Traveller Starship Tech

Imperial starships in the Traveller universe are different from starships in Terran Empire or Star Trek.

Average Tech Level

Prior to *The New Era*, the average Imperial Tech Level is 12, and most Imperial worlds can sustain TL 12. Imperial shipyards can support TL 15, while commercial shipyards typically support TL 12.

During *The New Era*, there are few shipyards working, and those that are typically have TL 9 at most. [note - doublecheck this]

Weapons Systems

Anti Matter Missiles are advanced tech +2, standard nuclear missiles are uncommon, however detonation laser nuclear warheads see common use in space combat.

Plasma/Fusion Weapons

In Traveller, Plasma and Fusion weapons have a considerable range advantage over those in Star Hero, and the turret weapons have a higher rate of fire.

FTL Communications

FTL Communications doesn't exist at all, even for theoretical applications.

Screens and Forcefields

Screens and forcefields don't exist on a personal level until very advanced tech levels. Ships and vehicles are limited to nuclear dampers and meson screens, and late TL-15 Black Globe Generators.

AI

Very Limited AI until TL-15, then true AI becomes feasible

Tractor Beams and similar Things

Tractor Beams technology has very limited usage. Tractor beams don't appear until TL-15, while at TL-13 they become available as a defensive bay weapon called Repulsors.

Teleportation/Matter Transport

Advanced Tech, experimentation starting at Late TL-15, very short range and extremely bulky with a high power requirement even at high tech levels.

Construction

Standard starship designs are specified by navies or corporations, while individuals require the services of a naval architect to prepare plans.

Starships (ships with jump drives) may be built in the shipyards of any class A starport. Spaceships (ships without a jump drive) may be built in the shipyards of any class A or B starport.

An important aspect of construction is the Tech Level (TL) of the constructing shipyard, as that determines the Tech Level of the ship's equipment.

Ships of 5000 Displacement Tons or less can be built in 36 months or less by any competent shipyard. Ships over 5000 Displacement Tons require from 24 to 60 months to complete, based on conditions, other orders in progress at the shipyard, and any overtime put in to reduce the building time. As a rough estimate, construction time is 5 Displacement Tons per day, with a minimum time of one week.

Starship Construction Steps

1. Determine the Tech Level of the shipyard that will be building the ship.
2. Select a hull size, material, and configuration. Select additional hull armor if required.
3. Select Maneuver drive
4. Select Jump drive if ship is a starship.
5. Select Power Plant
6. Determine fuel tank size; add fuel scoops, fuel purification plants, and drop-tanks as desired.
7. Select the bridge.
8. Select the computer.
9. Select weaponry.
10. Select ship's vehicles if appropriate.
11. Determine crew needs and quarters.
12. Determine additional requirements, such as cargo space, passenger accomodations, low berths, laboratories, special installations, and so forth.

Starship Hulls

The hull, like the frame of a house or car, is the basis into which everything else is placed.

Hull Volume

Hull volume is described in Displacement Tons (DT), which represents a volume of 14 cubic meters, or 2 HERO-System Hexes. The *Hull Size and Displacement* table converts Traveller hulls by Displacement Tons into HERO Size.

The base cost for hulls is 100kCr per DT.

Hull Materials

The standard ship hull is a hardened steel hull with a strength of DEF 8. Selecting a different hull material affects the BODY, DEF, Credit cost, and may also have other side effects.

Hull Configuration

The hull configuration is a rough description of the shape and design of the hull. Shapes like needle or wedge, cylinder or sphere, and so forth. One configuration option is hollowing out a planetoid and fitting it with equipment to serve as a spaceship or starship.

Selecting the hull configuration or shape also affects the BODY, Credit cost, and whether the ship can be streamlined to enter atmospheres.

Hull Size and Displacement

Hull Size: [DT]	Size	STR	BODY	DCV	Base Cost
1	5	35	15	-3	
2	7	45	17	-4	
3	8	50	18	-5	
5	9	55	19	-6	
10	10	60	20	-6	
15	11	65	21	-7	
20	12	70	22	-8	
50	14	80	24	-9	
100	15	85	25	-10	
200	17	95	27	-11	
400	18	100	28	-12	
600	19	105	29	-12	
800	20	110	30	-13	
1200	21	115	31	-14	
2000	22	120	32	-14	
3000	23	125	33	-14	
5000	24	130	34	-16	
8000	25	135	35	-16	
10000	25	135	35	-16	
20000	27	145	37	-18	
30000	28	150	38	-18	
50000	29	155	39	-19	
60000	29	155	39	-19	
75000	30	160	40	-20	
100000	30	160	40	-20	
200000	32	170	42	-20	
300000	33	175	43	-21	
500000	34	180	44	-22	
1000000	35	185	45	-22	

This assumes the standard hardened steel hull (DEF 8).

Hull Materials

Material	BODY	DEF	Hull Cost	Notes
Titanium alloy	+1	+1		
Light Composite	+2	+1		
Composite Laminate	+2	+2		
Crystal Iron	+5%	+3		1
Superdense	+10%	+4		1
Bonded Superdense	+20%	+8		1
Coherent Superdense	+25%	+12		1
Living Metal	+15%	+0	x3	2
Biomechanical	+0	+0	x2	2
Planetoid	+10	+10	x 1/2	3
Buffered Planetoid	+15	+15	x 2/3	3

1. May add Thermal Superconducting Armor (TSA)
2. Regenerates 1 BODY/hour
3. Cannot Enter Atmosphere

Hull Configuration

Hull Type	BODY	DEF	Cost	Notes
Dispersed/Open	+4	+0	x.75	1
Needle	+3	+0	x2	2, 3(+2)
Wedge	+2	+0	x1.5	2, 3(+2)
Cylinder	+1	+0	x1.25	2, 3(+1)
Box	+1	+0	x1	2
Sphere	+0	+0	x1	2
Dome/Disk	+2	+0	x1.25	2, 3(+1)
Closed Structure	+2	+0	x1.25	1
Slab	+2	+0	x1.5	2, 3(+1)

1. Cannot Enter Atmosphere
2. Can Enter Atmosphere
3. Highly maneuverable, adds to Piloting Skill Roll

Hull Armor

Finally, the amount of DEF varies between short-range and long-range vessels, and between civilian and military vessels.

