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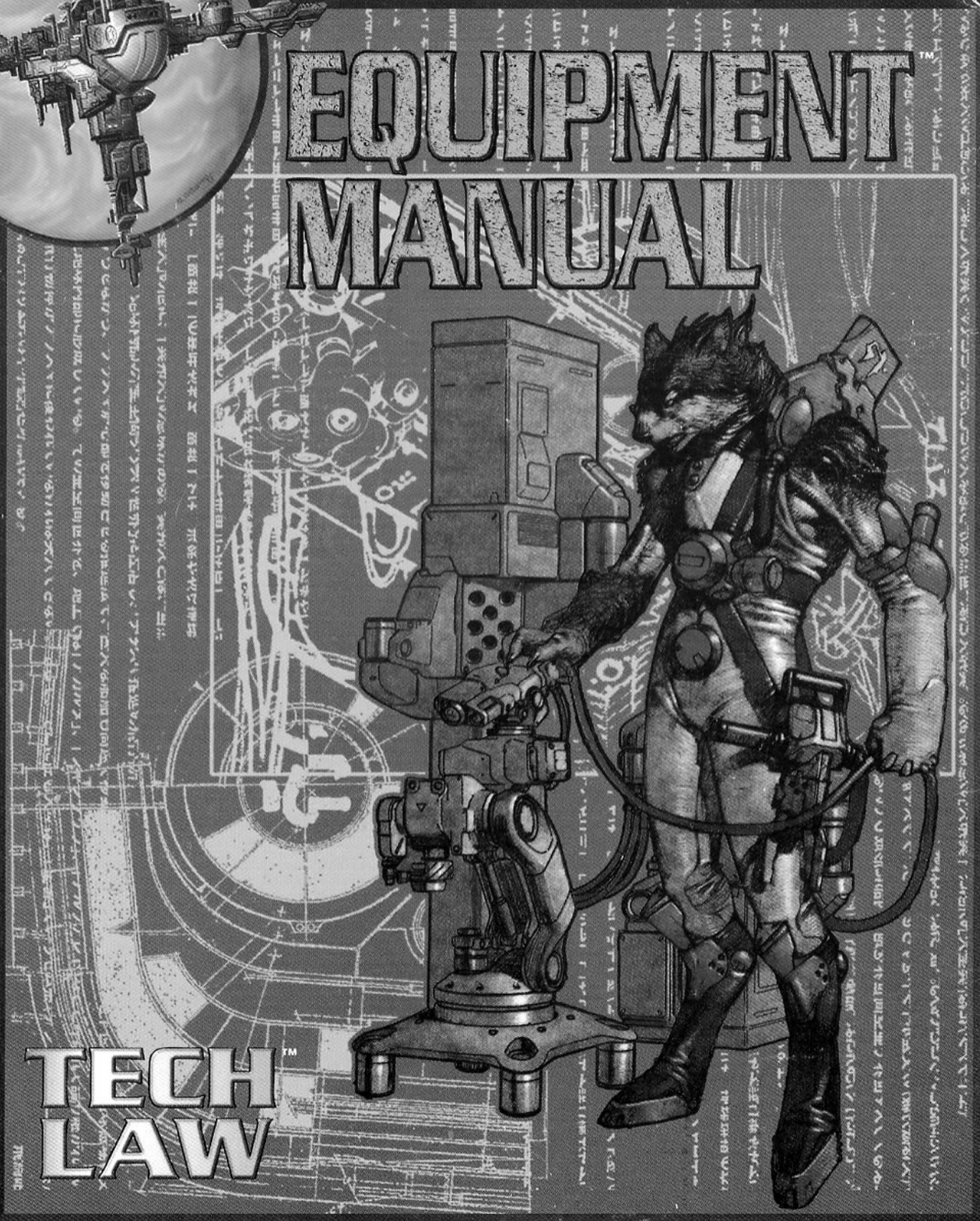
SPACEMASTER™

EQUIPMENT™ MANUAL



TECH™ LAW

Outfit your characters in galactic style!

TECH LAW:™ EQUIPMENT MANUAL

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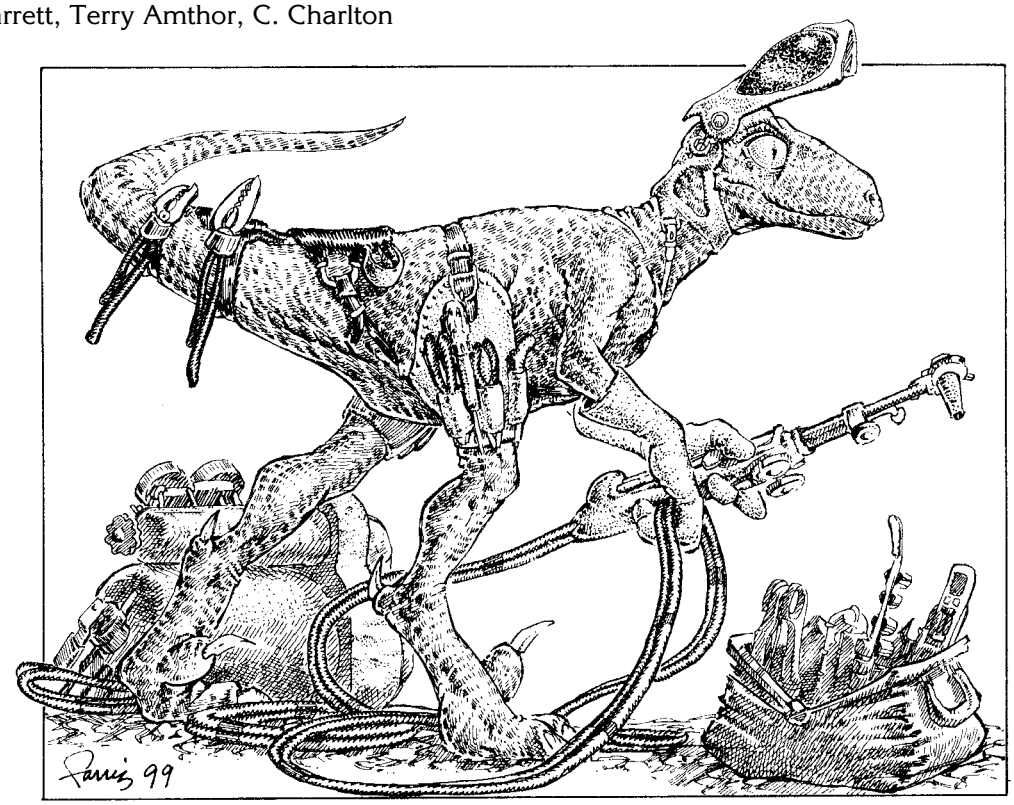

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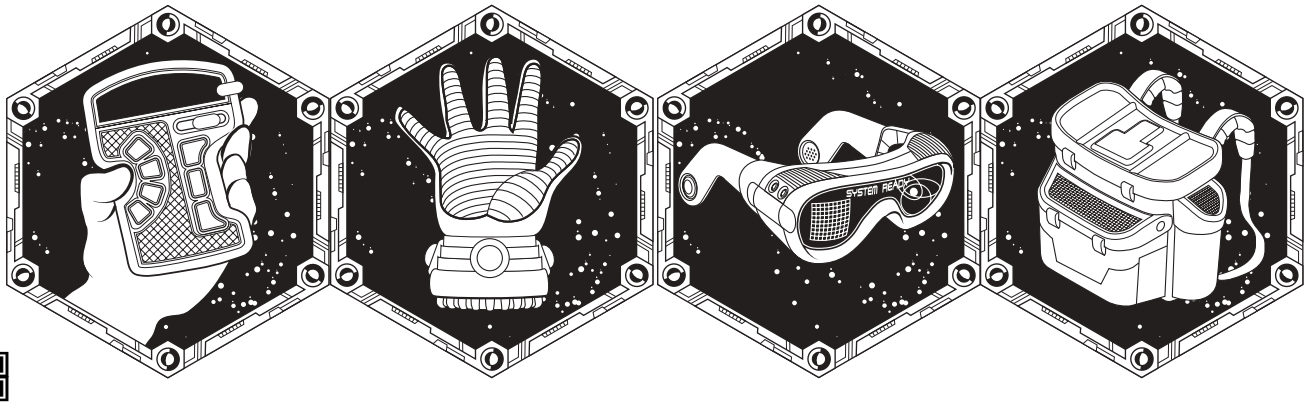

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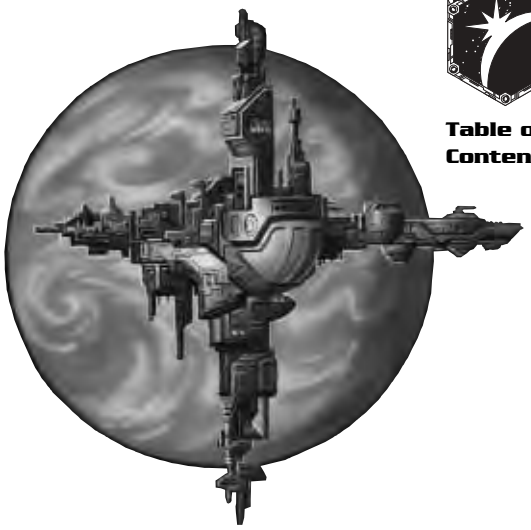


INTERLUDE ONE

The cat pounced again, and Christian swung his sword. The monoblade clashed with the cat's hazzok, throwing Christian to one side and bruising his shoulder as 250 kg barreled through where he used to be standing.

Christian scrambled back to his feet, just in time. He didn't know why the cat was after him, but when a Falar wanted you dead, you usually died.

He swung again as the cat charged. This time several supports cracked and the scaffolding slid to a bit of an angle. Not good. The cat was crazy. What was he thinking?

It didn't matter. Christian didn't need to think like a cat. He wasn't a cat. He needed to think like a monkey. What could a monkey do that a cat couldn't.

Inspiration is sometimes born of perspiration. Sometimes, its born from the sight of 250 kg of charging death. Christian leapt as the cat charged, grabbing the rafters above him.

The cat tore through the flesh of his legs as it passed. As it turned to pounce again, he could hear it purring.

The purring turned to a scream of anger as Christian, hanging by one arm, dripping blood, swung his monoblade through the metal supports that secured the scaffolding. With a single ponderous swing, the structure broke completely free, falling 50 meters to the museum floor.

Christian hung there from the rafter, shock beginning to weaken his grip. Now it was time to climb like a monkey.

PART I
INTRODUCTION

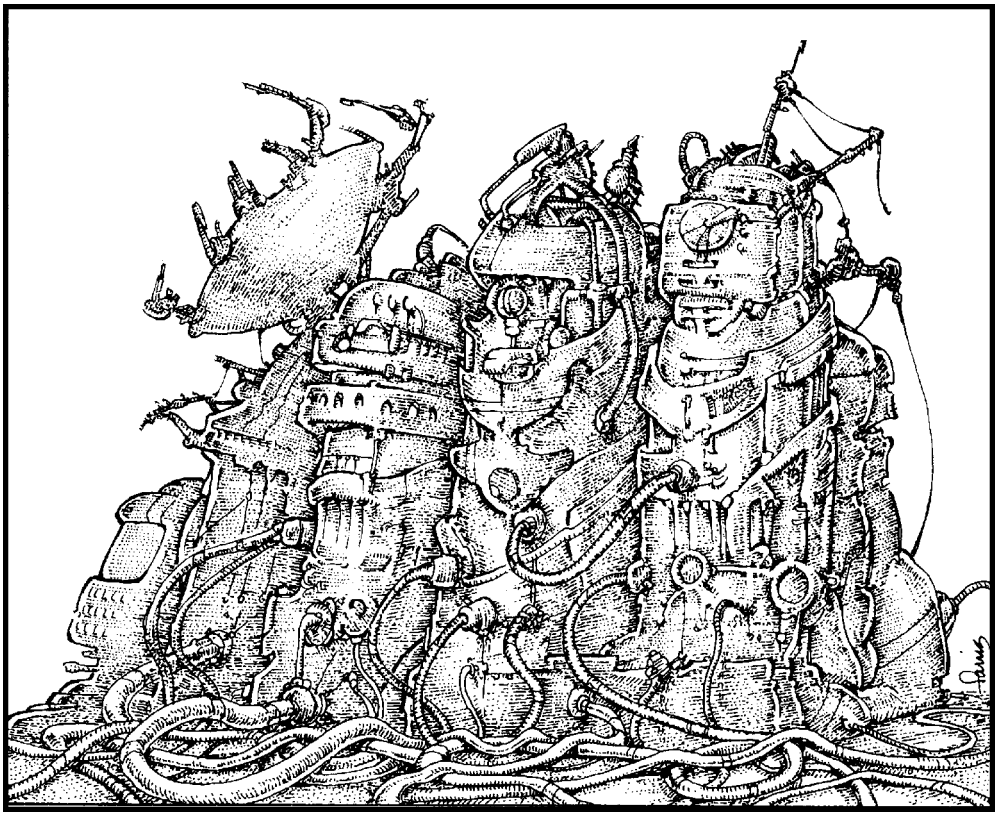
"Any sufficiently advanced technology is indistinguishable from magic."
— Arthur C. Clarke

Greetings. The book you have in your hands is called *Equipment Manual*. It is an integral part of *Spacemaster*, just as technology is an integral part of science fiction.

WHAT IS SPACEMASTER?

Spacemaster is a science fiction role playing game, set to be played in the *Privateers* universe. It uses the same concepts and conventions of Iron Crown Enterprise's *Rolemaster*, and could be played hand in hand with that system.

In *Spacemaster*, the players are whisked away to a science fiction universe where the only limits are those of the imagination, and whose every turn is fraught with danger. Although *Spacemaster* was published with the *Privateers* universe, it does not *have* to take place in the official universe. It can take place in any universe, from the gritty, hard science fiction universes of Greg Bear and Dr. Gregory Benford to the high adventure space operas of "Doc" Smith and George Lucas.



Tech Law is an integral part of that flexibility. It allows the Gamemaster (GM) to customize his game, defining what levels of technology are available and what aren't. It allows him to decide what is possible and what isn't. In the end, it is the GM's choice, and hopefully *Tech Law* is the tool that will allow him to make a good one.

SPACEMASTER ELEMENTS

Spacemaster contains several books. These books provide all of the rules necessary to play *Spacemaster*. These books interlock into more than just a game, but a complete system of role playing, allowing a GM to not only adjudicate rules, but combine societies, cultures and settings into wondrous and (hopefully) realistic vistas of imagination.

Spacemaster: Privateers (SM) — This is the core book of the system. All the subjects necessary to play the game are at least touched upon in this book. Character creation, action resolution, combat, psychic powers, experience and advancement are interlaced with history, culture, social structure and points of interest. This book contains everything necessary to run a *Spacemaster* game, from rules to a universe to implement them in, the basics are all here.

RULE BOOKS

Blaster Law — One of the most important of all core products, this book deals with energy weapons and their use in combat. *Spacemaster: Privateers* has a lot of combat power, but *Blaster Law* takes this to the extreme, expanding directed energy weapons. It uses a tech level system and gives complete weapon creation rules for use with anything from primitive spacefaring wolds to power weapons invented by worlds yet to be discovered.

Tech Law (*three volumes*) — The next of the core support products, there are three *Tech Law* volumes: *Equipment Manual*, *Robotics Manual*, and *Vehicle Manual*. These three books contain extensive information on the use and application of technology. they contain an advanced tech level system that the GM can use to create this own game.

Future Law — Add the power of expanded character development to your game with *Future Law*. *Future Law* is the ultimate player's guide to *Spacemaster*, giving new character professions and hundreds of new character options. Get the most out of your characters and feel the power of the *Spacemaster* system with this exciting core support book.

TECH LAW: EQUIPMENT MANUAL
4

Gamemaster Manual — The last book of the core support series is *Gamemaster Manual*. This book explores the ins and outs and pitfalls of gamemastering compiled from some of the nation's top role playing GMs! In *Gamemaster Manual* you will find core gamemaster mechanics for supporting the *Spacemaster* line. This includes a full blown system for Gamemasters to use in creating new, custom races for their universes!

SETTING BOOKS

Privateers: Races & Cultures — A must for any *Spacemaster* game, this book details the races of the Privateers universe. From culture to physiology to role playing, this book provides all the information necessary to truly understand the race you're playing.

Privateers: The ISC — The only defense against the deprivations of the Empire, the ISC is on the ropes. Will it survive? This book details the history, locations, corporations, military and prominent people of this great nation.

Privateers: The Jeronan Empire — The Jeronan Empire has been slow to give up it's secrets, now you will know what only the natives know. This book details the Empire, it's structure and military. What does the ISC think it knows about the Empire? What does it really know? These questions and more are answered in this book.

ROLEMASTER PRODUCTS

Rolemaster Fantasy Role Playing — For a game where science and fantasy are to be combined, *Rolemaster Fantasy Role Playing* contains all the rules necessary to play a magic wielding character. It is a must for cross genre campaigns.

