one-half ton.

Emergency low berths are also available; they will not carry passengers, but can be used for survival. Each costs Cr. 100,000 and displaces one ton. Each holds four persons.

Cargo Hold

The design plan must indicate cargo capacity. There is no cost but cargo carried may not exceed cargo capacity. Any space left over after all systems have been installed may be allocated to cargo space.

Fuel Scoops

Fuel scoops allow an unstreamlined ship to gather unrefined fuel from a gas giant. Streamlined ships have fuel scoops built in. Adding scoops costs Cr. 1,000,000 and requires no tonnage.

Fuel Processors

Fuel processors convert unrefined fuel into refined fuel. One ton of fuel processors can convert 20 tons of unrefined hydrogen into refined fuel per day. A ton of fuel processing equipment costs Cr 50,000.

Luxuries

Luxuries cost Cr. 100,000 per ton, and make life on board ship more pleasant. Each ton of luxuries counts as one level of the Steward skill for the purposes of carrying passengers, and therefore allows a ship to carry middle and high passage passengers without carrying a trained steward on board.

Ship's Locker

Every ship has a ship's locker. Typical equipment carried aboard will include protective clothing, vacc suits, weapons such as shotguns or pistols, ammunition, compasses and survival aids, and portable shelters. The contents of the locker are defined only when they need to be but always contains vacc suits and other useful items. The ship's locker is usually protected by a biometric lock keyed to the ship's officers.

Vehicles and Drones

The tonnage and cost covers minimal hangar space, indicating the vehicle is either carried on the outer hull or in a form-fitting compartment on board. For ease of access and for storage of spare parts and equipment, many ships will allocate more space to some vehicles.

Mining Drones: Mining drones allow a ship to mine asteroids. Each set of mining drones takes up ten tons, and allows the ship to process 1d6 x 10 tons of asteroid per working day. The tonnage allocated includes ore handling machinery, allowing the ship to take on ore and transfer it to the cargo bay.

Repair Drones: Carrying repair drones allows a ship to make battlefield repairs with the AutoRepair software or when managed by a character with Mechanic or Engineer skills. Repair drones have the same statistics as repair robots only without an Intellect program.

Probe Drones: Probe drones are for surveying planetary surfaces. Each ton of probe drones contains five drones. Probe drones can be dropped from orbit in disposable entry shells but must be recovered manually. Probe drones are also capable of surveying orbiting satellites, derelicts and other space debris. They can also be used as communications relays.

Escape Pods: This covers the installation of rescue bubbles and other escape pods for the entire crew.

Life Boat, Ship's Boat, Shuttle, Pinnacle, Cutter: These are all small craft, hangered either in or on the ship's hull.

Air/Raft, ATV: These are vehicles, also stored in or on the ship.

Armaments

A ship has one hardpoint per 100 tons of ship and each weapon system takes up one hardpoint. A weapon system may include multiple weapons – for example, a triple turret contains three lasers, missile launchers, sandcasters or some combination of three weapons.

Turrets

One turret may be attached to each hardpoint on the ship. If a turret is installed, then one ton of space must be allocated to fire control systems:

Weapon	TL	Tons	Cost (MCr.)
Single Turret	7	1	0.2
Double Turret	8	1	0.5
Triple Turret	9	1	1
Pop-Up Turret	10	2	+1
Fixed Mounting	-	0	x 0.5

Single, Double and Triple turrets can hold one, two or three weapons.

Pop-Up is a quality that can be applied to any type of turret – the turret is concealed in a pod or recess on the hull, and is detectable only when deployed. A ship with all its weapons in pop-up turrets looks unarmed to a casual sensor scan.

Fixed Mounting weapons cannot move, are limited to firing in one direction (normally straight ahead), and are found mainly on fighters. A fixed mounting costs half as much as a turret of the same type, so a single fixed mounting costs 0.1 MCr., a double fixed mounting costs 0.25 MCr., and a triple fixed mounting costs 0.5 MCr.

Turret Weapons

Weapon	TL	Optimum Range	Damage	Cost (MCr.)
Pulse Laser	7	Short	1d6	0.5
Beam Laser	7	Medium	2d6	1
Particle Beam	8	Long	3d6 + crew4 hit	
Missile Rack	6	Special	Depends on missile	0.75
Sandcaster	7	Special	Special	0.25

Missile racks need ammunition – twelve missiles take up one ton of space.

A sandcaster reduces the damage from a beam weapon by 1d6. Sandcasters require ammunition. Twenty sandcaster barrels take up one ton of space, and cost 10,000 credits.

Bays

Bay weapons are much larger than turrets, and take up 50 tons of space and one hard point, as well as one ton of space for fire control.

Bay Weapons

Weapon	TL	Range	Damage	Cost (MCr.)
Missile Bank	6	Special	Launches a flight of twelve missiles	12
Particle Beam	8	Long	6d6 + crew hit	20
Fusion Gun	12	Medium	5d6	8
Meson Gun	11	Long	5d6 + crew hit	50

Missile banks fire flights of twelve missiles at a time.

Meson weapons are unaffected by armor, as the blast only becomes harmful after it has already passed through the hull. Meson guns also inflict an automatic radiation hit on the crew of any target struck.

Screens

Screens are defensive systems that protect against specific attacks.

Screen	TL	Effect	Tons	Cost (MCr.)
Nuclear Damper	12	Reduces fusion gun and nuclear missile damage by 2d6, removes automatic crew hit from nuclear missile attacks	50	50
Meson Screen	12	Protects against meson weapon damage, reducing damage by 2d6	50	60

A nuclear damper reduces the damage from fusion weapons and nuclear missiles by 2d6 when affected.

Meson screens block attacks from meson weapons by preventing meson decay.