Starship Armor Systems

TL	Armor System	DEF	A/R Cost	Price
9	Short-range	+2	6/5	2000Cr
12	Short-range	+4	9/6	3000Cr
15	Short-range	+6	12/9	4000Cr
9	Civilian	+4	9/9	9
12	Civilian	+7	9/9	9
15	Civilian	+10	9/9	9
9	Military	+10	30/	
12	Military	+15	45/	
15	Military	+20	60/	15

Propulsion Systems

Maneuver Drives

Maneuver Drives are the propulsion systems for normal space flight. Maneuver drives are rated in the number of Gs of acceleration, and range from 1G to 6G.

The size (volume) of the maneuver drive is related to the maneuver rating (number of G's) and the size of the ship.

Maneuver Drives

Rating	TL Minimum	Ship Volume	MCr/DT
1G	7	2%	1.5
2G	7	5%	0.7
3G	8	8%	0.5
4G	8	11%	0.5
5G	8	14%	0.5
6G	9	17%	0.5

Notes:

Ship Volume is the percentage of the ship that must

be allocated to the maneuver drive equipment. For example, 5000 DT vessels has about 32,000 hexes (see Star Hero, page 183). A 2G Maneuver Drive in a 5000 DT ship takes up 5%, or .05*32,000=1600 Hexes.

The MCr/DT is the cost per Maneuver Drive ton of the installed Maneuver Drive. Using the example above, 5% of 5000 DT is 250 DT, so the cost of the drive is 0.7 MCr/DT * 250 DT = 175 MCr.

Traveller Maneuver Drives

1G Manuever Drive: *Flight 30"*, Position Shift (65 Active Points); OIF Bulky (-1), Custom Modifier (Real Equipment; -1/4), Crew-Served (2 people; -1/4). Total Cost: 26 points.

2G Manuever Drive: (Total: 100 Active Cost, 43 Real Cost) *Flight 40"*, Position Shift (85 Active Points); OIF Bulky (-1), Crew-Served (2 people; -1/4) (Real Cost: 38) plus +5 DEX (15 Active Points); OIF Bulky (-1), Linked (Flight; -1/2), Crew-Served (2 people; -1/4), Custom Modifier (Real Equipment; -1/4) (Real Cost: 5). Total Cost: 43 points.

3G Manuever Drive: (Total: 159 Active Cost, 63 Real Cost) Flight 60", Position Shift (125 Active Points); OIF Bulky (-1), Crew-Served (2 people; -1/4), Custom Modifier (Real Equipment; -1/4) (Real Cost: 50) **plus** +1 SPD (10 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Crew-Served (2 people; -1/4) (Real Cost: 4) **plus** +8 DEX (24 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Custom Modifier (Real Equipment; -1/4) (Real Cost: 9). Total Cost: 63 points.

4G Manuever Drive: (Total: 178 Active Cost, 73 Real Cost) *Flight 60"*, Position Shift (125 Active Points); OIF Bulky (-1), Crew-Served (2 people; -1/4), Custom Modifier (Real Equipment; -1/4) (Real Cost: 50) **plus** +2 SPD (20 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Custom Modifier (Real Equipment; -1/4) (Real Cost: 7) **plus** +11 DEX (33 Active Points); Linked (Compound Power; -1/2), Custom Modifier (Real Equipment; -1/4), Crew-Served (2 people; -1/4) (Real Cost: 16). Total Cost: 73 points.

5G Manuever Drive: (Total: 194 Active Cost, 74 Real Cost) *Flight 60"*, Position Shift (125 Active Points); OIF Bulky (-1), Crew-Served (2 people; -1/4), Custom Modifier (Real Equipment; -1/4) (Real Cost: 50) **plus** +3 SPD (30 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Custom Modifier (Real Equipment; -1/4), Crew-Served (2 people; -1/4) (Real Cost: 10) **plus** +13 DEX (39 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Crew-Served (2 people; -1/4) (Real Cost: 14). Total Cost: 74 points.

6G Manuever Drive: (Total: 216 Active Cost, 80 Real Cost) *Flight 60"*, Position Shift (125 Active Points); OIF Bulky (-1), Custom Modifier (Real Equipment; -1/4), Crew-Served (2 people; -1/4) (Real Cost: 50) **plus** +4 SPD (40 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Crew-Served (2 people; -1/4), Custom Modifier (Real Equipment; -1/4) (Real Cost: 13) **plus** +17 DEX (51 Active Points); OIF Bulky (-1), Linked (Compound Power; -1/2), Custom Modifier (Real Equipment; -1/4), Crew-Served (2 people; -1/4) (Real Cost: 17). Total Cost: 80 points.

Jump Drives

Jump drives are a type of Displacement Drive (see *Terran Empire, page160*). The jump travels through Hyperspace from the Jump Point to the Target Point, and all jumps take 1 week (7 days). Jump drives are the only FTL drives in Traveller.

The size (volume) of the jump drive is related to the jump rating and the size of the ship.

Jump Drives

Rating	TL Minimum	Ship Volume	MCr/DT
J1	9	2%	4
J2	11	3%	4
J3	12	4%	4
J4	13	5%	4
J5	14	6%	4
J6	15	7%	4
Notes:			

See the Maneuver Drives section for explanations of Ship Volume and MCr/DT.

Traveller Jump Drives

Jump 1 Drive: Teleportation 3", MegaScale (1" = 1 lightyear; +3 1/2) (27 Active Points); Extra Time (1 Hour, -3), 1 Charge which Recovers every 1 Week (-2 1/2), OIF Bulky (-1), Side Effects (Side Effect affects both character and recipient of Power's benefits; can cause misjump or damage to ship on failed skill roll; -3/4), Requires A Skill Roll (-1/2), Crew-Served (2 crew; -1/4), Difficult to Operate (-1/4)

Jump 2 Drive: Teleportation 6", MegaScale (1" = 1 lightyear; +3 1/2) (54 Active Points); Extra Time (1 Hour, -3), 1 Charge which Recovers every 1 Week (-2 1/2), OIF Bulky (-1), Side Effects (Side Effect affects both character and recipient of Power's benefits; can cause misjump or damage to ship on failed skill roll; -3/4), Requires A Skill Roll (-1/2), Crew-Served (2 crew; -1/4), Difficult to Operate (-1/4)