Arms Law — The leader of the core support for *Rolemaster* books is the critically acclaimed *Arms Law*. *Arms Law* contains attack charts for many primitive weapons: more weapons, more critical hit tables, more carnage for your game. With *Arms Law*, players and GMs will feel the battle rage around them and leave their foes bleeding in the ditch…

Spell Law (*three volumes*) — For games where magic and science are combined, *Spell Law* is a vital expansion. *Spell Law* contains three volumes: *…Of Channeling*, *…Of Essence*, and *…Of Mentalism*. These concise books contain all the spell lists available in *Rolemaster Fantasy Role Playing* as well as the spell lists for the additional professions in *Character Law*. All lists go up to 50th level, that's over 2,000 spells in all! As a GM, you will probably want to purchase all three *Spell Law* books, but as a player you need only purchase the book necessary for your character!

Creatures & Monsters — ICE's full-blown bestiary for *Rolemaster*. This is a compendium of information and statistics for two key elements of fantasy role playing: creatures and encounters.

"Companion" Products — Companions contain optional material that will add even more detail and/or depth to your game. Each book generally focuses on a specific theme. Some titles include: *Arcane Companion* (introducing a fourth realm of magic), *Essence Companion*, *Channeling Companion*, *Mentalism Companion*, and *Martial Arts Companion* (especially useful with *Spacemaster*).

Rolemaster Sourcebooks — These products (like *Creatures & Monsters*) contain optional rules and information that will help expand the game into new horizons. For example, *Races & Cultures: Underground Races* expands the list of races to include a wide variety of races that can be found underground.

STANDARD SYSTEM PRODUCTS

Weapon Law: Firearms — A book dealing with firearms of all types. Capable of dealing with any firearm, real or fictional. A must for any game where the bullets fly!

Ten Million Ways to Die — This product has weapon charts for all sorts of different weapons. Everything from swords, to guns to blasters are covered. Usable with any game system, this is a must for all gaming groups.

…and a 10' Pole — A compilation of adventuring equipment and a system for defining and integrating various lower levels of technology.

More support products are planned. So, keep your eyes peeled for more information on ICE's website (www.ironcrown.com)!

Note: *For readability purposes, Tech Law uses standard masculine pronouns when referring to persons of uncertain gender. In such cases, these pronouns are intended to convey the meanings: he/she, her/his, etc.*

SPECIAL THANKS

I would like to thank my play testers. Mike "I'm not a sadist, but I play one on TV" Renstrom, Scott "I killed the entire party" Llewelyn, Gary "Captain Bligh" Llewelyn, Matt "I had a character once . . . " Fitt, Aaron "I like making characters" Brown, Chris "Kneel before me!" Brashier, Stephen "You may call me the Great One" Johnson.

1.0 :: WELCOME

"Please allow me to introduce myself . . ."
— The Rolling Stones, Sympathy for the Devil

So you purchased a portion of *Tech Law*. What next?

Well that depends on what you want to do. If you bought *Tech Law* for use with *Spacemaster*, then the answer is simple, you use it as is. If you bought it, with *Blaster Law*, to use with another system, things get a touch more complicated.

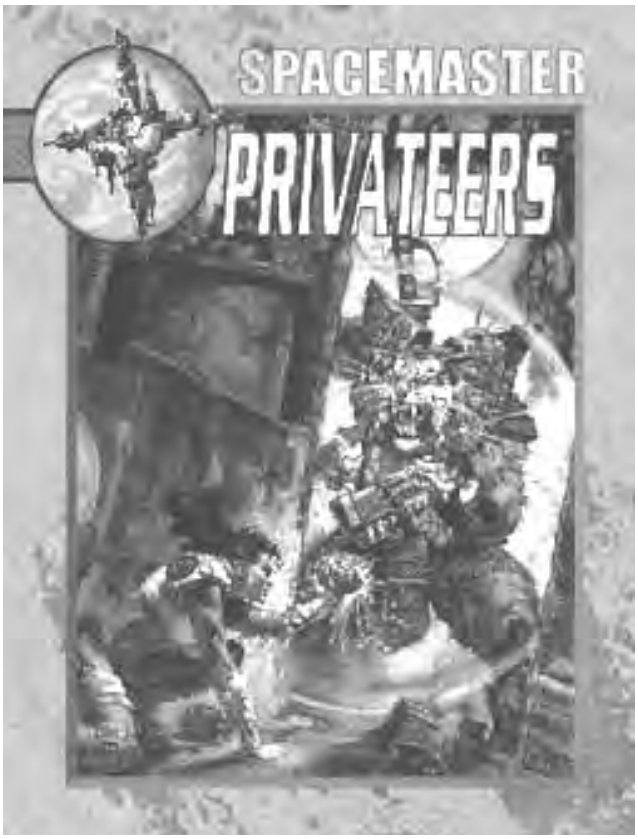
Either way, this book deals with the heart of all good science fiction: technology. This book will guide you through using technology, shaping technology, building technology and repairing technology. This book will also guide you through assigning various technologies to alien cultures.

The primary goal of this work is the realistic handling of technology. This is necessary for a realistic science fiction game.

USING TECH LAW WITH SPACEMASTER

The simplest use of this book is to combine it with *Spacemaster*, to add more technology to the basics given in *Spacemaster: Privateers*. You can also use the other *Spacemaster* products to expand *Spacemaster: Privateers* in other ways.

Spacemaster: The Privateers is the beating heart of the *Spacemaster*. It gives all the rules for creating characters, but it's much, much more. Since it also contains the skill system and combat system, it is the core of *Spacemaster*. It allows you to handle all action resolution, from jumping a chasm to picking a lock.



In the end, action resolution is not enough. Just because you know *how* to resolve combat and actions, doesn't mean you have all the pieces. That's where *Blaster Law* and *Equipment Manual* come in. In *Blaster Law* you will find all of the attack tables necessary to resolve energy weapon attacks, as well as conversions necessary to use firearms (should *Weapons Law: Firearms* not be possessed). In addition, you will find all of the critical charts necessary to resolve energy and firearm attacks.

However, there are many subjects whose full treatment were beyond the scope of *Spacemaster: Privateers*. Character creation, for instance, has many rules that wouldn't fit in the main book. *Future Law* completes and details character creation.

There are many special topics that don't fit in any of these books. For that, we have *Gamemaster Manual*. *Gamemaster Manual* contains all the advice necessary to build an interesting and engaging game, and rules for many special cases that rarely come up. Vacuum exposure, high and low gravity exposure, and radiation are just some of the rules covered in *Gamemaster Manual*.

Finally, we have *Tech Law*. *Tech Law* has all of the rules necessary for handling technology. In addition, it contains selected attack charts for handling melee weapons, firearms and other weapons. It also includes critical charts which relate to technology, such and the Android Critical Strike Tables.

USING TECH LAW WITHOUT SPACEMASTER

Tech Law can be used without *Spacemaster*, but this probably isn't desirable without using *Blaster Law* as well. With *Blaster Law* and *Tech Law*, the *Spacemaster* combat system can be used with other role playing games, lending *Spacemaster's* realism to other systems.

If this is the intention, then *Blaster Law* contains all the rules for handling combat without *Spacemaster*. See *Blaster Law* for more details.

USING ROLEMASTER WITH TECH LAW

If a serious supply of melee weapons and firearms is desired, then *Rolemaster* is the way to go. *Arms Law* is the *Rolemaster* equivalent of *Blaster Law*. It contains all of the weapons common to a medieval or fantasy setting.

If your campaign is going to use a lot of firearms, then *Weapons Law: Firearms* is very handy. This *Rolemaster* book contains an extensive list of firearms and, with a little work, nearly any firearm imaginable can be assigned to one of the attack tables contained within. With this book, *Blaster Law* only becomes necessary for handling futuristic combat.

All the rules necessary for using these books are contained in Appendix A-4. These rules allow the GM to convert these books, using their greater selection of weapons with *Spacemaster* armor types.

2.0 :: TECH LEVELS

"The most incomprehensible thing about the world is that it is comprehensible."
— Albert Einstein

Science fiction is poorly named. It would be much more accurate to call it "Technology Fiction," because at the heart of all science fiction is technology. Perhaps it isn't the main character, as the diehards claim it should be; but in a science fiction story, the technology lives and breathes. It moves and interacts with the main characters. Sometimes it even takes over and steals the show.

Gadgets, space ships, and ray guns are why the masses flock to see science fiction. This is what draws them like a moth to a flame, so when a GM decides to run a SF (science fiction) campaign, the phrase "what gadgets" had better not issue from his lips. When the time comes, he better be ready with all the equipment his players need.

Once a GM has worked out what races or cultures exist in his universe, he should sketch out an idea of how these races and cultures interact. Part of that will involve defining the technical abilities of all the major players. This section deals extensively with the use of technology and its application in the game.

2.1 TECH LEVEL CONCEPTS

Technology, for the sake of a SF game, must be qualified and quantified. Part of how this is done is the use of "tech levels."

Tech levels are a rating system by which technological advancement can be judged. Listed in this section are a series of tech level ratings. Each technological or scientific advance can then be dropped into the tech level system. In addition, every individual piece of tech can be placed somewhere in this structure.

2.2 USING TECH LEVELS

Each nation or race should be given tech levels. These need not be uniform, as not all races will develop at the same rate that Earth has. A pacifistic society, for instance, could easily have developed agriculture five or six tech levels higher than arms and armor.

But it's not necessary to travel to another star empire just to drop tech levels. You could drop a few on modern day Earth if you travel to the right location. The GM can have a lot of play in his tech levels, if he uses them properly.

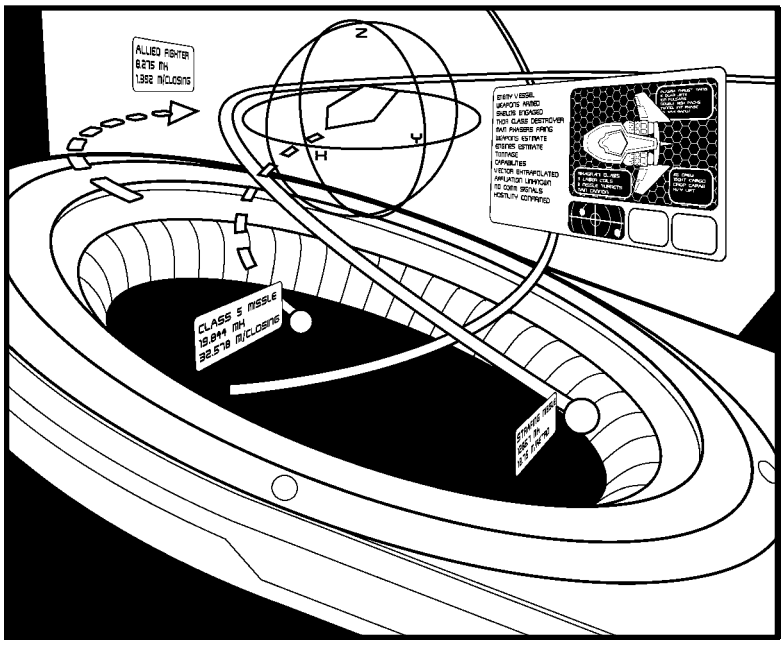
2.3 TIME TRAVEL

A time travel campaign will most likely to span a great deal of tech levels. The trick in a time travel campaign is whether to allow characters to take high tech items back in time with them. In Simon Hawke's *Time Wars* books, Lucas Priest was let loose on Richard the Lionhearted's England armed with an assortment of high tech gadgets, disguised as medieval equipment. This can lead to an interesting game, but can also be unbalancing, so it must be carefully monitored.

2.4 TECH LEVELS AND SKILL USAGE

Many skills depend heavily on the technology level at which they were learned. Medicine, for instance, is heavily dependant on pharmaceuticals and equipment. Replace a modern doctor's scalpels and drugs with leaches and herbs and watch him flounder.

The following chart depicts the penalties incurred when using skills and equipment of a differing tech level.

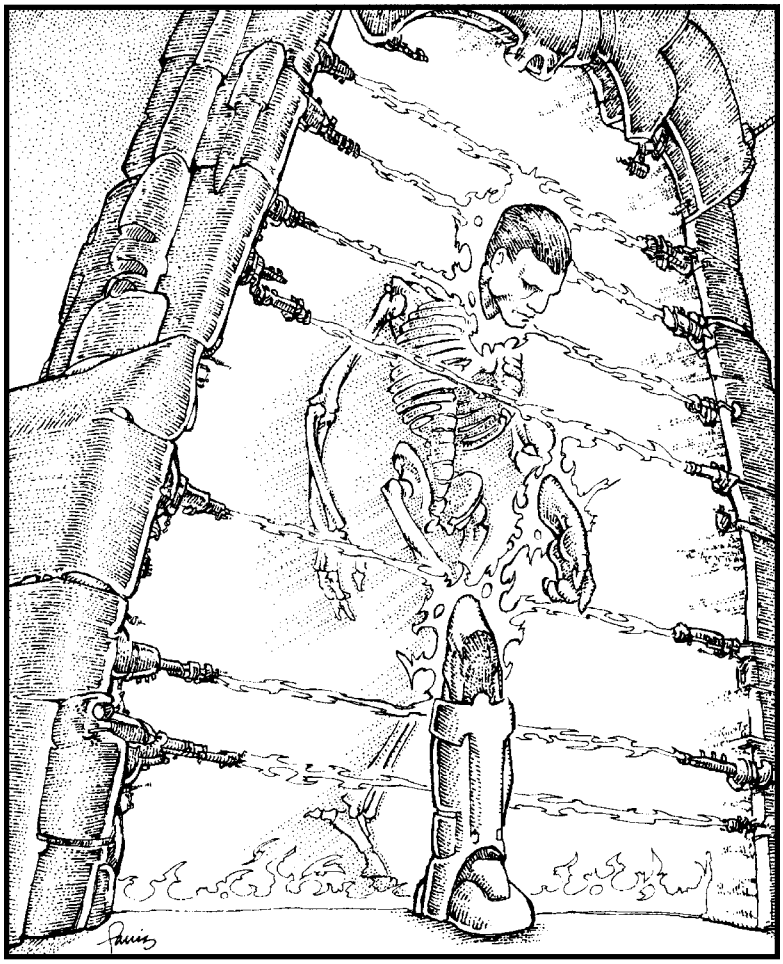


TECH LEVEL PENALTIES

User's Lvl - Equipment's Lvl	Penalty
-10 or Lower	Impossible
-9	-512
-8	-256
-7	-128
-6	-64
-5	-32
-4	-16
-3	-8
-2	-4
-1	-2
0	0
1	0
2	-1
3	-2
4	-4
5	-8
6	-16
7	-32
8	-64
9	-128
10 or more	-256

Note: *Skills could be learned at a lower tech level than the user on purpose. For instance, a time traveling doctor might learn First Aid and Medical Practice on a medieval level so as to be able to treat his patients in the field.*

In addition, certain skills would be unaffected. For instance, tracking is used independent of tech level, and would not be affected by temporal displacement.



2.5 RAISING THE LOCAL TECH LEVEL

In *A Connecticut Yankee in King Arthur's Court* by Mark Twain, the main character begins making gun powder and building guns. Could a group of characters accomplish the same thing?

Possibly, if they knew the formula for black powder, had primitive gunsmithing skills, and knew a good blacksmith. Should players be allowed to do it?

That is left up to the GM. The characters would definitely need unique backgrounds. To pass themselves off as wizards like the Connecticut Yankee, they'd need to be able to do a good bit of acting as well.

So what skills would characters need to make black powder? Chemical Engineering, Weapon Technology, or Gunsmithing (Crafts) might be good choices. To create gunpowder out of raw materials (sulphur (brimstone), charcoal, and saltpeter), the characters would need to make at least a Hard maneuver. If they can pull this off without blowing themselves up, they'll have it.

NOTATION

As technology, even on Earth, has developed at different rates, these levels are not necessarily intended to reflect the development of the western technology after which the ages were named. The discrepancies are purposeful and meant to represent the fact that no society evolves along a perfect tech level progression.

2.6 FITTING TECHNOLOGY TO YOUR CAMPAIGN

This is the most difficult part of building a science fiction universe. The GM must carefully assign his technology to keep the game balanced and to provide the appropriate feel to the setting.

A GM should start by asking himself these basic questions:

What genre would I like to play in? This is the most important question. An early starfaring campaign is going to have a very different feel from a game involving a vast, galactic empire.

Is this a hard science or space opera game? This is the second most important question. What kind of feel do you want? The Star Wars movies depict a society with a very high level of technology, and yet it is very unobtrusive. Holo-sights, specialized scanners and ultra advanced targeting systems are almost unheard of. These detract from the feeling of the individual's story, and therefore they're removed. On the other hand, the characters in any book by Dr. Gregory Benford could not possibly survive without their scanners, HUDs, and other advanced gadgets.

How restricted is technology? It's possible that many individual pieces of tech will be unbalancing or inappropriate for the game. They can be limited by imposing strict laws on their use.

Is this piece of tech right for this universe? Certain pieces of tech may be inappropriate. After assigning all of the generic factors, the GM needs to go through and decide if any tech that was included by default needs to be removed. Maybe force fields don't fit in this game, even though the tech level says they're available.