Jump 3 Drive: Teleportation 9", MegaScale (1" = 1 lightyear; +3 1/2) (81 Active Points); Extra Time (1 Hour, -3), 1 Charge which Recovers every 1 Week (-2 1/2), OIF Bulky (-1), Side Effects (Side Effect affects both character and recipient of Power's benefits; can cause misjump or damage to ship on failed skill roll;

-3/4), Requires A Skill Roll (-1/2), Crew-Served (2 crew; -1/4), Difficult to Operate (-1/4)

Jump 4 Drive: Teleportation 12", MegaScale (1" = 1 lightyear; +3 1/2) (108 Active Points); Extra Time (1 Hour, -3), 1 Charge which Recovers every 1 Week (-2 1/2), OIF Bulky (-1), Side Effects (Side Effect affects both character and recipient of Power's benefits; can cause misjump or damage to ship on failed skill roll; -3/4), Requires A Skill Roll (-1/2), Crew-Served (2 crew; -1/4), Difficult to Operate (-1/4)

Jump 5 Drive: Teleportation 15", MegaScale (1" = 1 lightyear; +3 1/2) (135 Active Points); Extra Time (1 Hour, -3), 1 Charge which Recovers every 1 Week (-2 1/2), OIF Bulky (-1), Side Effects (Side Effect affects both character and recipient of Power's benefits; can cause misjump or damage to ship on failed skill roll; -3/4), Requires A Skill Roll (-1/2), Crew-Served (2 crew; -1/4), Difficult to Operate (-1/4)

Jump 6 Drive: Teleportation 18", MegaScale (1" = 1 lightyear; +3 1/2) (162 Active Points); Extra Time (1 Hour, -3), 1 Charge which Recovers every 1 Week (-2 1/2), OIF Bulky (-1), Side Effects (Side Effect affects both character and recipient of Power's benefits; can cause misjump or damage to ship on failed skill roll; -3/4), Requires A Skill Roll (-1/2), Crew-Served (2 crew; -1/4), Difficult to Operate (-1/4)

Power Plants

Power Plants provide power to the ship's systems. The minimum size power plant should equal the greater of the manuever drive rating or the jump drive rating. Thus, a ship with a 3G Maneuver drive and a J2 Jump drive should have at least a P3 Power Plant.

Imperium Power Plants

Rating	TL	END	REC	A/R	Volume	Price*
P1	9-12	150	150	165/60	3%	3
P2	9-12	175	175	193/70	6%	3
P3	9-12	200	200	220/80	9%	3
P4	9-12	225	225	247/90	12%	3
P5	9-12	250	250	275/100	15%	3
P6	9-12	275	275	302/110	18%	3
P1	13-14	150	150	165/60	2%	3
P2	13-14	175	175	193/70	4%	3
P3	13-14	200	200	220/80	6%	3
P4	13-14	225	225	2/2	8%	3
P5	13-14	250	250	2/2	10%	3
P6	13-14	275	275	2/2	12%	3
P1	15	150	150	165/60	1%	3
P2	15	175	175	193/70	2%	3
P3	15	200	200	220/80	3%	3
P4	15	225	225	2/2	4%	3
P5	15	250	250	2/2	5%	3
P6	15	275	275	2/2	6%	3

* MCr per DT of Power Plant

Fuel

Fuel Storage Tanks

All ships require fuel to run, and a fuel tank to hold the fuel. There are no credit or point costs for the fuel storage tank.

The Power Plant requires a fuel storage tank with a minimum capacity of 1% of the ship's tonnage per Power Plant number. A 2000 DT ship with a P3 power plant thus requires 1% * 2000 * 3 = 60 DT. This fuel supports simultaneous operation of the Power Plant and the Maneuver Drive for 4 continuous weeks.

Ships with Jump Drives require additional fuel capacity, in the amount of 10% of the ship's DT per jump number. A 2000 DT ship with a Jump2 drive requires 10% * 2000 * 2 = 400 DT.

Obviously, a large percentage of the ship's space usage is for fuel storage.

Fuel Scoops

Refined fuel can be purchased at most starports at a cost of 500 Cr per DT (or 100 Cr per DT for unrefined fuel). However this is not always practical, especially when travelling to areas lacking starports.

Ships fitted with fuel scoops can scoop hyrdogen for fuel from gas giants or oceans on worlds having oceans. However this fuel is unrefined, and dramatically increases the chance of a misjump unless refined. Ships with fuel scoops should also install a Fuel Purification Plant.

Fuel Purification Plant

Fuel purification plants can purify 1000 DT of fuel per 6 hours. Ships with very large fuel tanks often have several purification plants installed. The size and cost of power plants varies by Tech Level.

Fuel Purification Plant

TL	DT	Cost (kCr)
8	50	200
9	45	190
10	40	180
11	35	170
12	30	160
13	25	150
14	20	140
15	15	150

Fuel Purification Plant: Minor Transform 4d6 (Liquid Hydrogen or Water to usable fuel) (40 Active Points); Extra Time (6 Hours, -3 1/2), OIF Immobile (-1 1/2), Custom Modifier (Real Equipment; -1/4)

Bridge

TBD

Computers

Computers are needed to help run the myriad of systems on a starship, and vary in utility and power by Tech Level. Computer system selection has four components: hardware, standard software, combat software, and sector software.

Hardware

The

Computer Models

Model	TL	Price (MCr)	Volume (DT)
1	8	2	1
2	9	9	2
3	10	18	3
4	11	30	4
5	12	45	5
6	13	55	5
7	14	60	5

Model 1

The IBX-1 is the bare minimum computer hardware necessary to run a ship. It is slow, and can only run 2 programs at a time (so it turns off Entertainment and non-essentials during landing, jumps, etc.)

Val	Char	Cost	Notes	
10	INT	0	11-	PER Roll 11-
10	DEX	0	11-	OCV 3 DCV 3
2	SPD	0	Phases: 6, 12	
			Total Characteristic Cost: 0	

Model 2

The IBX-2 is a somewhat better computer than the IBX-1, able to run 3 programs at a time and with a slightly higher agility.

Val	Char	Cost	Notes	
15	INT	5	12-	PER Roll 12-
11	DEX	3	11-	OCV 4 DCV 4
2	SPD	0	Phases: 6, 12	
			Total Characteristic Cost: 8	

Model 3

The next step in hardware, the IBX-3 provides improvements in processing ability and response time, as well as better combat-system control.