Are there any pieces of tech that need to be included? Perhaps in this universe, pieces of tech have been discovered that the tech level says are unavailable. For instance, maybe in this universe, the force field was discovered in the year 2001, instead of many years after.

INTERLUDE TWO

Ferguson rubbed his eyes and stared at the holo projector. With a sigh, he scanned backwards through the telemetry and started the images again.

The unprovoked attack was brutal. The images showed the alien fighters as they burned in, targeting the transport with what appeared to be a particle beam weapon. Then they burned past the transport, flipping end over end in what Ferguson assumed was a victory roll. Then the transport disappeared in a burst of apocalyptic light as its anti-matter bottle collapsed.

The image, with nothing left to play, froze on that last scene. The transport expanded and cooled, a vapid ball of gas that had been three-hundred men, women and children.

This was bad. Earth's first contact, the moment they'd been awaiting for centuries, had turned into a blood bath. This new race, still called the Otherkind for lack of a better name, were making attacks all across the border now.

Even now the fleet was in motion. The grand hand of human retribution burned steadily toward Otherkind space. They'd learn. They'd learn the might of humanity when half the human fleet swept the shore of their home world.

He began the computer analysis. The fighters burned in at 5 G's of deceleration, spinning and firing with their particle beam weapons at almost the last moment. Figures analyzed the temperature of the vaporized hull metal as it expanded, translating that into the energy of the weapon. The fighters then used lateral thrusters to kick upwards, missing the transport as it began to explode, obscuring the fighters in a glowing ball of human death. They could only assume that the unmanned second ship had been left alive because it had no one to kill. Or perhaps they wanted these images to get back.

Those bastards would pay.

"Computer, freeze image."

He compared the figures. Otherkind Acceleration: 5 G's. Human Acceleration: 7 G's. That probably had more to do with their physiology than the level of their technology.

Otherkind Maneuverability: 3 G's. Human maneuverability: 5 G's. That indicated lower levels of technology in their thruster capabilities.

Otherkind weapons: 18 Mitchell's. Human weapons: 32 Mitchell's. They were half as powerful.

The invasion should be a cake walk. Humans had them outnumbered and outgunned. Vengeance would be swift and final.

Ferguson stood and walked over to the coffee machine. Since the footage had been released to the news services, the public opinion had been overwhelming. Blow those bastards back into whatever sludge pool their ancestors had crawled from. That was the sentiment going around. Some enterprising folks had even begun making t-shirts.

Ferguson stared at the image as he sipped his coffee. There was a slight irregularity in the explosion. He had never noticed it before, but this time he hadn't frozen the image on the last frame.

"Computer, overlay grid."

A cubic matrix of green lines appeared over and through the image. Ferguson squinted at one of the indexes.

"Computer, localize and expand sector AZ-15."

He watched the section of grid expand to fill the screen. There was definitely something there.

"Computer, enhance image."

The computer began running its enhancement algorithms. Ferguson watched as the image clarified.

"An enemy fighter?"

There it was, clear as day. An enemy fighter, barely visible through the explosion. It was way out of position.

"Computer, can you identify this craft?"

"Affirmative. Hull topography and markings make it 99.672% probable that this is craft Alpha 2."

Alpha 2? What was Alpha 2 doing way over there?

He replayed the image from the beginning. The fighters burned in, destroyed the transport, and burned off at 5 G's as the explosion obscured them.

Then Alpha 2 was suddenly way out of position.

"Computer? Why would this craft be so far out of position?"

"Alpha 2 was too close to the explosion. It is likely that he wanted to be as far away as possible."

Machines were always so literal. He was about to reprimand the computer when the implications of the statement began to sink in.

"Computer, how many G's of acceleration would it have taken to get there?"

"Assuming that the fighter began accelerating the moment it was obscured by the explosion, which is unlikely, it accelerated at 47.2 G's."

Ferguson tried to track that information, but he just couldn't wrap his mind around it.

"That doesn't parse. Come again?"

"Assuming that the fighter began accelerating the moment it was obscured by the explosion, which is unlikely, it accelerated at 47.2 G's."

But how? How could this fighter suddenly accelerate so quickly? How is that possible?

It was possible they didn't come in under maximum acceleration and deceleration, but why? What tactical reason could there be?

And how can they suddenly survive that sort of acceleration? What kind of creature survives 47+ G's? Unless . . .

"Inertial dampers?"

But that would mean they were advanced, vastly advanced. Advanced far beyond human capabilities. But then why not use the inertial dampers all along? Why turn it on only when it was a matter of life and death?

Unless they were trying to hide their capabilities. But again, why? Why would they stage attacks with crafts acting vastly under powered? Why? Why would they purposely cripple themselves, only operating under full power when the exploding ship became an immediate danger?

Then it hit him. They wanted the humans to attack. They wanted the humans to draw their fleet together into one place. The humans were handing them their fleet on a silver platter.

But then that must mean that there was hope. If the aliens were tricking them into massing their fleet, that must mean that the humans, fighting a war on their terms, might have a chance, no matter how small. At least he prayed to God that's what it meant.

"Computer, get me the general. Maximum priority. They have to stopped. They have to be stopped, now."

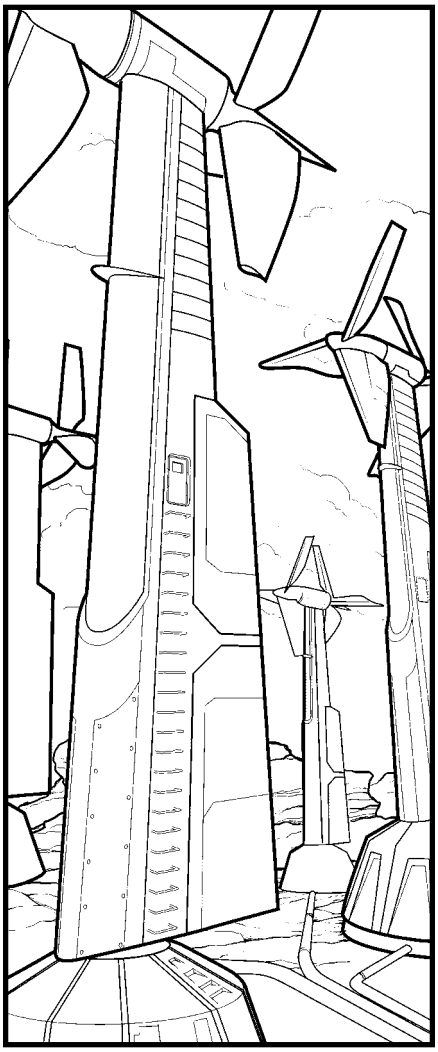
PART II
TECHNOLOGICAL DEVELOPMENT

"I have yet to see any problem, however complicated, which, when you looked at it in the right way, did not become still more complicated."
— Poul Anderson

3.0 :: TECH LEVEL BENCHMARKS

"Success is a journey, not a destination."
— Proverb

This section contains a listing of the tech levels, broken into various categories. The general category is meant to give an overview of technological development. This treatment is not accurate enough to give a GM a truly comprehensive look on how tech levels affect a society. Therefore, this section has been further broken into specific categories, such as agriculture. These describe in more detail the progress that comes with the advances in technology. This allows the GM to make more informed decisions involving tech levels.



3.1 GENERAL

This chart depicts a general overview of the tech levels. They are listed as a series of historical, Earth equivalents to give the reader a better idea of how the tech levels fit into the overall scheme.

Each major age of man is listed below, along with the major technological achievements of the age. Note that these ages are listed with a bias toward Western civilization. To get a good idea of how different cultures develop at different rates, look up when the oriental cultures developed these same levels of technology.

Note: *For those GMs in possession of ICE's sourcebook, ". . . and a 10-Foot Pole" (ATFP) a notation has been placed after each tech level which corresponds to a section in that book. . . . and a 10-Foot Pole is an invaluable resource. It is much more complete than this book was intended to be, mainly because most of the items in there do not require descriptions for those of us who are used to them in our every day lives.*

This still requires some careful watching by the GM. First of all, many devices were invented slightly out of their tech levels, so if a GM is using this for an non-terrestrial civilization, he should keep that in mind. In addition, many of the ages from that book span multiple tech levels, so there may be equipment on a list that hasn't quite been invented yet.

0 **Pre Stone Age** — No technology exists. Even language has yet to be invented.

1 **Stone Age** — Language is invented. Fire is discovered. The club becomes the weapon of superiority. Hunting and gathering are the norm. [*ATFP* Section 3.0, The Stone Age, p. 10]

2 **Dawn of Civilization** — Domestication of sheep and cereal grains. Invention of pottery. The invention of the wheel. Tools are made of stone. Fallowing and irrigation are invented. [*ATFP* Section 4.0, The Copper Age, p. 15]

3 **Bronze Age** — Writing and bronze working are invented. Weapons and tools are made from bronze. The chariot is invented and dominates the battle field. [*ATFP* Section 5.0, The Bronze Age, p. 23]

4 **Age of Reason** — Philosophy and higher learning come into play. Paved roads are invented. Geometry and mathematics are invented. [*ATFP* Section 5.0, The Bronze Age, p. 23]

5 **Iron Age** — The ability to smelt and work iron is invented. This primarily affects the trappings of war. Construction with stone undergoes many advances. The keystone arch is invented. The waterwheel, and its use in mills, is discovered. [*ATFP* Section 6.0, The Iron Age, p. 34]

6 **Dark Ages** — Primarily innovations in warfare and ground tactics. The saddle and the stirrup make cavalry more effective than ever before. [*ATFP* Section 6.0, The Iron Age, p. 34]

7 **Medieval Period** — Windmills and wind power are invented. Gothic architecture is perfected. The flying buttress is invented. Mathematics now includes zero. Steel is invented, making warfare even more efficient. [*ATFP* Section 7.0, The Middle Ages, p. 51]

8 **High Medieval Period** — Plate armor is invented. The knight rules the battlefield. Bell casting is perfected. At the end of this period, gunpowder is introduced, but doesn't really take over until the next period. [*ATFP* Section 7.0, The Middle Ages, p. 51]

9 **Renaissance** — Gunpowder and advances in shipbuilding techniques revolutionize warfare. Fencing is invented as armor becomes obsolete. [*ATFP* Section 8.0, The Renaissance, p. 68]

10 **Colonial Period** — Ship advancements of this and the last period lead to a great spurt of exploration. The printing press hits wide-spread usage. [*ATFP* Section 9.0, The Age of Reason, p. 86]

11 **Low Industrial Revolution** — Sound cast iron is produced in a blast furnace. The steam engine is invented. A series of important inventions combine

to make the steam engine more efficient. The telegraph is invented. [*ATFP* Section 10.0, The Industrial Revolution, p. 103]

12 **High Industrial Revolution** — The assembly line brings mass production into full swing. The telephone is invented, and the revolver enters the scene. Iron begins to play a part in building, and suspension bridges enter the scene. The internal combustion engine is invented and undergoes several overhauls through the end of this age. The dynamo makes electrical power useful. The incandescent lamp is invented. [*ATFP* Section 11.0, The Age of Steam, p. 121]

13 **Low Industrial Civilization** — Mass production and the automobile change the world. The airplane is invented. The radio enters widespread use. [*ATFP* Section 12.0, The Electric Age, p. 139]

14 **Middle Industrial Civilization** — Jet power becomes practical. The rocket is invented. Nuclear fission is first achieved. The television enters widespread use. The machine gun, long range artillery, poison gas, and many other military advances change warfare. [*ATFP* Section 13.0, The Atomic Age, p. 158]

15 **High Industrial Civilization** — The computer is invented. Orbital and lunar space flight is achieved. Atomic power is put into wide use. The maser and laser are invented. Transplant technology takes off. [*ATFP* Section 13.0, The Atomic Age, p. 158]

16 **Low Cyber Age** — The personal computer is invented. Orbital space flight becomes routine. Medical research takes off. The genome begins to be mapped. The early stages of human-machine interaction begin. Cloning is achieved. Sub-Atomic particles are successfully teleported. [*ATFP* Section 14.0, The Information Age, p. 174]

17 **High Cyber Age** — Cybernetics are invented and spread like wildfire. Planetary exploration begins. Rudimentary success with simulated intelligence is achieved. The neural interface revolutionizes entertainment. The first Self-Generating-Discharge Plasmatrons are built.

18 **Spacefaring Age** — Planetary colonies are established. Fusion power is placed in widespread use. Man-portable lasers and particle beams become the weapons of choice. Small scale genetic manipulation of an unborn fetus is achieved.

19 **Starfaring Age** — Ramjets begin to explore the stars. Slow colony ships leave for nearby systems. Simulated intelligence is perfected. Large scale genetic manipulation is achieved on unborn fetuses with moderate success.

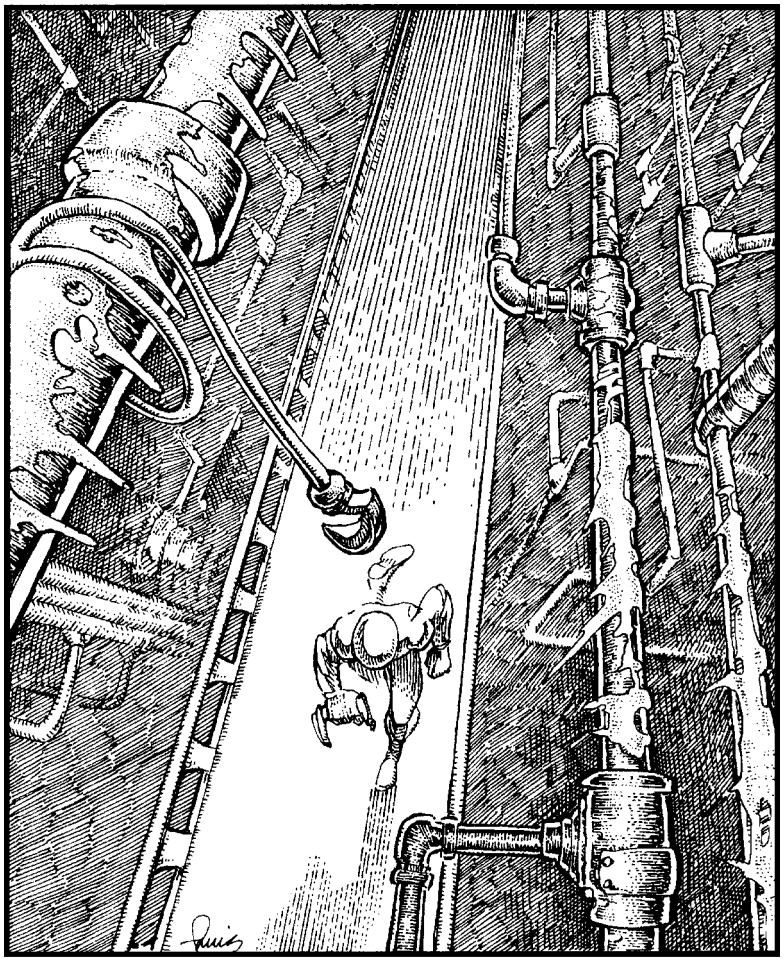
20 **Star Colonial Period** — Faster than light travel is discovered. The tachyon is discovered. Artificial intelligence is invented. Increases in medical and agricultural technology allow for colonies to survive with minimum support. Genetic manipulation, on a small scale, is achieved with adult specimens.

21 **Antimatter Age** — Antimatter power enters widespread use. Antimatter weapons are created. Medical science can now fix almost any non neural damage.

22 **Age of Gravity** — The invention of artificial gravity expands man's living capacities. Genetic manipulation on a reasonable scale can now be performed on a living organism. Neural Pathway Reconstruction Therapy is invented. Non locality physics splits off of quantum physics.

23 **Quantum Age** — Vacuum energy is fully tapped. Early force screens are invented. Teleportation, on a small scale, becomes possible. Major brain reconstruction becomes possible.

24 **Age of Force** — Force screens are developed on both a large and personal scale. Direct manipulation of alloys makes engineering advances possible.



25 **Age of Antigravity** — Antigravity is invented. Inertial dampers revolutionize space combat.

26 **Age of Terraforming** — Large scale ecological engineering becomes possible.

27 **Age of World Building** — Ringworlds and zero fault technology become possible. There is little out of reach.

28 **Dysonian Age** — Dyson spheres can now be built. Zero fault technology makes them practical.

29 **Cosmic Age** — Limitless, cosmic power is discovered

30 **Age of Omnipotence** — Direct, mathematical manipulation of reality is possible. Anything can now be achieved.

31+ **And Beyond**... — Unknown.

3.2 ARMS AND ARMOR

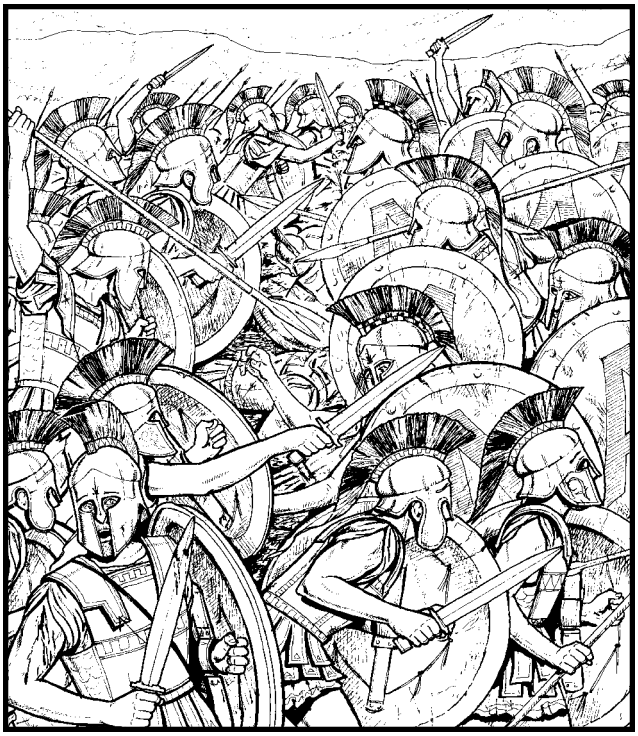
The art of war precedes civilization and social order. It's likely that it even precedes sapience. From the earliest days of intelligence weapons have been used by the strong to steal from the weak. They have also been used by the strong to protect the weak. The warrior is in fact the oldest profession.

0 **Pre Stone Age** — No weapons exist. War is conducted with fists and teeth.

1 **Stone Age** — Rocks and sticks are used. The club is invented. Hide armor and hide shields are invented.

2 **Dawn of Civilization** — Spears and then arrows are invented. The bow follows.

3 **Bronze Age** — Bronze working brings about the forging of blades and armor. Armor consists of bronze and leather.



4 **Age of Reason** — Refinements in armor is the majority of this age's accomplishments. The paved road allows the more rapid movement of troops. The phalanx is devised.

5 **Iron Age** — Forged iron revolutionizes weapons and armor. The cavalry is first used successfully, despite the lack of the stirrup. The ballista, catapult, and mangonel enter widespread use.

6 **Dark Ages** — Greek fire is introduced to maritime combat. The stirrup and saddle are introduced, increasing the effectiveness of cavalry. The reign of the heavy cavalry begins. Ground tactics are refined somewhat.

7 **Medieval Period** — Steel is invented. Armor and weapons are refitted using this lighter, stronger material. Improvements in architecture and stone masonry create bigger and more fortified castles. The heavy horse becomes more and more powerful. Chain mail is brought into its first full-scale use.

8 **High Medieval Period** — Plate armor is invented. The crossbow is developed, heralding "The End of Warfare." At the end of this period, gunpowder is invented.

9 **Renaissance** — Gunpowder and advanced shipbuilding techniques revolutionize warfare. Man-portable gunpowder weapons are brought onto the battlefield, as well as catapults. Fencing is invented as armor becomes obsolete.

10 **Colonial Period** — Ship advancements of this and the last period improve capabilities in maritime warfare. Gunpowder cannons allow for more complicated riggings. The paper cartridge increases the firing rate of the infantryman. The smoothbore musket is invented. The bayonet is introduced.

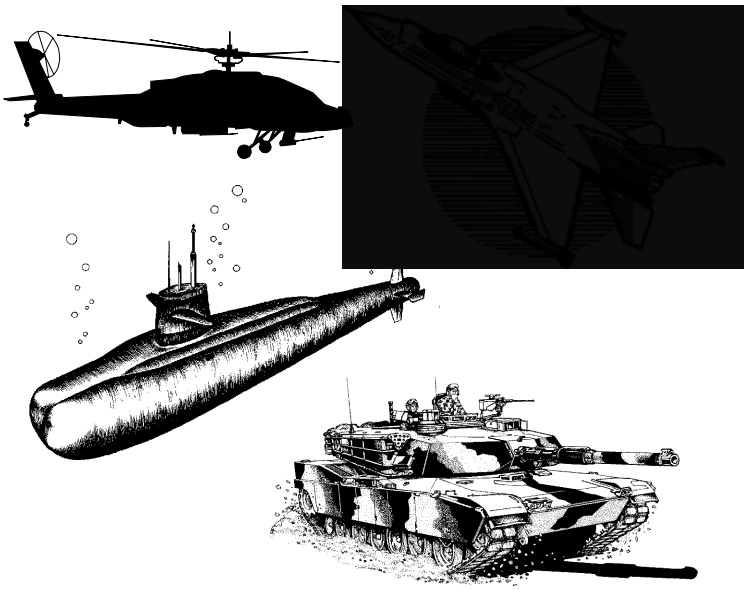
11 **Low Industrial Revolution** — Muskets and the cavalry saber rule the battlefield. Scientific research is directed toward arms technology for the first time. The first maneuverable submarine is invented.

12 **High Industrial Revolution** — The revolver is invented. Steel hulls replace wooden ones. Steam power replaces wind power. Armored turrets and the torpedo are invented. Smokeless powder, the breech loader, and the working machine gun are invented. An array of explosives are invented.

13 **Low Industrial Civilization** — The military airplane, the man-portable machine gun, the submarine, the sea mine, and gas warfare are first brought into full use.

14 **Middle Industrial Civilization** — Jet power becomes practical. The rocket is invented. Radar is invented. Submarine detection methods are invented. Electronic countermeasures, as well the proximity fuse, are invented. The machine gun rules the battlefield. The tank puts an end to trench warfare. Helicopters are invented, but not put to widespread use. Atomic weapons are first developed.

15 **High Industrial Civilization** — The helicopter enters warfare. Increases in medical techniques are the greatest improvements in warfare. Nuclear power is put to use in naval vessels.



16 **Low Cyber Age** — The rocket is brought into wide use, and the helicopter becomes a combat vessel. Ballistic body armor is invented, as are improved chemical and incendiary arms. Increased computer technology allows more accurate use of missiles. The spy satellite comes into full usage. The ICBM is the nuclear delivery system of choice.

17 **High Cyber Age** — Military lasers and particle beams are brought into use. Electrochemical propulsion replaces gunpowder. Cybernetic advancements allow the creation of a new "super soldier." Orbital weapons begin to be utilized. Further advances in computer telemetry allow for increased long range combat capabilities. Gauss weapons are invented. Kinetic armor is invented, and the usefulness of the firearm begins to wane.

18 **Spacefaring Age** — Man-portable lasers and particle beams become the infantry weapon of choice. Planetary based mass drivers replace atomic weapons in interplanetary defense. Reflective armor and aerosol screens become useful in personal defense. Genetic engineering, on a minor scale, is used to produce the next generation of soldiers. Genetically engineered bio-weapons achieve new levels of effectiveness. VT tanks are first built.

19 **Starfaring Age** — The first space combat vessels are built, though not brought into widespread use. Plasma weapons are invented. Ablative body armor is developed to combat particle beam weapons. A new generation of genetic "super soldiers" is produced.

20 **Star Colonial Period** — Man-portable plasma weapons are developed. Personal body armor is advanced to protect against plasma weaponry. The discovery of the tachyon leads to faster than light scanning equipment. The missile nearly becomes obsolete. Space combat vehicles are brought into ready use. Advanced SI computers are now small enough to create automated combat vehicles. The combat 'droid is developed.

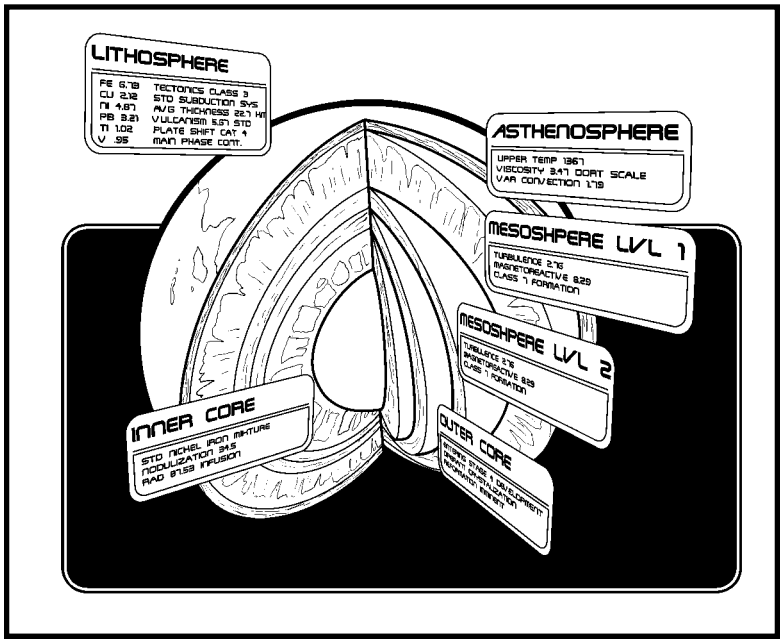
21 **Antimatter Age** — Weapons become smaller and deadlier. Antimatter power is used to run more and more powerful space combat vessels. The potential of tachyon sensors begins to be fully realized. Star combat is now the norm. Combat armor evolves to the point where orbital drops are possible, bringing about a new breed of paratrooper. Land invasions become more and more obsolete, as space superiority takes a central role in warfare. Genetic super soldiers and combat droids vie for supremacy on the battlefield. Medical technology can heal most wounds.

22 **Gravity Age** — Artificial gravity allows longer terms on space situated weapons platforms. Men can be kept in fighting trim even in space. Increased gravity can be used for physical training. Neural pathway reconstruction therapy allows soldiers to be revived and saved after much longer periods of brain death.

23 **Quantum Age** — Full utilization of vacuum energy brings freedom to space-based weapons they have never had before. Major brain reconstruction is now possible. Increased weapons, armor and genetic technologies bring about the obsolescence of the combat droid.

24 **Age of Force** — Force screens become useful for both large vehicles and personal defense. Direct manipulation of alloys, on a molecular level, increases the effectiveness of fighting vessels. Weapon and armor technologies vie for superiority, but the personal shield has changed everything.

25 **Antigravity Age** — Antigravity allows the creation of hover tanks and other low altitude, all-terrain craft. Inertial dampers allow space combat to achieve new levels of maneuverability. The dogfight is reinvented.



26 **Age of Terraforming** — Terraforming allows large scale holocaust weapons to be employed with greater impunity.

27 **Age of World Building** — Zero fault technology makes fighting implements more durable and effective. Increases in engineering make things harder and harder to destroy. For the first time in history it appears it may, one day, be easier to create than to destroy.

28 **Dysonian Age** — Entire worlds can now be built, giving whole new territories to take. Force technology increases to the point where active destruction is becoming more and more difficult.

29 **Cosmic Age** — The discovery of cosmic energy allows offensive technology to outstrip defensive technology.

30 **Age of Omnipotence** — Direct, mathematical manipulation of reality is possible. Creating and destroying are now one.

31+ **And Beyond... —** Unknown.

3.3 COMMUNICATIONS TECHNOLOGY

Communications technology is any technology which allows the exchange of thoughts and ideas between two sapient creatures. It runs the gamut between simple language and high-tech, faster than light, com gear.

0 **Pre Stone Age** — No technology, not even language, exists.

1 **Stone Age** — Language is invented. Increasingly complicated thoughts and concepts are communicated.

2 **Dawn of Civilization** — Language is refined somewhat.

3 **Bronze Age** — Writing is invented. Further refinements in language persist, allowing the communication of complex philosophical concepts.

4 **Age of Reason** — Advancements in language of the last age allow for the birth of philosophy and the communication of scientific concepts. The invention of the paved road allows a communications base which supports larger political bodies.

5 **Iron Age** — Further advancements in language persist. Watch fires and horsemen are the primary couriers of important news. The messenger becomes a trusted commodity.

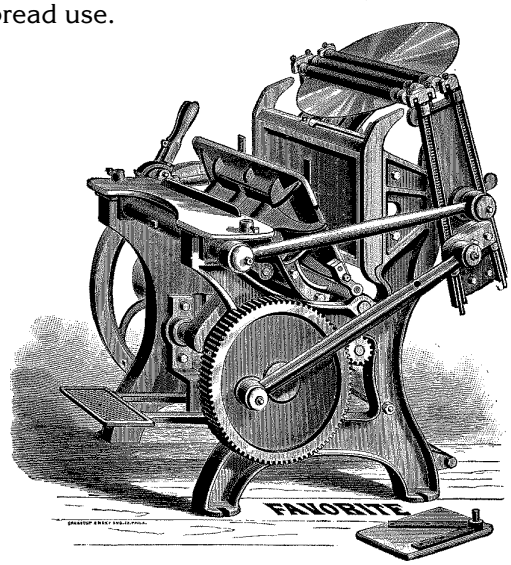
6 **Dark Ages** — Little in the way of developments are made, though the groundwork for many modern languages are laid.

7 **Medieval Period** — Increased shipbuilding technology allows greater rate of travel by sea.

8 **High Medieval Period** — Advances in this time period primarily involve ship construction.

9 **Renaissance** — More advances in ship construction are known during this period.

10 **Colonial Period** — The printing press hits widespread use.



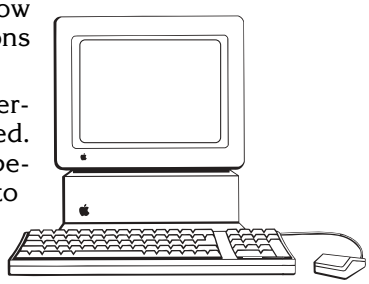
11 **Low Industrial Revolution** — The telegraph is invented.

12 **High Industrial Revolution** — The telephone is invented.

13 **Low Industrial Civilization** — The radio enters widespread use.

14 **Middle Industrial Civilization** — The television enters widespread use.

15 **High Industrial Civilization** — The computer is invented. A network of communication satellites in geosynchronous orbit allow line of sight communications to circumvent the world.



16 **Low Cyber Age** — The personal computer is invented. The Internet comes into being, adding a new level to corporate and private communications. Fiber optics are invented.

17 **High Cyber Age** — Cybernetics are invented. The neural interface revolutionizes the consumption and distribution of data. The Sensenet is born.

18 **Spacefaring Age** — Interplanetary communication is restricted to speed of light signals.

19 **Starfaring Age** — Interstellar signals are still restricted to speed of light signals.

20 **Star Colonial Period** — The tachyon is discovered. Slow faster than light communication is created.

21 **Antimatter Age** — Methods of reducing a tachyon's energy are discovered. The speed of faster than light communication improves dramatically.

22 **Gravity Age** — The speed of faster than light signals is increased still more.

23 **Quantum Age** — Teleportation is heralded as the dawn of a new age of instantaneous communication. However there are many restrictions. Other breakthroughs in non-locality make instantaneous communication possible.

24 **Age of Force** — Com systems become smaller and more efficient.

25 **Antigravity Age** — Com systems become smaller and more efficient.

26 **Age of Terraforming** — Com systems become smaller and more efficient.

27 **Age of World Building** — Com systems become smaller and more efficient.

28 **Dysonian Age** — Com systems become smaller and more efficient.

29 **Cosmic Age** — Limitless, cosmic power is discovered. Com systems lose all effective range.

30 **Age of Omnipotence** — Direct, mathematical manipulation of reality is possible. This is communication with the universe itself, in the highest form.

31+ **And Beyond...** — Unknown.

3.4 COMPUTERS AND DATA STORAGE

Computers have revolutionized many aspects of human life. The same would be true for any species. Computers can handle the functions of man with greater accuracy and greater efficiency than a biological life form.

The problem is, they are still machines. At least for many tech levels they are. What do they become when they achieve self-awareness? That is a debate for philosophers. It's obvious, however, that they will be something more than slave minds.

It is also interesting to note that computers, at least around and about tech level 16, are a highly volatile market. Moore's law states that the power of computers must double every twelve to eighteen months. In the real world, this shows no sign of being violated.

0 **Pre Stone Age** — No advances.

1 **Stone Age —** No advances.

2 **Dawn of Civilization** — No advances.

3 **Bronze Age** — The first form of data storage, the written word, is invented.

4 **Age of Reason** — Techniques for writing and writing implements are refined somewhat.

5 **Iron Age** — The first two computational devices, the abacus for mathematics and the astrolabe for navigation, are invented.

6 **Dark Ages** — Books, at least in the hands of the clergy, achieve popularity and use.

7 **Medieval Period** — Little in the way of inventions emerge, though inevitable refinements continue.

8 **High Medieval Period —** Little in the way of inventions emerge, though inevitable refinements continue.

9 **Renaissance** — Little in the way of inventions emerge, though inevitable refinements continue.

10 **Colonial Period** — The first adding device is invented, using a system of dials. Other refinements follow, though not in great volume.

11 **Low Industrial Revolution** — The telegraph is invented, allowing near speed of light transmissions of data over large distances.

12 **High Industrial Revolution** — The first mechanical adding machines are invented. Inevitable refinements occur. The difference and analytical engines are designed, but lack of fine machine techniques make them impractical, if not impossible, to build. The telephone is invented, allowing the first transmission of sound over large distances.

13 **Low Industrial Civilization** — Punch card programming and data storage are invented. The radio is invented, allowing transmission of data over the airwaves.

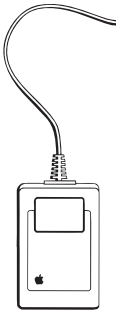
14 **Middle Industrial Civilization** — The television is invented, providing the first visual imaging system. The punch card computer is improved, allowing fully automatic computations to be performed.