Val	Char	Cost	Notes	
20	INT	10	13-	PER Roll 13-
15	DEX	15	12-	OCV 5 DCV 5
3	SPD	5	Phases: 4, 8, 12	
			Total Characteristic Cost: 30	

Model 4

Model 5

Model 6

Model 7

Standard Software

x

Combat Software and Programs

The following software is available for purchase in the commercial sector, and does not include software available only in the military sector.

Software Name	Effect	Price
Predict 1	+1 with all Weapons	2
Predict 2	+2 with all Weapons	4
Predict 3	+2 with all Weapons	6
Predict 4	+3 with all Weapons	8
Predict 5	+3 with all Weapons	10

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Program Name	Effect	Price
Predict 1	+1 with all Weapons	2
Predict 2	+2 with all Weapons	4
Predict 3	+2 with all Weapons	6
Predict 4	+3 with all Weapons	8
Predict 5	+3 with all Weapons	10

Sector Software

Commercial Sector
Military Sector
Exploratory Sector
Research Sector

Weapon Systems

Traveller ships generally use Lasers and Sandcasters?

Starship Lasers

Starship lasers are the most common starship weapon in the Traveller universe. Lasers can be mounted in turrets, mounted as spinal weapons, etc.

Lasers come in 3 power levels: Low Tech (TL9), Medium Tech (TL12, Imperial Standard), and High Tech (TL15).

TL9 Turret Lasers

TL9 Lasers are an RKA 8d6 visible light laser.

BEAM LASER, 250 MW SINGLE-TURRET

Effect: RKA 8d6
END: 54
Range: 600,000 kilometers
Description: This is the standard TL9 laser in a single turret.

Cost	Powers	END
67	*Low Tech Beam Laser*: RKA 8d6, MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (270 Active Points); OIF Bulky Fragile (-1 1/4), Custom Modifier (Visible Light Laser; -1/2), Increased Endurance Cost (x2 END; -1/2), Beam (-1/4), Real Weapon (-1/4), Custom Modifier (High Maintenance; -1/4)	54

BEAM LASER, 250 MW TRIPLE TURRET

Effect: RKA 8d6, 3-shot autofire
END: 60 per shot
Range: 600,000 kilometers
Description: This is the standard TL9 laser in a triple turret. The Active and Real Costs are the same for the Double and Triple Turret versions.

Cost	Powers	END
75	*Low Tech Beam Laser*: RKA 8d6, Autofire (3 shots; +1/4), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (300 Active Points); OIF Bulky Fragile (-1 1/4), Custom Modifier (Visible Light Laser; -1/2), Increased Endurance Cost (x2 END; -1/2), Beam (-1/4), Real Weapon (-1/4), Custom Modifier (High Maintenance; -1/4)	60

TL12 Turreted Lasers

TL12 Lasers are RKA 8 1/2d6, UV (Invisible to Normal Sight).

BEAM LASER, 250 MW TL12 SINGLE-TURRET

Effect: RKA 8 1/2d6, Invisible to Normal Sight
END: 65
Range: 600,000 kilometers
Description: This is the standard TL12 turreted laser in a single turret.

Cost	Powers	END
118	Standard Tech Beam Laser: RKA 8 1/2d6, Invisible to Single Sense (Normal Sight; +1/4), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (325 Active Points); OIF Bulky Fragile (-1 1/4), Beam (-1/4), Real Weapon (-1/4)	32

BEAM LASER, 250 MW TL12 SINGLE-TURRET

Effect: RKA 8 1/2d6, Invisible to Normal Sight, AF (3)
END: 36 per shot
Range: 600,000 kilometers
Description: This is the standard TL12 turreted laser in a triple turret. The Real and Active Costs are the same for a double turret.

Cost	Powers	END
130	Standard Tech Beam Laser: RKA 8 1/2d6, Invisible to Single Sense (Normal Sight; +1/4), Autofire (3 shots; +1/4), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (357 Active Points); OIF Bulky Fragile (-1 1/4), Beam (-1/4), Real Weapon (-1/4)	36

TL15 Turreted Lasers

TL15 lasers are a more highly focused beam of non-visible light. They are RKA 9d6, Armor Piercing, and Invisible to Normal Sight.

BEAM LASER, 250 MW TL15 SINGLE-TURRET

Effect: RKA 9d6, Invis. to Normal Sight, AP
END: 22
Range: 600,000 kilometers
Description: This is the standard TL15 laser in a single turret.

Cost	Powers	END
172	High Tech Beam Laser: RKA 9d6, Reduced Endurance (1/2 END; +1/4), Invisible to Sight Group (+1/2), Armor Piercing (+1/2), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (472 Active Points); OIF Bulky Fragile (-1 1/4), Beam (-1/4), Real Weapon (-1/4)	22

BEAM LASER, 250 MW TL15 TRIPLE-TURRET

Effect: RKA 9d6, Invis. to Normal Sight, AP
END: 23
Range: 600,000 kilometers
Description: This is the standard TL15 laser in a triple turret; Active and Real Costs are same for double.

Cost	Powers	END
196	High Tech Beam Laser: RKA 9d6, Autofire (3 shots; +1/4), Invisible to Sight Group (+1/2), Armor Piercing (+1/2), Reduced Endurance (1/2 END; +1/2), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (540 Active Points); OIF Bulky Fragile (-1 1/4), Beam (-1/4), Real Weapon (-1/4) Note: Single 250 megawatt Beam Laser, up to 3 can be mounted in a turret	23

TL 15 POP-UP SINGLE-TURRET

Effect: RKA 9d6, Invis. to Normal Sight, AP
END: 23
Range: 600,000 kilometers
Description: This is the standard TL15 laser in a single pop-up turret. Until the turret is powered up and fired, it is not detectable on scanners.

Cost	Powers	END

144	Popup High Tech Beam Laser Turret: RKA 9d6, Reduced Endurance (1/2 END; +1/4), Armor Piercing (+1/2), Invisible to Detect, and Sight Group (energy scanners until turret is powered and fired; +3/4), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (506 Active Points); OIF Bulky Fragile (-1 1/4), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Beam (-1/4), Real Weapon (-1/4)	23

TL 15 POP-UP TRIPLE-TURRET

Effect: RKA 9d6, Invis. to Normal Sight, AP, AF(3)
END: 25
Range: 600,000 kilometers
Description: This is the standard TL15 laser in a triple pop-up turret. Until the turret is powered up and fired, it is not detectable on scanners.

Cost	Powers	END
164	Popup High Tech Beam Laser Turret: RKA 9d6, Autofire (3 shots; +1/4), Armor Piercing (+1/2), Reduced Endurance (1/2 END; +1/2), Invisible to Detect, and Sight Group (energy scanners until turret is powered and fired; +3/4), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (574 Active Points); OIF Bulky Fragile (-1 1/4), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Beam (-1/4), Real Weapon (-1/4) Note: Single 250 megawatt Beam Laser, up to 3 can be mounted in a turret	25

Laser Barbette

A laser barbette is an specially-built unmanned laser turret, using fire-control software rather than a live gunner.

LASER BARBETTE, 1200 MW TL15 SINGLE-TURRET

Effect: RKA 10d6, Armor-Piercing, Inv. to Normal Sight
END: 37
Range: 375,000 kilometers
Description: This is a 1200 megawatt laser barbette.

Cost	Powers	END
62	1,200 Megawatt Heavy Laser Barbette: RKA 10d6, Armor Piercing (+1/2), Megascale (1" = 10 km; +1/2), Increased Maximum Range (37,500"; +1/2) (375 Active Points); OAF Immobile (-2), Independent (-2), Extra Time (Full Phase, -1/2), Real Weapon (-1/4), Beam (-1/4)	37

Bay Lasers

Bay Lasers have a limited arc of fire (60-degree firing arc on the same level).

BAY LASER, TL15

Effect: RKA 10d6, Armor-Piercing, Inv. to Normal Sight
END: 104
Range: 375,000 kilometers
Description: This is a high-power laser bay.

Cost	Powers	END
150	Sniper Laser Bay-15: RKA 10d6, Armor Piercing (+1/2), Invisible to Sight Group (+1/2), MegaScale (1" = 10,000 km; +1 1/4), Can Be Scaled Down 1" = 1km (+1/4) (525 Active Points); OIF Bulky (-1), Increased Endurance Cost (x2 END; -1/2), Beam (-1/4), Crew-Served (2 people; -1/4), Real Weapon (-1/4), Custom Modifier (60 Degree Firing Arc on same Level; -1/4)	104

Spinal-Mount Lasers

Spinal Mount lasers can only be fired in the direction the ship is traveling.

SPINAL MOUNT LASER

Effect: RKA 12d6, Armor-Piercing
END: 37
Range: 375,000 kilometers
Description: This is a high-power Spinal Mount laser.

Cost	Powers	End
90	*Spinal Laser Mount*: RKA 12d6, Armor Piercing (+1/2), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (495 Active Points); OIF Immobile (-1 1/2), Extra Time (1 Turn (Post-Segment 12), -1 1/4), Crew-Served ([9-16] people; -1), Increased Endurance Cost (x2 END; -1/2), Beam (-1/4)	98

Point Defense Laser Array

Point Defense Lasers are not as powerful as the standard laser, but they are extremely accurate, since their main job is destroying incoming missiles.

POINT DEFENSE LASER ARRAY

Effect: RKA 5d6, AF (10 shots), +10 OCV, Missile Deflection
END: 17/shot
Range: 375,000 kilometers
Description: This is point defense laser array.

Cost	Powers	END
92	*Quadpulse Point Defense Laser Array*: (Total: 199 Active Cost, 92 Real Cost) RKA 5d6, MegaScale (1" = 1 km; +1/4), Autofire (10 shots; +1) (169 Active Points); OIF Bulky (-1), Real Weapon (-1/4) (Real Cost: 75) plus +10 with any single attack with one specific weapon (Real Cost: 10) plus Missile Deflection (Any Ranged Attack) (20 Active Points); OIF Bulky (-1), Linked (RKA; -1/2), Real Armor (-1/4) (Real Cost: 7)	17

Meson Guns

Meson Guns fire subatomic particles known as mesons, a characteristic which allows them to penetrate armor but not energy shields.

Meson Bay Weapons

50-TON MESON GUN BAY

Effect: RKA 8 1/2d6, AVLD (Energy Screens)
END: 124
Range: 375,000 kilometers
Description: This is a 50-ton meson gun bay.

Cost	Powers	END
169	*50 Ton Meson Gun Bay*: (Total: 638 Active Cost, 169 Real Cost) RKA 8 1/2d6, Area Of Effect (182" Line; +1), MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4), AVLD (Screens or Force Fields; +1 1/2) (585 Active Points); OIF Bulky (-1), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (Cannot be used in atmospheres; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 146) plus Suppress 4d6, MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (40 Active Points); OIF Bulky (-1), Linked (Meson Beam; -1/2), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 10) plus +4 with any single attack with one specific weapon (Real Cost: 4) plus Penalty Skill Levels: +6 vs. Range Modifier with a single attack (Real Cost: 9)	124

100-TON MESON GUN BAY

Effect: RKA 10 1/2d6, AVLD (Energy Screens)
END: 154
Range: 375,000 kilometers
Description: This is a 100-ton Meson Gun Bay.

Cost	Powers	END
205	100 Ton Meson Gun Bay: (Total: 783 Active Cost, 205 Real Cost) RKA 10 1/2d6, Area Of Effect (224" Line; +1), MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4), AVLD (Screens or Force Fields; +1 1/2) (720 Active Points); OIF Bulky (-1), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (Cannot be used in atmospheres; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 180) plus Suppress 5d6, MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (50 Active Points); OIF Bulky (-1), Linked (Meson Beam; -1/2), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 12) plus +4 with any single attack with one specific weapon (Real Cost: 4) plus Penalty Skill Levels: +6 vs. Range Modifier with a single attack (Real Cost: 9)	154

Spinal Meson Guns

LIGHT SPINAL MESON GUN

Effect: RKA 13d6, NND (Does BODY) plus 5d6 Suppress Electronics
END: 144
Range: 30 million kilometers
Description: Put writeup here.