15 **High Industrial Civilization** — The electronic computer is invented. They are generally room-sized monstrosities.

16 **Low Cyber Age** — The personal computer is invented, revolutionizing communication and business. At the end of this age, early computer-neural interaction (all one way), is coming to be. Moore's law is becoming strained as clock speeds approach limits imposed by the speed of light. The slack is picked up by parallel processing. The Internet becomes a household tool.

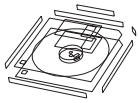
17 **High Cyber Age** — Full computer-neural interaction becomes possible. Cybernetics result, as do the Sensenet and the Datanet. Rudimentary success with simulated intelligence is achieved.

18 **Spacefaring Age** — Hardware innovations begin to slack off, no longer compensating for the lack of clock speed increases (which simply are as fast as relativity allows). Fiber optic systems are now used exclusively, with great success. Simulated intelligence becomes more and more realistic.

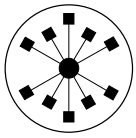


19 **Starfaring Age** — Moore's law is dead. Computer technology increases, but its heyday of growth is over. Simulated intelligence is generally considered to be perfected. Computer scientists begin to wonder whether true sapient intelligence will ever be manufactured. This is sometimes referred to as the "dark age of computing."

20 **Star Colonial Period** — The light barrier is broken, resulting in a flurry of computer growth that puts Moore's law to shame. With the light barrier no longer a problem, the top is blown off the clock speed barrier. Thanks to the tachyon, artificial intelligence is not only possible, it is difficult to restrain. Molecutronic computers are born.

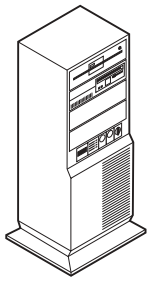


21 **Antimatter Age** — Computer tech continues to increase, but the need for faster systems is becoming less and less necessary. A "home feeling" approach to computing begins, as the feel of the software begins to far outstrip other considerations.



22 **Gravity Age —** Computing power has exceeded the needs of its creators by so far that research nearly ceases. Another computer dark age ensues.

23 **Quantum Age** — Full utilization of vacuum energy, combined with an excess of computational power, allows small scale teleportations to be performed.



24 **Age of Force** — The dark age continues.

25 **Antigravity Age** — The dark age continues.

26 **Age of Terraforming** — The dark age continues.

27 **Age of World Building** — The dark age continues.

28 **Dysonian Age** — Zero fault technology, coupled with generations of striving to produce bug-free software (there was nothing else to do) produce systems where errors are almost unheard of.

29 **Cosmic Age** — With the technology of the next age in sight, a major push to expand computational power recommences.

30 **Age of Omnipotence** — Direct, mathematical manipulation of reality is possible. This requires massive computational ability, which is achieved.

31+ **And Beyond…** — Unknown.

3.5 ENERGY SOURCES

Energy is very important to technology. There has never been a time in history when the development of technology has caused the requisite amounts of energy to drop. Energy can come in several forms.

0 **Pre Stone Age** — No technology exists. Even fire is yet to be tamed. Muscle power is the only power there is.

1 **Stone Age** — Fire is discovered. So is the lever.

2 **Dawn of Civilization** — Animal power is harnessed.

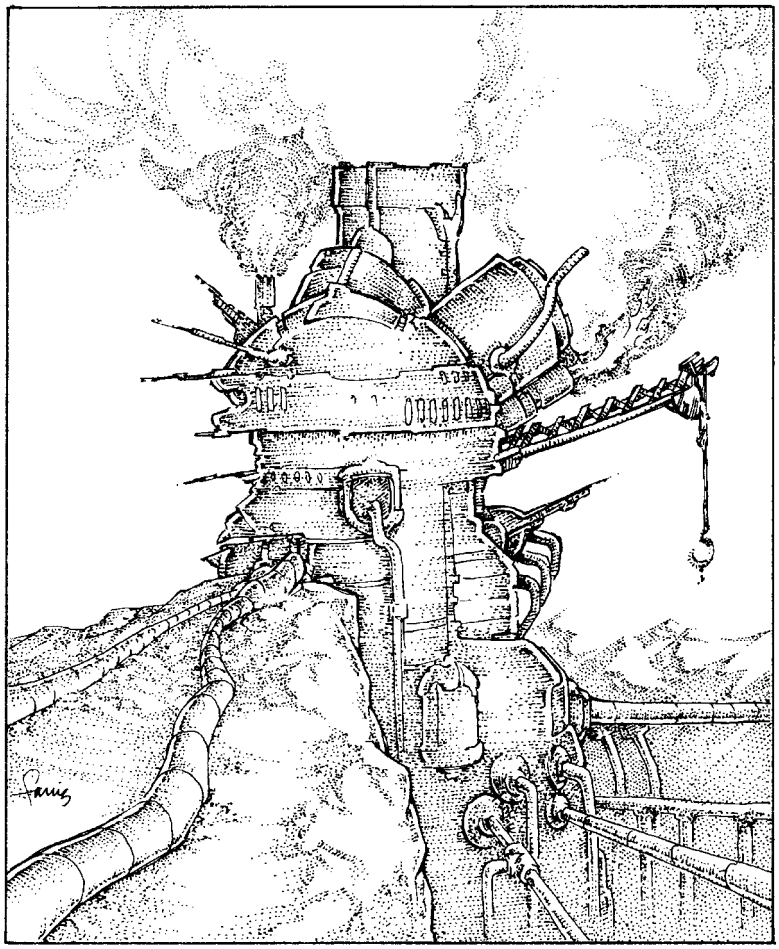
3 **Bronze Age** — No real advances occur during this period.

4 **Age of Reason** — No real advances occur during this period.

5 **Iron Age** — The waterwheel, and its use in mills, are discovered.

6 **Dark Ages** — Better horse harnesses allow for more efficient animal power.

7 **Medieval Period** — Windmills and wind power are invented.



8 **High Medieval Period** — No real advances occur during this period.

9 **Renaissance** — No real advances occur during this period.

10 **Colonial Period** — Coal begins to be burned in large quantities.

11 **Low Industrial Revolution** — The steam engine is invented. A series of important inventions combine to make the steam engine more efficient. The telegraph is invented. Electricity is discovered.

12 **High Industrial Revolution** — The internal combustion engine is invented and undergoes several overhauls through the end of this age. The dynamo makes electrical power useful. The incandescent lamp is invented.

13 **Low Industrial Civilization** — The automobile causes an increased use of fossil fuels.

14 **Middle Industrial Civilization** — Nuclear fission is first achieved.

15 **High Industrial Civilization** — Atomic power is put to wide use.

16 **Low Cyber Age** — Atomic power is further refined.

17 **High Cyber Age** — First prototype fusion reactors are built. The first Self-Generating-Discharge Plasmatrons (vacuum energy) are built.

18 **Spacefaring Age** — Fusion power is placed in widespread use. VT vehicles rise in popularity, keeping the fossil fuel age alive.

19 **Starfaring Age** — Ramjets, powered by fusion and interstellar hydrogen, begin to explore the stars. Advancements in the Self-Generating-Discharge Plasmatron allow VT vehicles to begin production in full electric forms. The fossil fuel age finally dies.

20 **Star Colonial Period** — Fusion power is used on all spacecraft by this time.

21 **Antimatter Age** — Antimatter power enters widespread use. Antimatter weapons are created.

22 **Gravity Age** — Antimatter power is further refined. Power converters are invented (heralded by the popular media as the rebinding of Prometheus), allowing energy to be converted from one form to another with very little loss. This allows the construction of micro power generators, as bulky steam turbines are no longer required.

23 **Quantum Age** — Vacuum energy is fully tapped. Energy is now practically limitless.

24 **Age of Force** — Further refinements are made with vacuum power.

25 **Antigravity Age—** Further refinements are made with vacuum power.

26 **Age of Terraforming** — Further refinements are made with vacuum power.

27 **Age of World Building** — Further refinements are made with vacuum power.

28 **Dysonian Age** — Dyson spheres allow all of a sun's energy to be tapped, though vacuum power makes this a moot point.

29 **Cosmic Age** — Limitless, cosmic power is discovered

30 **Age of Omnipotence** — Direct, mathematical manipulation of reality is possible. This requires almost all the power made available by the last period.

31+ **And Beyond...** Unknown.

3.6 GENERAL SCIENCE

For many years science was used to describe any body of systematic knowledge. In the nineteenth century, the definition was refined to denote an organized inquiry into the natural and physical universe. For the purposes of Spacemaster, the second and more modern definition is appropriate.

0 **Pre Stone Age** — No technology exists. Even language has yet to be invented.

1 **Stone Age** — Language is invented. Fire is discovered.

2 **Dawn of Civilization** — Science begins, by necessity meeting the needs for survival. Elementary forms of arithmetic, geometry and astronomy are devised to meet the requirements of engineering, time reckoning, accounting, land measurement and agriculture.

3 **Bronze Age** — Writing and bronze working are invented.

4 **Age of Reason** — Philosophy and higher learning come into play. High-powered geometry is invented. The universe is thought to be eternally changeless and eternally in motion in a dichotomy of "Being" and "Becoming." An alternative "atomic" theory is posited. Mathematics are elevated to the pinnacle of scientific activity.

5 **Iron Age** — The ability to smelt and work iron is invented. The keystone arch is invented. The first heliocentric model of the universe is posited.

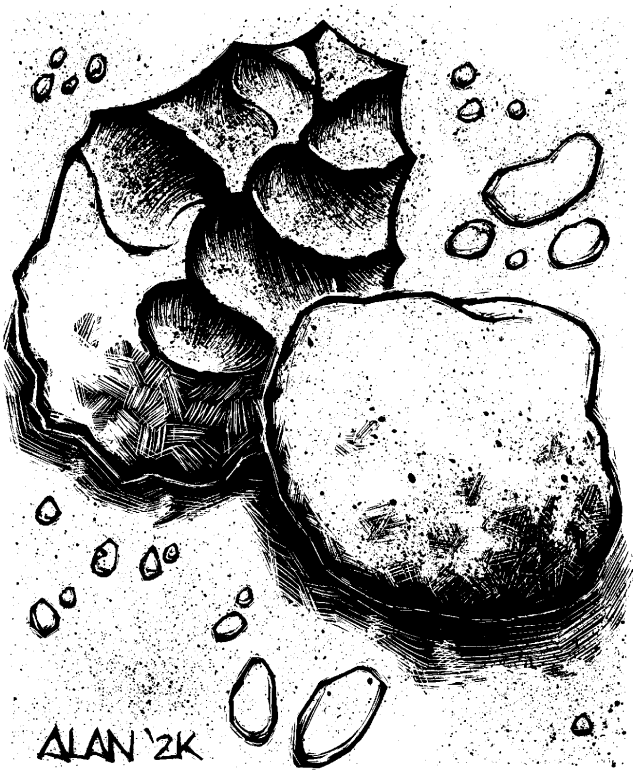
6 **Dark Ages** — Primarily innovations in warfare, with the occasional technological advance. Little in the way of scientific advances occur.

7 **Medieval Period** — Scientific refinements are made on existing subjects. Knowledge is centralized and taught in universities.

8 **High Medieval Period** — A movement to merge mysticism and science begin. Experimental method is introduced. Physics is introduced. An infinite universe is theorized. At the end of this period, gunpowder is introduced, representing a step forward in chemistry.

9 **Renaissance** — A new heliocentric theory is taken more seriously. The earth is first seriously taken as a planet. Mathematical reasoning is first introduced to cosmology, superseding the common sense approach. The theory of the immutable universe and crystalline spheres of cosmology are shaken.

10 **Colonial Period** — The printing press hits widespread use, bringing the book to a more common citizen. The beginnings of orbital mechanics are defined. The telescope is invented. Major revolutions in astronomy begin. The heliocentric theory is cinched. The three laws of motion are postulated (They are the law of inertia, "An object in motion stays in motion, and an object at rest stays at rest, unless acted upon by an outside force."; the law of acceleration, "The change in motion of an object is proportional to the force acting upon it and takes place in the direction of a straight line upon which the force is impressed."; and the law of reaction, "Every action has an equal and opposite reaction.") The law of gravitation is postulated.



11 **Low Industrial Revolution** — The theory of corpuscular light is introduced. The theory of colors (as they pertain to light) is introduced. The theory of uniform gravity is proven. The steam engine is invented. The telegraph is invented. Chemistry and geology are introduced as sciences.

12 **High Industrial Revolution** — The theory of evolution is postulated. The theory of heredity is postulated. The corpuscular theory of light is replaced by the wave theory. The theory of conservation of energy is introduced. The theory of electromagnetism is put forward. X rays are discovered. The telephone is invented, and the revolver enters the scene. The internal combustion engine is invented and undergoes several overhauls through the end of this age. The dynamo makes electrical power useful. The incandescent lamp is invented. The electron is discovered. Atomic theory is put forth. The logistics of the binding of atoms into molecules is put forth. Periodic law is defined. Astronomy, physics, and biology become formal sciences.

13 **Low Industrial Civilization** — The corpuscular and wave theories of light are melded. The groundwork of quantum theory is laid out. Aerodynamics culminates in the invention of the airplane. The theories of special and general relativity are postulated. The radio enters widespread use. The expanding universe is postulated. The big bang is theorized. Continental drift is theorized, and plate tectonics follows. Genetics becomes a formal science.

14 **Middle Industrial Civilization** — The rocket is invented. Quantum physics culminates in nuclear fission. The television enters widespread use.

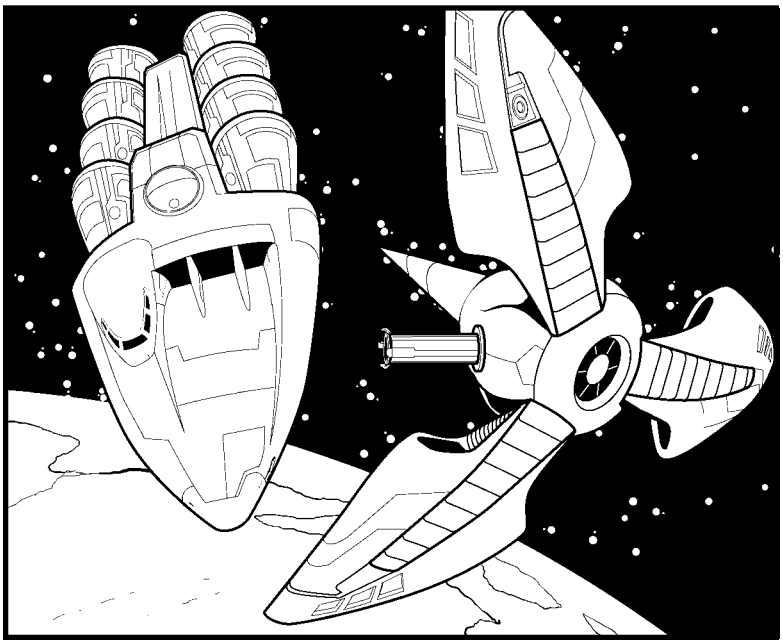
15 **High Industrial Civilization** — The computer is invented. Orbital and lunar space flight is achieved. Atomic power is put to wide use. The maser and laser are invented.

16 **Low Cyber Age** — The personal computer is invented. Orbital space flight becomes routine. The early stages of human machine interaction begin. Bell's inequality is shown, proving the existence of quantum non locality. Subatomic particles are successfully teleported. The first generators which harness vacuum energy are built.

17 **High Cyber Age** — Cybernetics are invented and spread like wildfire. Planetary exploration begins. Rudimentary success with simulated intelligence is achieved. The neural interface revolutionizes entertainment. Solar observation refines fusion and nucleosynthesis theory. The first drafts of the unified field theory are put together.

18 **Spacefaring Age** — Planetary colonies are established. Fusion power is placed in widespread use. Man-portable lasers become the weapon of choice. Advances in radioactive theory help in the related field of medicine. The unified field theory reaches its final form and gains full acceptance.

19 **Starfaring Age** — Ramjets begin to explore the stars. Slow colony ships leave for nearby systems. Simulated intelligence is perfected. Data from star exploration revolutionizes theories on ecosystems and biospheres.



20 **Star Colonial Period** — Faster than light travel is discovered. A universal frame of reference is discovered, and relativity theory is shaken to it's very foundations. The tachyon is discovered. Artificial intelligence is invented. Nanites are produced in quantity for the first time.

21 **Antimatter Age** — Refinements in quantum theory allow for large-scale production of antimatter. Antimatter reactors are produced. These quantum advancements lay the groundwork for direct spatial manipulation. Cosmic power is theorized.

22 **Gravity Age** — Non locality physics splits off from quantum physics. The groundwork in spatial manipulation, explored during the last age, culminates in the invention of artificial gravity. There is no fine control of this science yet, and therefore inertial damping is far from reach. In addition, this can only be used to increase the gravity of an object of significant mass, such as a deck plate, and therefore it cannot be used to create antigravity. It does, however, spawn the sister technology of the reactionless drive (this still produces a feeling of acceleration).