Cost	Powers	END
148	Light Spinal Meson Gun: (Total: 728 Active Cost, 148 Real Cost) RKA 13d6, NND ([Standard]; Meson Screens or Black Globes; +1), MegaScale (1" = 10,000 km; +1 1/4) (634 Active Points); OIF Immobile (-1 1/2), Crew-Served ([17-32] people; -1 1/4), Limited Arc Of Fire (Only on same horizontal level; -1), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Increased Endurance Cost (x2 END; -1/2), Beam (-1/4) (Real Cost: 101) plus Suppress 5d6, Variable Special Effects (Any SFX; All Unshielded Electronics; +1/2), NND ([Standard]; Meson Screens or Black Globes; +1), MegaScale (1" = 10,000 km; +1 1/4) (94 Active Points); Custom Modifier (Linked to Spinal Meson Gun; -1/2), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 47)	144

MEDIUM SPINAL MESON GUN

Effect: RKA 15d6, NND (Does BODY) plus 6d6 Suppress Electronics
END: 148
Range: 30 million kilometers
Description: Put writeup here.

Cost	Powers	END
149	Medium Spinal Meson Gun: (Total: 750 Active Cost, 149 Real Cost) RKA 15d6, MegaScale (1" = 1,000 km; +1), Area Of Effect (180" Line; +1) (675 Active Points); OIF Immobile (-1 1/2), Crew-Served ([17-32] people; -1 1/4), Limited Arc Of Fire (Only on same horizontal level; -1), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 112) plus Suppress 6d6, Variable Special Effects (Any SFX; All Unshielded Electronics; +1/2), MegaScale (1" = 1,000 km; +1) (75 Active Points); Custom Modifier (Linked to Spinal Meson Gun; -1/2), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 37)	148

HEAVY SPINAL MESON GUN

Effect: RKA 18d6, NND (Does BODY) plus 8d6 Suppress Electronics
END: 206
Range: 30 million kilometers
Description: Put writeup here.

Cost	Powers	END

215 Heavy Spinal Meson Gun: (Total: 1027 Active Cost, 215 Real Cost) RKA 18d6, NND ([Standard]; Meson Screens or Black Globes; +1), MegaScale (1" = 10,000 km; +1 1/4) (877 Active Points); OIF Immobile (-1 1/2), Crew-Served ([17-32] people; -1 1/4), Limited Arc Of Fire (Only on same horizontal level; -1), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Increased Endurance Cost (x2 END; -1/2), Beam (-1/4) (Real Cost: 140) plus Suppress 8d6, Variable Special Effects (Any SFX; All Unshielded Electronics; +1/2), NND ([Standard]; Meson Screens or Black Globes; +1), MegaScale (1" = 10,000 km; +1 1/4) (150 Active Points); Custom Modifier (Linked to Spinal Meson Gun; -1/2), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 75) 206

TYPE T SPINAL MESON GUN

Effect: RKA 13d6+1, NND (Does BODY)
END: 180
Range: 30 million kilometers
Description: Put writeup here.

156 *Type T Spinal Meson Gun:* RKA 13d6+1, NND ([Standard]; Forcefield or meson screen; +1), Does BODY (+1), MegaScale (1" = 10,000 km; +1 1/4), Can Be Scaled Down (+1/4) (900 Active Points); Extra Time (1 Turn (Post-Segment 12), -1 1/4), Limited Arc Of Fire (One hex row; Only on same horizontal level; -1), OIF Bulky (-1), Crew-Served ([9-16] people; -1), Increased Endurance Cost (x2 END; -1/2) 180

Particle Accelerators

Particle Accelerator weapons fire subatomic particles at high speeds, but the speeds are only possible in space. They cannot be used in an atmosphere.

50-TON PARTICLE ACCELERATOR BAY

Effect: RKA 13d6+1, NND (Does BODY)
END: 180
Range: 30 million kilometers
Description: Put writeup here.

Cost Powers END

120 *50 Ton PAW Bay*: (Total: 443 Active Cost, 120 Real Cost) RKA 8 1/2d6, Area Of Effect (104" Line; +1), MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (390 Active Points); OIF Bulky (-1), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (Cannot be used in atmospheres; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 97) plus Suppress 4d6, MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (40 Active Points); OIF Bulky (-1), Linked (Meson Beam; -1/2), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 10) plus +4 with any single attack with one specific weapon (Real Cost: 4) plus Penalty Skill Levels: +6 vs. Range Modifier with a single attack (Real Cost: 9) 86

143 100 Ton PAW Bay: (Total: 533 Active Cost, 143 Real Cost) RKA 10 1/2d6, Area Of Effect (128" Line; +1), MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (480 Active Points); OIF Bulky (-1), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (Cannot be used in atmospheres; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 120) plus Suppress 4d6, MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (40 Active Points); OIF Bulky (-1), Linked (Meson Beam; -1/2), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (60 degree firing arc on same level; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4) (Real Cost: 10) plus +4 with any single attack with one specific weapon (Real Cost: 4) plus Penalty Skill Levels: +6 vs. Range Modifier with a single attack (Real Cost: 9) 104

106 Particle Accelerator Barbette: (Total: 328 Active Cost, 106 Real Cost) RKA 6 1/2d6, Area Of Effect (80" Line; +1), MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (300 Active Points); OIF Bulky (-1), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (Cannot be used in atmospheres; -1/2), Real Weapon (-1/4) (Real Cost: 92) plus Suppress 2d6, MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4) (20 Active Points); OIF Bulky (-1), Linked (Meson Beam; -1/2), Increased Endurance Cost (x2 END; -1/2), Real Weapon (-1/4) (Real Cost: 6) plus +2 with any single attack with one specific weapon (Real Cost: 2) plus Penalty Skill Levels: +4 vs. Range Modifier with a single attack (Real Cost: 6) 64

121 Light Spinal Particle Accelerator: (Total: 647 Active Cost, 121 Real Cost) RKA 13d6, MegaScale (1" = 1,000 km; +1), Area Of Effect (156" Line; +1) (585 Active Points); OIF Immobile (-1 1/2), Crew-Served ([17-32] people; -1 1/4), Limited Arc Of Fire (180 degrees; Only on same horizontal level; -1), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (cannot be used in atmospheres; -1/2) (Real Cost: 90) plus Suppress 5d6, Variable Special Effects (Any SFX; All Unshielded Electronics; +1/2), MegaScale (1" = 1,000 km; +1) (62 Active Points); Custom Modifier (Linked to Spinal Meson Gun; -1/2), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 31) 128