23 **Quantum Age** — Vacuum energy is fully tapped. Non locality physics gives birth to the earliest force screens. Teleportation, on a small scale, becomes possible.

24 **Age of Force** — Force screens are developed on both a large and personal scale. Advances in non-locality physics allow direct manipulation of alloys. This is the initial groundwork for direct mathematical manipulation of reality, but it will be ages before the implications are realized.

25 **Antigravity Age** — Gravity theory is refined. Antigravity is invented. Inertial dampers revolutionize space combat and construction. Reactionless drives no longer produce a feeling of acceleration.

26 **Age of Terraforming** — Direct manipulation of molecular structure allows many advances in biological engineering. Large scale ecological engineering becomes possible.

27 **Age of World Building** — Ringworlds become possible. Advances in computers and engineering allow for zero fault technology. Malfunctions brought about by wear and poor design are a thing of the past. There is little out of reach.

28 **Dysonian Age** — Dyson spheres can now be built. They require constant artificial gravity, so zero fault technology is needed to make them practical.

29 **Cosmic Age** — Limitless, cosmic power is discovered

30 **Age of Omnipotence** — All of science culminates with the direct, mathematical manipulation of reality. Anything can now be achieved.

31+ **And Beyond...** — Unknown.

3.7 LAW AND LAW ENFORCEMENT

Laws and law enforcement are the primary goals of a society. Beings huddle together, first and foremost, for protection, and the most immediate threat a being experiences is from his neighbor. Therefore a society must police itself and protect its people.

0 **Pre Stone Age** — There is no law.

1 **Stone Age** — The only laws are the law of survival and the law of vengeance. Enforcement is carried out by whoever is strong enough.

2 **Dawn of Civilization** — Individual rulers are the sole law in a country. Their palaces are the only courts. Law is enforced by the military.

3 **Bronze Age** — Though individual practices change, law and law enforcement essentially remains the same.

4 **Age of Reason** — Though individual practices change, law and law enforcement essentially remains the same.

5 **Iron Age** — Law is written and formalized so that all citizens may read and understand. Judges and adjudicators are placed to mete justice.

6 **Dark Ages** — Schools of law are developed, but rare. Separate law enforcement offices begin to emerge.

7 **Medieval Period** — Though individual practices change, law and law enforcement essentially remains the same.

8 **High Medieval Period** — Schools of law become numerous. Law filters down from the ruling class to the realm of the scholar.

9 **Renaissance** — Though individual practices change, law and law enforcement essentially remains the same.

10 **Colonial Period** — Though individual practices change, law and law enforcement essentially remains the same.

11 **Low Industrial Revolution** — National law, complete with courts, becomes the norm.

12 **High Industrial Revolution** — Finger printing and ballistic sciences are developed.

13 **Low Industrial Civilization** — The foot cop and the eyewitness are still the hand of law.

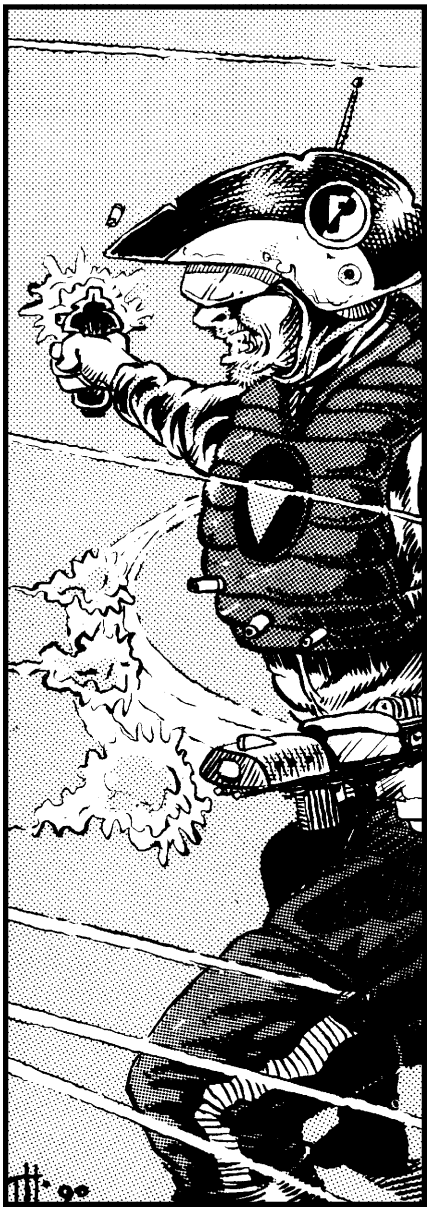
14 **Middle Industrial Civilization** — Forensic science becomes more refined.

15 **High Industrial Civilization** — Movements to abolish capital punishment begin. Physical evidence begins taking a greater hand in criminal proceedings.

16 **Low Cyber Age** — Forensic evidence is now the heart of law and law enforcement. DNA matching, fiber analysis, ballistics and many other sciences make the crime scene as important as the eyewitness.

17 **High Cyber Age** — Increasing improvements in theft deterrent systems begin to breed a new age of technical criminals.

18 **Spacefaring Age** — Advancements in psychology render the death penalty unnecessary in many cases. Criminals have stratified into two types. The blue collar criminal is your common thug. The white collar criminal has the technical knowledge to bypass the security systems which guard precious goods. A larger number of policemen must be technicians to combat this white collar criminal.



19 **Starfaring Age** — The blue collar criminal is almost non-existent.

20 **Star Colonial Period** — Advancements in rehab programs make the death penalty unnecessary in most cases. Crime continues to become a technical profession.

21 **Antimatter Age** — Capital punishment is abolished. Scanners make physical evidence increasingly hard to hide.

22 **Gravity Age** — The blue collar criminal is extinct. He rarely commits more than one crime.

23 **Quantum Age** — Advances in psychology weed out most criminal traits at a young age.

24 **Age of Force** — Crime is nearly abolished

25 **Antigravity Age** — There is little left for law enforcement to do.

26 **Age of Terraforming** — The necessity for law enforcement continues to dwindle.

27 **Age of World Building** — All law enforcement agencies are rendered pointless by alarm systems and psychological knowledge. Law enforcement droids conduct the occasional round ups of criminals that are still necessary.

28 **Dysonian Age** — Social engineering has all but abolished crime.

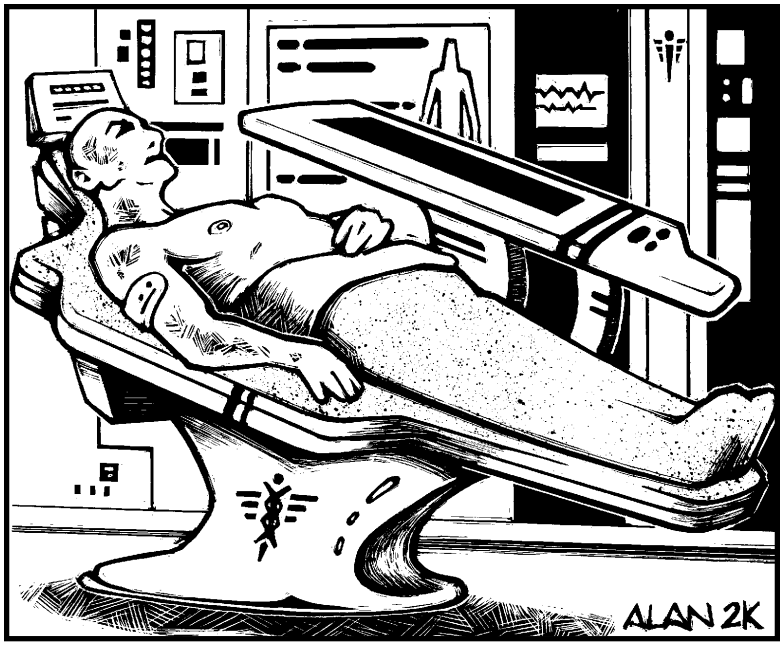
29 **Cosmic Age** — Social engineering has all but abolished crime.

30 **Age of Omnipotence** — Social engineering has all but abolished crime.

31+ **And Beyond...** — Unknown.

3.8 MEDICINE

Medicine is the study of the care and treatment of injured or afflicted beings. The greatest problem with medicine is that it requires lifetimes of experimentation to discover the proper treatments and cures for an organism. When treating an alien race, creatures with a medical tech level of 23 or 24 may be reduced to splints and compression, and even those might do more harm than good.



0 **Pre Stone Age** — What medicine exists is instinctive.

1 **Stone Age** — Medicine is conducted through incantations and spells. It is therefore not particularly effective.

2 **Dawn of Civilization** — Cauterization and compression are discovered to stop bleeding. Primitive cures to speed healing and recovery from common illnesses are discovered.

3 **Bronze Age** — Thorough examination leading to proper diagnosis is defined, bringing healing into a more scientific art.

4 **Age of Reason** — Dissection and observation help expand medical knowledge. The groundwork for embryology and evolution is laid.

5 **Iron Age** — The splint is invented. Public sanitation is invented. Surgery can now be used to remove cataracts. Anatomy begins to be outlined. The sympathetic nervous system is discovered, and the mapping of the brain begins.

6 **Dark Ages** — The first small, meager steps from midwifery to gynecology are taken. Tests are now required before medicine may be practiced.

7 **Medieval Period** — Anatomy is still based on the dissection of pigs. Postmortem dissections begin. The medical case history is born.

8 **High Medieval Period** — Knowledge of anatomy begins to gel. The first steps are taken to separate medicine and mysticism.

9 **Renaissance** — The first accurate works on anatomy are published. The suturing of wounds begins. Movement from herbs to pharmaceuticals is in evidence.

10 **Colonial Period** — The circulation of blood is discovered. The purpose of the lungs is discovered (though oxygen is probably yet to be discovered). The microscope is discovered, and therefore blood cells, bacteria and capillaries follow. The importance of chemistry in medicine is first realized.

11 **Low Industrial Revolution** — Scurvy is cured. Vaccinations begin. Digitalis is used to treat heart disease. Histology is developed.

12 **High Industrial Revolution** — The scientific basis for medical practice is finally fully defined. Increased research helps map the kidney, eye and brain. The basic knowledge of the cell is explored and defined, and thus the theory behind disease is created. Microbiology is created. Many methods of immunization are discovered. Pasteurization is invented. Bacteriology is created. Safe anesthesia and treatment of wound infection help surgical techniques advance. Diagnosis is perfected. Psychiatry is invented.

13 **Low Industrial Civilization** — Antibiotics are discovered. Vaccination becomes common place. X-ray machines become more common.

14 **Middle Industrial Civilization** — The need for amputations drops dramatically. Surgical procedure is greatly refined.

15 **High Industrial Civilization** — The computer is invented. Medical diagnostic equipment becomes increasingly refined. Transplant technology takes off.

16 **Low Cyber Age** — Medical research takes off. The genome begins to be mapped. The early stages of human machine interaction begin. Cloning is achieved. Procedures such as the CT scan, PET scan and MRI become common place.

17 **High Cyber Age** — Cybernetics are invented and spread like wildfire. The methodology for curing cancer is laid down, though only a few forms can be cured.

18 **Spacefaring Age** — Most forms of cancer are cured. Regeneration of most forms of tissue can be stimulated. Genetic manipulation, on a small scale, of an unborn fetus is achieved. The technology for curing most disease exists, though finding that cure is often difficult.

19 **Starfaring Age** — Large scale genetic manipulation is achieved, with moderate success, on unborn fetuses.

20 **Star Colonial Period** — Increases in medical and agricultural technology allow for colonies to survive with minimum support. Genetic manipulation, on a small scale, is achieved with adult specimens. Advances in psychology increase the success of rehabilitating criminals.

21 **Antimatter Age** — Medical science can now fix almost any non-neural damage. Regeneratives and disease cures handle almost all trauma.

22 **Gravity Age** — Genetic manipulation on a reasonable scale can now be performed on a living organism. Neural Pathway Reconstruction Therapy is invented, curing many forms of brain damage. Anti-agenic drugs are devised. Transplant organs are now force grown in cloning vats.

23 **Quantum Age** — Major brain reconstruction becomes possible. Psychological advances begin to weed out problems at a young age.

24 **Age of Force** — There are now very few ailments which can't be cured. Sufficient information to treat alien species now takes only decades to compile.

25 **Antigravity Age** — It now takes only years to compile enough information on alien physiology to properly treat them.

26 **Age of Terraforming** — Alien physiologies may now be studied in months.

27 **Age of World Building** — Alien physiologies may now be studied in weeks.

28 **Dysonian Age** — Alien physiologies may now be studied in hours.

29 **Cosmic Age** — Alien physiologies may no be studied in minutes.

30 **Age of Omnipotence** — Direct, mathematical manipulation of reality is possible. Nothing cannot now be achieved.

31+ **And Beyond...** — Unknown.

4.0 :: ASSIGNING LEVELS OF DEVELOPMENT

"Teachers should not impose their belief that the Earth is round on students who have been brought up to believe that it is flat."
— Jim Cooper (chief for educational matters under Arizona governor Evan Mecham)

An important step in designing a culture is to assign it levels of technological development. This can be a fairly straight forward task, if the GM is looking for a quick and dirty approach, or it can be very involved.

Anyone can take the quick and dirty approach, but a truly in-depth consideration of the matter might seem rather daunting. This section is included to help GMs get a grip on this question. It is designed to give a starting point to those who don't know where to start, and some food for thought to those who do.

This section is broken into two main parts: racial considerations and cultural considerations. Racial considerations dwell mostly on matters of a biological nature. Cultural considerations deal with the biases of philosophies and other school of thought.

4.1 RACIAL CONSIDERATIONS

Many biological fundamentals drive a race. The need to eat, the need to reproduce, and the inevitability of death are but a few. These drives will greatly influence the development of a race, its culture, and its technology.

4.1.1 GENERAL BIOLOGY

The first step is to consider the most basic details of their physiology. This will drive a race on it's most elemental levels. This is the level where you find the fight/flight reflex, the need to eat, and other basic, instinctual drives.

Evolutionary Considerations

Without getting into the debate of creationism vs. evolutionism, suffice it to say that most science fiction races are created from the standpoint of evolution. Even creationists typically talk like evolutionists when designing a science fiction story. Why? Well, because it's good for the story.

Anyway, when designing a race, its best to start at the beginning. What were these creatures before they walked and talked and made tools and began looking at the stars? How does this affect their development? What hurdles did they have to overcome?

The hurdles are typically the most defining question. Eliminating disabilities and inabilities are the first task of technology. Is the race particularly slow? Then transportation will be very important. Is the race in severe peril of predators? Then arms and armor will be important.

Begin by listing the things a race isn't good at, such as speed, agility, vision or even math. Then look at the varying technological categories for solutions. The more solutions you find in those categories, the more emphasis that category should have in development.

The second thing to look at are the aptitudes of the race. A flying race, though it won't need early, slow airplanes, will have a much better innate understanding of flight. The air foil might have been a leap in logic for us, learning that the atmosphere was a gas composed of many particle and extrapolating on how the flow of those particles would effect density and produce lift. However, we have never felt air rush over our wings. We have never learned how one curvature increases lift, while another reduces it.

Therefore a race should be examined for aptitudes. Though the fields associated with these aptitudes might not be of great importance to the race, the development will be much more effortless. The field may be a cherished hobby, if not a vital necessity. Observe how the game industry has driven computer technology. We are not always motivated by survival.

Endurance

A creature's endurance will tell one a lot about its capabilities. A creature that loves to run, and is good at running, even if its not good at running fast, is not going to be as motivated to develop transportation.

Endurance doesn't just refer to aerobic activities, however. Some creatures are better suited for handling temperature extremes than others. The more tolerant the creature is of temperature extremes, the less likely they are to develop temperature control technologies.

On the other hand, failings are still very motivating. Poor cold resistance is likely to drive a creature to develop controllable forms of heat. Inability to stand the driving wind is going to lead to better structures.

Height

How tall are the creatures? Short creatures will have a much easier time building multi-level dwellings. They might also have an easier time building mines and extracting natural resources.

Tall creatures, on the other hand, will have a much harder time building multi-level structures. A two-story house for a large being must be much stronger for each level added, since it must also be much taller.

This could very well force these races to avoid building such structures. Eventually, however, they will probably be driven by space considerations to build large buildings. Then they will be forced to become masters of the art, or give it up completely.

Life Span

With life span, it's important not only to look at the creature's actual life span, but more importantly, their perceived life span. Do they mature as quickly intellectually as they do physically? If not, then they might not have as much time to work toward advancing their accumulated knowledge, and all their technology will suffer.

On the other hand, if a race is nigh immortal, much of their research will likely be placed in the oldest and most wizened. This will greatly advance the progression in fields that are accepted, but radical ideas are often discovered by the young, who haven't invested large amount of emotional energy in the ideas of the past. Such a long lived race may have trouble making radical leaps.

On the other had, a race that has a long, but finite, intellectual life would develop very quickly. They'd likely develop quickly in all areas, having enough time to build strong foundations for the next generation to question and overthrow.

Special Abilities

This is a more difficult subject, mainly because it's so broad. All special abilities should be examined. How do these abilities effect the creature's development? Do they give it any edges that would speed development along? Do they give it any abilities that might give make it neglect a certain area of development?

For instance, if members of a race are born lightning calculators, how would that affect their data storage technology? Computers were born of calculators. Calculators were born from difference engines. If a race has no need for mechanical aid in mathematics, how long would it take the race to make the leap to computers and data storage?

Food and Competition

How a race eats and what it must compete with is another important factor in a race's development. A race that is in heavy competition with another race might develop arms and armor at an accelerated rate. A race with poor food resources may develop agriculture at an accelerated rate.

On the other hand, a race that has little competition for food or resources will have less motivation to develop agricultural skills. They might spend their leisure time on science, communication, or even warring amongst themselves.

Cursorial Hunters

A cursorial hunter is one that is capable of tracking its prey for days if necessary. A noncursorial hunter is capable of only short bursts of speed. Humans are cursorial, cats are not.

A cursorial hunter will probably have a much longer attention span than a noncursorial hunter. It may even be that noncursorial hunters will never develop sapience.

At any rate, a noncursorial hunter will probably not develop technology very quickly at all. They might require some extreme external stimuli to force them into sapience.

Other Considerations

This is a catchall category, the time when you consider all those other little strange things that might be stacked for or against a race. Like special abilities, it's hard to give firm advice in this area.

For instance, an amphibian race might develop under water technologies at a rate vastly faster than a surface race. For them, the high pressures of the depths of the water might be an every-day barrier, a line of death that they are unable to cross. When a limitation is staring a race in its face, they are more motivated to overcome it.

4.1.2 PSYCHOLOGICAL CONSIDERATIONS

The psychology of a race will have a lot to do with how they develop. A race that values warfare will develop arms and armor much quicker than a race of pacifists. On the other hand, a race that values honorable combat might never develop weapons of mass destruction.

A GM should take a close look at a race's outlook. What do they value? What do they abhor? What motivates them? What awakens them in the middle of the night, frightened to their very core? The answer to these questions will give a lot of clues as to how a race will develop.

4.1.3 PERCEPTION CONSIDERATIONS

How a race perceives the universe is also important. Do they see color? Can they see infrared light? Can they hear the ultrasonic?

Many of these questions may not give radical shifts to a races development, but a race that can see infrared wavelengths isn't going to develop infrared gear. They might not even develop street lamps. A color blind race isn't going to color coordinate controls. They might put together colors that look the same to them but clash horrifyingly to a race that percieves light in a different spectrum.

4.1.4 MATING CONSIDERATIONS

The speed and means by which a race reproduce can have a lot to do with their development. Do they reproduce very slowly? In that case, warfare might be unheard of. Do they require birth control to keep from going completely out of control? If so, then medical science, at least endochrinology, might be highly developed.

A good example of this is the novel *A Mote in God's Eye*, and its sequel, *The Gripping Hand*, by Larry Niven and Jerry Pournelle. In this, the Moties had no way to control their population growth. Anytime a Motie went too long without reproducing, they died.

This drove their society to terrible wars which ended in a complete collapse of Motie society. They were driven by this motivation for millions of years, until these collapses were considered as inevitable as night and day, and they began preparing for them, dreading them, and expecting them.

This is an extreme example, of course, but a good one. It should give a GM an example of where this subject might lead them.

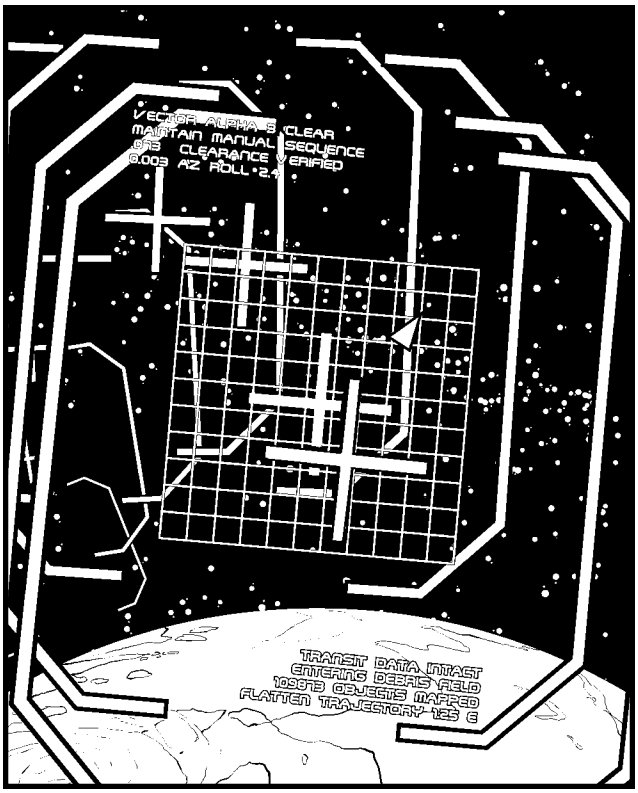
4.2 CULTURAL CONSIDERATIONS

Once the racial considerations are considered, the GM should consider the race's culture. Sometimes a race might build a star-spanning society that then collapses. At this point, each member world, crawling out of its own dark age, will be defined as much by their differences in culture as their similarities in race.

Physical Resources

How has the culture's abundance or shortage of resources effect their technology. What do they waste? What can't they afford to waste? How has development on a metal-poor world affected construction? How has it affected their metallurgy skills?

In any case, the haves and the have-nots develop very differently. What they have and what they have not will say a lot about how they develop.



Subsistence Patterns

After a culture's resources are defined, a GM should decide what the cultures subsistence patterns are. What resources do they use? What resources do they value?

These questions will help determine not only why a race survives and why they go to war, but how a race survives and how they go to war.

Imagine a world where metal is scarce. What do they use to build? What kind of polymers have they been forced to develop? What do they value?

A world that values aluminum is not going to use it frivolously, like humans do. A world that lives in and cherishes trees may not make paper the way we do. A culture that has been forced to survive without large trees would have to build without wood. These patterns of existence tie in with physical resources to help define a lot about a culture and how they use their technology.

Values and Kinship

What a race holds dear says a lot about how it will develop. A culture that values both the born and the unborn infant will probably never develop abortion. They may never develop birth control.

A society based on strong family and clan ties might be prone to war with other clans, forcing accelerated arms development. A society that feels all its members are kin might have just the opposite trend.

Values tell a great deal about a race. Perhaps they feel the wounded are weak, and should die. They might never develop medicine. Perhaps they feel that no person should toil to feed another. These cultures might never develop agriculture.

At any rate, these questions should be carefully considered. They help to shape a race, and thereby shape a race's technology.

Language

Language is often more of a result of all these other factors than a motivating factor in and of itself. This doesn't mean that it's unimportant.

How does the culture communicate? A culture without verbal communication may develop technology at a much slower rate. Then again, a race whose language is very easily converted into a binary code, like Morse code, might make that leap to the telegraph much earlier. Once there, the telegraph might spread quickly, accelerating the growth of communication technology beyond what might be achieved with a culture whose language translates poorly.

Religion, Myths, And History

This ties into psychological considerations. What are the religious imperatives placed on a race? What are they compelled to do? What are they compelled not to do? It is unlikely that a race whose religious dogma exclusively teaches passive resistance will devote many resources to arms and warfare.

What have their myths touted? Myths filled with the wonders of flight might promote travel technologies. Myths involving telepathy and other form of instantaneous communication might be compelled to develop these things in real life.

These myths translate into literature as well. Many of the technological wonders of today were envisioned by science fiction writers of yesterday. Would we have developed television when we did without science fiction? How about the laser? Certainly these items might well have been developed, but how quickly? What technologies would have been delayed? How would this have cascaded?

History is also a driving factor in a culture. Horrible events in a culture's past might render certain technologies taboo. A culture haunted by a past nuclear holocaust might not develop weapons of mass destruction. A culture haunted by terrible plagues might spend fortunes on medical research. A culture fleeing a terrible dark age might cherish communication and data storage.

Whatever the culture fears, cherishes, or dreams about should be considered. They will help make a culture what it is.

Class Specialization

How specialized is this culture's class system? A culture with a highly structured slave class is going to have less need for industrial equipment. A society that values its trade class might have a retarded development of mass production technology. A society with a structured, ritualized warrior caste may disdain advanced weapon technology.

The class system is the heart of many cultures. Any culture with class systems should have them scrutinized. What technologies does the class structure replace? What technologies does it promote? These questions are very important.

Art, Architecture, and Symbolism

Architecture will tell a great deal about a culture's construction technology. Other factors, such as art and symbolism, will give more clues to the forms of technology than their functionality.

The phallus and the cross are common symbols in occidental culture. Because of this, their forms are often repeated in designs and structures. Details like this can lend a great sense of realism and style to a culture.

Politics and Welfare

The politics of a culture will determine what the people with money will buy. Rulers in a warlike culture will spend more money on arms and weapons. Rulers who are trying to keep a culture together across vast distances will develop technologies that improve communication.

The welfare of a nation also motivates its development. How does a nation treat its elderly? What do they need to protect themselves against? A culture that is bombarded with asteroids will have a strong space program. One that is plagued with diseases will develop good medical technologies.

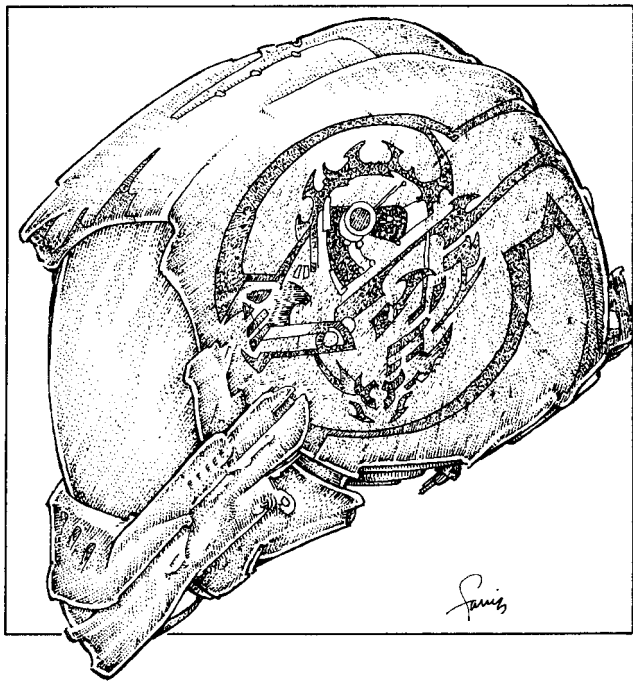
A Final Note

Entire volumes could be filled with a discussion on how these factors shape and mold a culture's development. This section does not pretend to be a complete treatment of the subject. It doesn't even dream of being a complete treatment.

The purpose of this section is to make a GM think. It is to help get the creativity flowing and to intrigue and inspire.

A GM can do a lot with the implications of a well designed race and culture. Once he begins the process of culture design, things often just fall into place.

Hopefully, this will give the GM a good start. Hopefully, it will point him in the right direction. If the campaign is to be space opera, then this isn't very important. If the campaign is to be hard SF, however, then it can be imperative. A realistic race and culture can make or break hard science fiction.



5.0 :: SPECIFIC ADVANCEMENTS

"The universe is full of magical things, patiently waiting for our wits to grow sharper."
— Eden Phillpotts

In Section 2.0, an overview of the various tech levels was presented. However, the reader may not be familiar with some of the terms presented there. Certain advancements, such as FTL travel, could be handled in many different ways.

The purpose this section is to cover various specific developments in technology. As with all things, this is presented as a GM tool. It is likely that many of these pieces of technology will not be included in any given campaign, or that they will be changed radically before they are. This is more than okay, it's expected.

Using Specific Advancements

After the tech levels for a specific culture have been defined, it's necessary (assuming the tech level is not particularly primitive), to give some thought to the technologies involved.

The GM should go through this section carefully, taking note on each of the advancements that are necessary for his culture. He should alter them as needed to fit the campaign and give careful consideration to their affects on game balance.

In certain areas, hard decisions may have to be made. With FTL travel, for instance, the GM must decide, first of all, which of the methods are even possible. Then he must determine which races use which methods. Finally, assuming that different species use different methods, the implications of these technologies must be compared to one another, to make sure the balance of power that the GM intended is not disturbed.

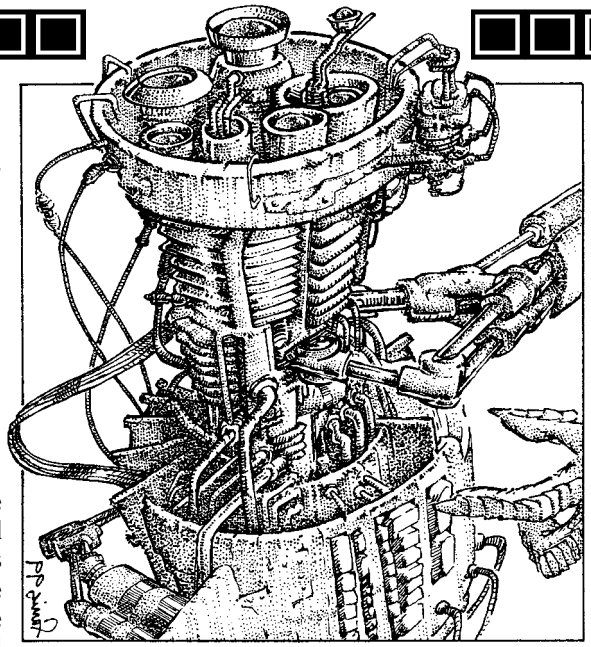
When the GM has finished examining this section he is ready to move on to the rest of this work. There he can define the specific pieces of equipment the races of his universe will have.

5.1 ENERGY SOURCES

Energy is important to any civilization. The higher the civilization's tech level, the higher their energy consumption probably is. Never in the history of man has there been an age where technology used less power than the age before, despite the invention of power-saving devices. It is likely that this trend will continue, that technology will become more and more hungry for power.

It is therefore necessary to define what sources of power a civilization has at its disposal. Entire political structures are built around the generation of power (take the Middle East, for example). Wars have been fought over less important resources.

FOSSIL FUELS (Tech Level 3)



After wood, fossil fuels are the most common form of power available. Coal has been burned for heat or steam for almost as long as history can record. More recently, natural gas and petroleum have replaced coal as the primary fossil fuel. The problem with fossil fuels is twofold. First of all, there are finite amounts of it, far less than technology will require in the long run. Second, and perhaps more important, is the devastating effect that the burning of fossil fuels can have on the world's ecology. Fossil fuels are, at best, a short term solution to a world's power problems.

NUCLEAR FISSION (Tech Level 15)

At the end of tech level 14, the atom will be split. By tech level 15, it will be possible to use nuclear fission to generate power. At the time, this will be the cleanest power source available to any locale. (Hydroelectric is cleaner, but it requires a large river.)

There are many myths about nuclear power. Let's dispel them.

First, nuclear reactors cannot explode. They simply do not have a high enough density of fissionable materials. Theoretically, they can melt down. With proper precautions, this should never have to happen. Even if this does happen, the long term biological effects are far more pleasant than the long term effects of burning fossil fuels to produce electricity.

Another popular misconception is that nuclear reactors produce waste which is highly radioactive for tens of thousands of years. This is not only inaccurate, it is a contradiction in terms. The very term "highly radioactive" means that it cannot be highly radioactive for long. In fact there is radioactive waste today which is already less radioactive than the fissionable materials from which it was produced.

Radioactive power sources are used on many modern vehicles. The Radioisotope Thermal Generator generates power for the space shuttle, for instance. An RTG is so durable the shuttle could explode without causing any harm.

Are nuclear reactors safe? Of course not. Are they safer than fossil fuel plants? Definitely, in the long run. France has been working almost exclusively off nuclear power for years, without a major mishap.

HYDROELECTRIC (Tech Level 13)

Dam off a river, let the water build up really high, then shoot the water through a turbine or series of turbines. The resulting energy is called hydroelectric. This is probably the most plentiful, eco-friendly form of power. Its only problem is that it requires the flooding of a large area of land when the dam is built, and must be located on a large moving body of water.

WIND POWER (Tech Level 12)

With the invention of the power generator came the need for a force to motivate it. Wind power is used as early as tech level 7 to provide simple, mechanical force in mills. It is only natural that it would be an early source of motivation for turbines.

Wind power is cheap, efficient, and clean. The problem is that it is not reliable. The wind does not blow constantly. A second problem is that it takes many windmills to generate wind power, making it impractical for large-scale use. Naturally this is useless in a vacuum.

GEOTHERMAL (Tech Level 13)

In its simplest sense, geothermal power can be used for heating homes as early as tech level 3, merely by channeling heat from an open fissure in the ground through pipes and into a home. For the purposes of *Tech Law*, however, geothermal energy will be used to refer to using geothermal energy to generate electricity.

Until the invention of the power converter in tech level 22, allowing the free exchange of energy from one form to another, all generation of electricity is performed by heating water. With geothermal power, the water is heated using the energy of the interior of the earth.

Naturally this can only be used on worlds with an active interior. It often requires some significant digging to harness, and as many of the prime locations are near volcanoes or on fault lines, many would feel this method of generating power has it's safety issues as well.