156 Medium Spinal Particle Accelerator: (Total: 780 Active Cost, 156 Real Cost) RKA 15d6, MegaScale (1" = 1,000 km; +1), NND (Meson Screens or Forcefields; +1) (675 Active Points); OIF

Immobile (-1 1/2), Crew-Served ([17-32] people; -1 1/4), Limited Arc Of Fire (180 degrees; Only on same horizontal level; -1), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (cannot be used in atmospheres; -1/2) (Real Cost: 104) plus Suppress 6d6, Variable Special Effects (Any SFX; All Unshielded Electronics; +1/2), MegaScale (1" = 1,000 km; +1), NND (Meson Screens or Forcefields; +1) (105 Active Points); Custom Modifier (Linked to Spinal Meson Gun; -1/2), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 52) 154

190 Heavy Spinal Particle Accelerator: (Total: 987 Active Cost, 190 Real Cost) RKA 18d6, Area Of Effect (242" Line; +1), MegaScale (1" = 10,000 km; +1 1/4) (877 Active Points); OIF Immobile (-1 1/2), Crew-Served ([17-32] people; -1 1/4), Limited Arc Of Fire (180 degrees; Only on same horizontal level; -1), Extra Time (1 Turn (Post-Segment 12), Only to Activate, -3/4), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (cannot be used in atmospheres; -1/2) (Real Cost: 135) plus Suppress 8d6, Variable Special Effects (Any SFX; All Unshielded Electronics; +1/2), MegaScale (1" = 10,000 km; +1 1/4) (110 Active Points); Custom Modifier (Linked to Spinal Meson Gun; -1/2), Increased Endurance Cost (x2 END; -1/2) (Real Cost: 55) 198

Fusion Guns

123 Dual Fusion Gun Turret-12: RKA 6 1/2d6, Area Of Effect Nonselective (One Hex; +1/4), Armor Piercing (+1/2), MegaScale (1" = 100 km; +3/4), Can Be Scaled Down 1" = 1km (+1/4), Autofire (2 shots; +1 1/4) (400 Active Points); OIF Immobile (-1 1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4), Reduced By Range (-1/4) 40

Plasma Guns

79 50 Ton Plasma Gun Bay-12: RKA 9 1/2d6, Area Of Effect Nonselective (One Hex; +1/4), Armor Piercing (+1/2), MegaScale (1" = 1,000 km; +1), Can Be Scaled Down 1" = 1km (+1/4) (435 Active Points); OAF Bulky (-1 1/2), Extra Time (1 Turn (Post-Segment 12), -1 1/4), Increased Endurance Cost (x2 END; -1/2), Custom Modifier (Limited Arc of Fire, 2 Hexsides; -1/2), Crew-Served (2 people; -1/4), Real Weapon (-1/4), Reduced By Range (-1/4) Note: Maximum Range of 39,000 KM 86

Missiles

The most common.

127 5 Ton Missile Pod: RKA 6 1/2d6, 125 Charges (Recovers Under Limited Circumstances; Base or Tender to Reload Pods, cannot be loaded from inside the ship; +1/4), Explosion (+1/2), MegaScale (1" = 10,000 km; +1 1/4), Can Be Scaled Down 1" = 1km (+1/4), Autofire (5 shots; +1 1/2) (475 Active Points); OIF Immobile (-1 1/2), Custom Modifier (must have a viable target lock to fire; -1/2), Can Be Missile Deflected (-1/4), Real Weapon (-1/4), Crew-Served (2 people; -1/4) Note: standard space combat missile, with either kinetic energy (KE) or High Explosive Warhead.
If KE, its an AP attack instead of explosive, pods are mounted in cargo bays or small craft bays [125]

156 Small Missile Bay: RKA 8d6, Explosion (+1/2), 1000 Charges (Recovers Under Limited Circumstances; requies base or tender to reload; +1), MegaScale (1" = 10,000 km; +1 1/4), Can Be Scaled Down 1" = 1km (+1/4), Autofire (20 shots; +2 1/2) (780 Active Points); OIF Immobile (-1 1/2), Extra Time (1 Turn (Post-Segment 12), -1 1/4), Crew-Served ([3-4] people; -1/2), Limited Arc Of Fire (180 degrees; -1/2), Real Weapon (-1/4) [1000]

LIGHT MISSILE RACK

Effect: RKA 6½d6 Explosion
Shots: ##
Range: 1,500,000 kilometers
Put writeup here.

80 *Light Missile Rack:* RKA 6 1/2d6, Explosion (+1/2), MegaScale (1" = 10,000 km; +1 1/4), Can Be Scaled Down 1" = 1km (+1/4) (300 Active Points); OIF Bulky (-1), 6 Charges (-3/4), Custom Modifier (must have a viable target lock to fire; -1/2), Can Be Missile Deflected (-1/4), Real Weapon (-1/4) [6]

Note: standard space combat missile, with either kinetic energy or High Explosive Warhead. If KE, its an AP attack instead of explosive.

Defense Systems

Traveller starship defenses are xx.

SANDCASTER LAUNCHER

Effect: 50% Resistant Physical and Energy Damage Reduction
END: 8
Range: 600,000 kilometers
Put writeup here.

16 *Sandcaster Launcher:* (Total: 74 Active Cost, 16 Real Cost) Energy Damage Reduction, Resistant, 50%, 12 Continuing Charges lasting 1 Turn each (+1/4) (37 Active Points); OIF Bulky Fragile (-1 1/4), Ablative BODY or STUN (-1), Custom Modifier (only stops laser, plasma, or fusion fire; -1), Real Armor (-1/4), Costs Endurance (Only Costs END to Activate; -1/4) (Real Cost: 8) **plus** Physical Damage Reduction, Resistant, 50%, 12 Continuing Charges lasting 1 Turn each (+1/4) (37 Active Points); OIF Bulky Fragile (-1 1/4), Ablative BODY or STUN (-1), Custom Modifier (only stops laser, plasma, or fusion fire; -1), Real Armor (-1/4), Costs Endurance (Only Costs END to Activate; -1/4) (Real Cost: 8) 8

MESON SCREEN

26 Meson Screen: (Total: 120 Active Cost, 26 Real Cost) Physical Damage Reduction, Resistant, 75% (60 Active Points); OIF Immobile (-1 1/2), Custom Modifier (only stops damage from Meson weapons and radiation effects; -1), Crew-Served ([3-4] people; -1/2), Costs Endurance (-1/2) (Real Cost: 13) plus Energy Damage Reduction, Resistant, 75% (60 Active Points); OIF Immobile (-1 1/2), Custom Modifier (only stops damage from Meson weapons and radiation effects; -1), Crew-Served ([3-4] people; -1/2), Costs Endurance (-1/2) (Real Cost: 13) Note: Available in 3 sizes, 25,50,75 12

26 Nuclear Damper: (Total: 120 Active Cost, 26 Real Cost) Physical Damage Reduction, Resistant, 75% (60 Active Points); OIF Immobile (-1 1/2), Custom Modifier (only stops damage from nuclear weapons and radiation effects; -1), Crew-Served ([3-4] people; -1/2), Costs Endurance (-1/2) (Real Cost: 13) plus Energy Damage Reduction, Resistant, 75% (60 Active Points); OIF Immobile (-1 1/2), Custom Modifier (only stops damage from

nuclear weapons and radiation effects; -1), Crew-Served ([3-4] people; -1/2), Costs Endurance (-1/2) (Real Cost: 13) Note: Available in 3 sizes, 25,50, 75 12

Operations Systems

Systems.

Computers

List of computers.

Sensors

Sensors in Traveller do not use a VPP, as the sensor systems are fixed and configurable on the fly.

Meson communications becomes available at TL15.

Sensor Packages

Traveller sensor packages are divided into active and passive sets.

The Active Arrays can have a range of anywhere from 3,000 to 480,000 kilometers
And consists of a variety of active and passive sensor emitters, making it a much more sophisticated Version of Radar.[Radar, Lidar, Sonar]
Passive sensor arrays, use large antennae to detect any electromagnetic emanations from a potential target. These are extremely sophisticated and precise sensors.[High Res Thermal, Densitometers, and Neural Activity Sensors are all passive.

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31 1) Sensor Probes and Recon Drones: Clairsentience (Sight Group And Radar), x2 Range (1230"), 2 Perception Points, Telescopic (+1 versus Range Modifier), Tracking, Transmit, 4 Continuing Charges lasting 6 Hours each (+3/4), MegaScale (1" = 10,000 km; +1 1/4), Can Be Scaled Down 1" = 1km (+1/4) (140 Active Points); OIF Immobile (-1 1/2), Fixed Perception Point (-1), Sense Affected As More Than One Sense [very common Sense] (-1/2), Concentration (1/2 DCV; -1/4), Crew-Served (2 people; -1/4)

21 Sensor and Commo Package: Multipower, 75-point reserve, (75 Active Points); all slots OIF Immobile (-1 1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2)

4m 1) Radar (Radio Group), +2 to PER Roll, Telescopic (+3 versus Range Modifier), Tracking, MegaScale (1" = 1 million km; +1 3/4), Can Be Scaled Down 1" = 1km (+1/4) (75 Active Points); OIF Immobile (-1 1/2), Costs Endurance (-1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2)

2m 2) Neutrino Sensor: Detect A Single Thing 9- (Unusual Group), Discriminatory, Increased Arc Of Perception (360 Degrees), Range, MegaScale (1" = 100,000 km; +1 1/2) (45 Active Points); OIF Immobile (-1 1/2), Costs Endurance (-1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2)

1u 3) Optical telescopes: +7 PER with Sight Group (14 Active Points); OIF Immobile (-1 1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2)

1u 4) IR Perception (Sight Group), Increased Arc Of Perception (360 Degrees), Telescopic (+3 versus Range Modifier), Tracking, MegaScale (1" = 1 million km; +1 3/4), Can Be Scaled Down 1" = 1km (+1/4) (54 Active Points); OIF Immobile (-1 1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2), Costs Endurance (Only Costs END to Activate; -1/4)

1u 5) Laser/Maser Comm System: Mind Link , Machine class of minds, Any Willing Target, Any distance, Number of Minds (x128) (55 Active Points); OIF Immobile (-1 1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2), Costs Endurance (Only Costs END to Activate; -1/4)

1u 6) Densitometer: Detect A Single Thing 9- (Unusual Group), Discriminatory, Increased Arc Of Perception (360 Degrees), Range, MegaScale (1" = 10,000 km; +1 1/4) (40 Active Points); OIF Immobile (-1 1/2), Costs Endurance (-1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2)

1u 7) Radio Perception/Transmission (Radio Group), MegaScale (1" = 1 million km; +1 3/4), Can Be Scaled Down 1" = 1km (+1/4) (30 Active Points); OIF Immobile (-1 1/2), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2), Costs Endurance (Only Costs END to Activate; -1/4)

2u Meson Communicator: Mind Link , Machine class of minds, Any Willing Target, No LOS Needed, Number of Minds (x32), Difficult To Dispel (x2 Active Points; +1/4), Indirect (Same origin, always fired away from attacker; +1/4) (75 Active Points); OIF Immobile (-1 1/2), Only With Others Who Have Mind Link (-1), Crew-Served ([3-4] people; -1/2), Sense Affected As More Than One Sense [very common Sense] (-1/2), Costs Endurance (Only Costs END to Activate; -1/4)

Communications

Meson communications becomes available at TL15.

There is no FTL communications of any kind.

Electronic Warfare

TBD

Flight Control

TBD

Personnel Systems

Life Support

10	*Ships Life Support System:* LS (Immunity All terrestrial diseases and biowarfare agents; Safe in High Pressure; Safe in High Radiation; Safe in Intense Cold; Safe in Intense Heat; Safe in Low Pressure/Vacuum; Self-Contained Breathing) (29 Active Points); OIF Bulky (-1), Costs Endurance (-1/2), Custom Modifier (LS System requires extra maitenance or the air filitration systems go sour after 2 weeks; -1/2)	3

Environmental Systems

12	*Ships Environmental Systems:* Change Environment 64" radius (35 Active Points); OIF Bulky (-1), Custom Modifier (only to provide lights, gravity, and temperature to ships interior; -1)	3