SOLAR (Tech Level 15)

The photoelectric cell is invented around tech level 15. At that point, it becomes possible to generate power using only the light of the sun. This is the safest form of power ever devised.

Unfortunately, it has its drawbacks. First of all, it takes a lot of photocells to satisfy a civilization's needs for power. In addition, it requires sunlight. This means that it is impossible to collect energy during the night or during deep cloud cover.

Solar power is most useful in space, where night and weather conditions are not relevant. It is used on most satellites and space craft for at least backup power.

FUSION
(Tech Level 17)

Fusion power is achieved by bringing hydrogen (or rather deuterium) together in such conditions that it fuses into helium. This is the same process that keeps the sun and all the stars burning.

Fusion power is a good source of heat, and therefore electricity. Unfortunately, it is very difficult to control. Fusion temperatures are measured in the millions of degrees. It involves intense and powerful forces which, should they be released, can cause violent and dangerous reactions. Whereas making a fission reactor safe is merely a matter of planning, making a fusion reactor safe requires a process more akin to prayer.

Cold Fusion, Fact or Fantasy?

Cold fusion is a difficult subject, and one of heated debate, even now. What exactly did happen in that lab in Utah? Did we discover a new form of power, one that was safe, clean, and limitless?

No one really knows. Something happened. Energy was generated. But what was the cause? The efforts to reproduce the effect have been notoriously fickle. Was it cold fusion?

It's difficult to say. Whether to treat cold fusion in a serious fashion probably has a lot to do with the players involved. A normal playing group will probably take it in stride. In fact, it's the type of thing SF fans want to believe in. A group that involves anyone even remotely connected with nuclear power will probably not accept the idea of cold fusion. The reactions tend to run the gamut from hysterical laughter to outright belligerence. As with any controversial subject, the GM would be wise to examine the issue before using it in his campaign.

MATTER/ANTIMATTER
(Tech Level 21)

Needless to say, matter and antimatter do not react well together. Whenever the two are brought together they annihilate each other in a violent release of energy. If the amounts of matter involved is at all significant, this release can be measured in megatons, gigatons, teratons, or more.

Starting in tech level 21, antimatter can be produced in quantities to make its use as a power source practical. The problem with this type of reactor is safety. Using it is to ride the current of a long, controlled explosion. In addition, the antimatter must be stored, perhaps magnetically, in a manner that does not allow it any contact with matter, as the results of error are explosive at best.

Another benefit of antimatter power is its use in star craft. In universes where reactionless drives do not exist, antimatter is a convenient manner by which to provide a lot of energy for thrust. It just needs to be controlled safely.

VACUUM ENERGY
(Tech Level 17)

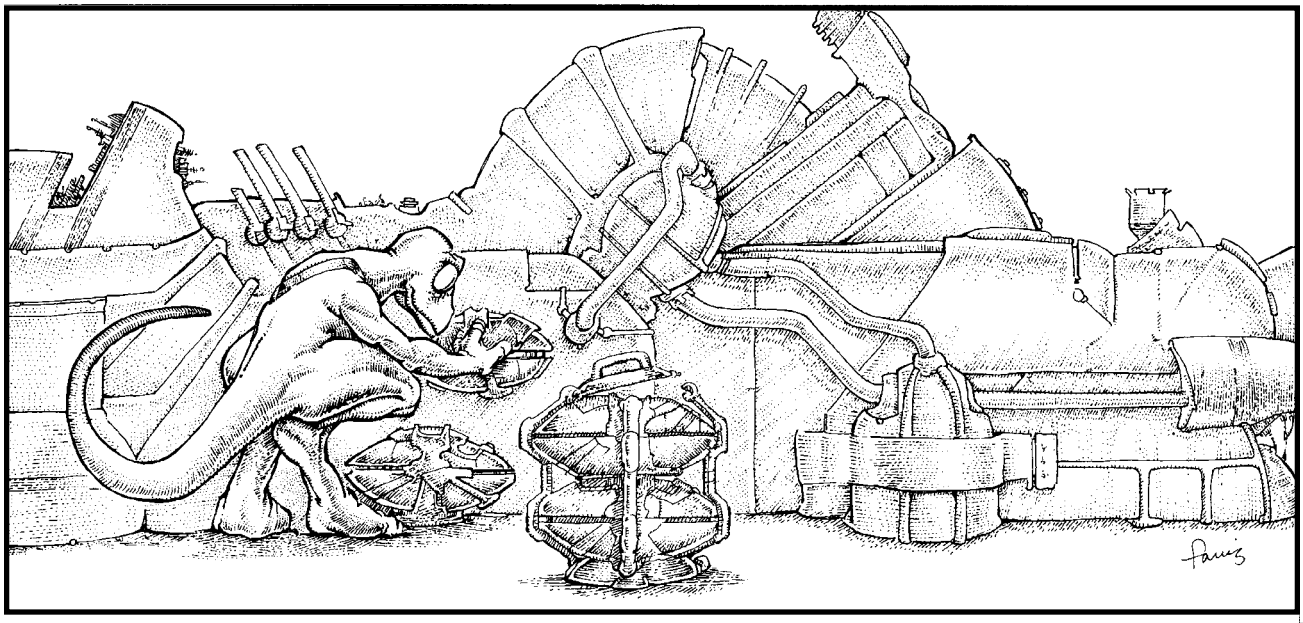
So-called "empty space" is actually seething with fluctuations in the quantum field. These fluctuations take the form of virtual particles that appear as a matter and antimatter pair which then annihilate each other. If this happens within the period dictated by the uncertainty principle, then the law of conservation of energy is not violated.

At the end of the low cyber age, a Self-Generating-Discharge Plasmatron first captures the energy of virtual particles.

As the tech levels increase, this process becomes more and more efficient. By the quantum age, all the energy can be harnessed, providing a nearly limitless source of energy.

COSMIC POWER
(Tech Level 29)

At tech level 29, infinite cosmic power is discovered. This cosmic power draws from the very fabric of reality. It supplies limitless power at almost no cost. It helps pave the road for direct, mathematical manipulation of reality.



5.2 COMMUNICATIONS TECHNOLOGY

Communication is the heart of every society. How a society communicates has a lot to do with whether the society is a success or a failure. No interstellar community can exist as a cohesive whole without faster than light communications.

RADIO (Tech Level 13)

Radio is a form of electromagnetic communication. As such, it is restricted to the speed of light. Radio will be the communications method of choice for societies at tech levels less than 20. Radio, being a form of light, requires line of sight to operate (though it can penetrate a short way through solid objects).

TIGHTBEAM (Tech Level 15)

With the invention of the maser (and later the laser), it becomes possible to reach the next stage of electromagnetic communications. No different in theory than radio, a communication laser or maser simply transmits the electromagnetic information in a focused beam instead of in a global transmition (as with radio).

This has three benefits. First of all, it is difficult, if not impossible, to monitor the communication without cutting it. The only real way to do it is by monitoring the energy changes at the transmitter or reciever (watching the temperature on the reciever pulse, for instance). Unfortunately, this often requires close proximity.

The second benefit is range. A laser can throw a beam across the solar system for a fraction of the energy that it would take to crank a broadbeam communication across the same distance.

The third benefit is defense. A com laser usually is energetic enough to act as a mark 10 laser in all ways.

There is only one drawback. A com laser has to be pointed directly at its target. This can be difficult over long distances, unless the target is stationary (a planet for instance). Otherwise, time lag adds up quickly.

TACHYONS (Tech Level 20)

A tachyon is the name for any particle that travels faster than light (all "normal" particles are called tardons). An interesting thing about tachyons is that all the effects of relativity operate on them, but in the opposite manner as they do on tardons.

OTHER (Tech Level 20+)

Occasionally, in science fiction, other forms of communication are used. They might be called "subspace" or "Z ray" or some other such name. The point is that these signals generally travel faster than light, and therefore are the heart of communications in the universe.

5.3 COMPUTERS

Computers are a part of everyday life in most science fiction worlds. The more advanced a society's technology becomes, the more dependent a society becomes on its computers. Computers gradually infuse themselves into the soul of a society, taking more and more jobs that human beings are incapable of handling, or at least incapable of handling quickly enough.

Moore's law states that computer power doubles every twelve to eighteen months. For a while, this is represented primarily by a straight-forward increase in clock speed. Eventually, however, clock speed comes up hard against the speed of light, and the signals simply cannot be pushed through any quicker.

But Moore's law continues. Parallel processors, more efficient computing systems and eventually FTL signals continue to push computing technology forward. It is unknown how powerful it will eventually get.

During tech level 20, molecutronics are born. These computers have infinite clock speed potential. They are immune to electromagnetic pulses.

CAPABILITIES AND LIMITATIONS

One of the first things that must be determined is what the computer systems of the world should be capable of. Is artificial intelligence possible? What is the state of virtual reality? Is a neural interface possible? How about personality downloads?

Each of these subjects is treated separately below. A GM should give each careful consideration, as each can have ramifications on many areas of the game.

ARTIFICIAL VS. SIMULATED INTELLIGENCE (Tech Level 19 or 20)

Artificial intelligence is an elusive and difficult technology. When Arthur C. Clarke wrote *2001: A Space Odyssey*, he was hopeful that artificial intelligence would be achieved by 2001. He was, of course, wrong. In the early days of artificial intelligence, many victories were achieved. It wasn't until much later that it was discovered that those victories were the easy ones.

It might be that artificial intelligence simply requires a twenty year boot period.

An artificially intelligent computer is fully self aware. It is capable of everything a natural mind is capable of, including guessing, lying, and making leaps in logic. An artificial intelligence is even capable of kindness, generosity, and self interest.

A simulated intelligence appears in most every way to be artificially intelligent. They are programmed to show feeling, make leaps in reason, and even lie. They are not, however, capable of true self interest. They will make guesses when they are able, but will often fall back on the old answer of "insufficient data."

VIRTUAL REALITY (Tech Level 16)

As computer processing ability progresses, virtual reality technology becomes better and better. As this technology improves, virtual reality begins to replace television as the entertainment venue of choice.

As the neural interface is invented, a whole new dimension is added to virtual reality. As the technology progresses, more and more of civilization's social life will probably become virtual. Eventually something happens or they just say "enough," and quit.

NEURAL INTERFACE (Tech Level 17)

With the increasing integration of man and machine that follows the cyber ages, the neural interface eventually becomes possible. Toward the end of the low cyber age (within the last decade), sensor equipment is designed which can read and interpret the intentions (if they're simple) of the human brain. This is primarily used for video games and simple vehicle control.

By the high cyber age, this link begins to work both ways. In the beginning it is only used to give commands to robotic prosthetics, but eventually an entire link between mind and machine is formed, allowing data transfers, virtual reality, and sense imaging.

As the age progresses, the neural interface begins to become more and more important. Why build a night club when you can build a virtual night club? Real estate is expensive, but virtual estate is only as expensive as volatile memory.

The Sensenet and the Datanet come into being. The Sensenet is an entire virtual universe designed for the user's pleasure, while the Datanet is a gigantic virtual library. If dependence on these technologies continues to increase, the society will probably never leave the cyber age.

PERSONALITY DOWNLOADS (Tech Level 17)

With the neural interface comes the personality download. By the end of the low cyber age, technology is approaching the ability to build enough memory to store a human intellect. By the high cyber age, Moore's law guarantees it.

What the effects of this are depend greatly on the GM. If he believes that the soul has a place in the game, but that it can't be downloaded, then this will probably be nothing but a depository of data. If he believes that one vessel is as good as another, then the entire being might then be alive in memory. This is purely a judgment call.

Of course, having a fully sapient intellect running around the Sensenet will have many ramifications in the game. Having a dozen, a hundred, a thousand of them…

5.4 LAW AND LAW ENFORCEMENT

The abilities of law enforcement agencies will have a lot of influence on the feel of a game. A game where the law is powerless will be ruled by hoods and crime organizations. A game where the law has iron control will be completely different. It will be a place where children and the elderly can walk the streets at night in peace, but at what price?

SECURITY LEVELS

Each security system, computer, or location has a security level. This security level affects any attempts to commit illegal acts within the area. For instance, committing computer crime on a level 10 system is much more difficult than on a level 1 system.

Tech level does not have much effect on security levels, unless the thief is using equipment of a different level than the system. Generally speaking, the technology being used to crack the system is on par with the technology of the system itself.

Use the following modifications when going up against a security level:

SECURITY LEVELS TABLE EM-5.1

Security Level	Penalty
0	-0
1	-10
2	-20
3	-30
4	-40
5	-50
6	-60
7	-70
8	-80
9	-90
10	-100
11+	-(Level x 10)

5.5 MEDICINE

Medicine is the treatment of the sick and injured. Medicine is as old as technology. A game world's medical technology has a great effect on the game, especially if there are no spells or psychic powers that can heal characters.

GENERAL CAPABILITIES

The first thing a GM must decide is what medical science can accomplish. Some of the common advances are listed below.

TRANSPLANTS (Tech Level 15)

In tech level 15, doctors begin to successfully transplant organs from one creature to another. Advanced immunosuppressants invented during tech level 16 allow more advanced transplants to take place.

Throughout tech level 17, these technologies become more and more advanced. By the end, nearly anything can be transplanted. The recipients just have to take immunosuppressants for the rest of their lives.

Starting at tech level 22, organs can be force grown in cloning vats. This eliminates the need for immunosuppressants.

CLONING
(Tech Level 16)

Cloning is first achieved at the end of the low cyber age. This is a very primitive process, and still requires the clone to grow over its natural developmental period.

Starting at tech level 22, clones can be force grown. They no longer require a full childhood and adolescence to grow, just a few months.

EUGENICS
(Tech Level 12)

Beginning with the initial theory of heredity, it becomes possible to begin eugenics programs. Eugenics is the practice of selectively breeding sapient creatures to promote certain traits.

Eugenics is the forerunner to genetic engineering. The biggest problem is that it takes many, many generations before a eugenics program has any real effect.

GENETIC ENGINEERING
(Tech Level 17)

Scientists finish mapping the genome during the beginning of the high cyber age. At this point, it becomes possible to customize the genetic structure of a sapient creature. This is not achieved on a fetus, however, until tech level 18. Large scale, radical effects are achieved during tech level 19.

Genetic alterations on adult organisms becomes possible, on a small scale at least, come tech level 20. These advances come hard. Reasonable changes to an adult organism are not possible until tech level 22.

REGENERATION
(Tech Level 18)

Beginning in the space faring age, medical technology makes some great strides in the field of regeneration. It becomes possible to regenerate wounds in a matter of hours. Limbs too can be regenerated, but these take a couple of weeks. Anything can be regenerated except brain tissue and entire organs (It's hard to keep a heartless patient alive and still allow a heart to regenerate).

CYBERNETICS
(Tech Level 17)

Cybernetics become available during the high cyber age. They allow full replacement of limbs, plus neural interface. A full treatment of cybernetics is not possible in *Equipment Manual* and will be saved for *Robotics Manual*.

PHARMACEUTICALS
(Tech Level 11)

Pharmaceuticals are important to medical science. For the most part, pharmaceuticals will be the magical and little understood infrastructure of medicine. Generally speaking, pharmaceuticals can be ignored, unless they are unavailable.

If a physician does not have access to his pharmaceuticals, he may still use his Medical Practice skill. The skill is no more effective than First Aid would be.

There are some instances in which pharmaceuticals are useful. In Section 10.0, some example pharmaceuticals are listed.

SUSPENDED ANIMATION
(Tech Level 17)

Beginning in the high cyber age, living creatures can be put into a state of suspended animation. They can then be kept alive and on life support with very little consumption of oxygen and nutrition.

This becomes very important on long space flights, when the constant power necessary to maintain suspended animation is more plentiful than the consumables necessary to keep the person alive and awake. At tech level 17, a person in suspended animation only ages at 10% of his normal rate, and he only requires 10% of his normal supplies to survive.

SUSPENDED ANIMATION TABLE EM-5.2

Tech Level	Aging and Consumption Rate
17	10%
18	1%
19	0.1%
20	0.01%
21	0.001%
22	No supplies needed, no aging.

CRYOGENICS
(Tech Level 17)

Starting about tech level 15 or 16, people begin to have themselves frozen, hoping that whatever ailment is killing them will one day be cured and they can then be thawed. Come tech level 17, it is possible for this thawing to take place.

To thaw a frozen patient, the doctor makes a Cryogenic Operations maneuver, adding the modifiers listed on table EM-5.3 for the doctor's tech level. If the patient was frozen improperly, the effective tech level of the doctor is reduced by one. After that, a Medical Practice maneuver is often necessary to bring him back to life.

ANTI-AGENICS
(Tech Level 22)

Anti-agenics prolong life. They hold back aging. They halt the aging process and stave off that flood of ailments that afflict the elderly.

Assume that anti-agenic drugs halt the aging process altogether. At tech level 22, they must be taken every week. By tech level 23, the effects are permanent. They should probably be extremely expensive.

Death and Beyond

What does death mean in a science fiction campaign?

First of all, even in the real world, we can resuscitate a clinically dead patient. What happens when high tech medical technology is available?

This must be left up to the GM. Only he really knows if the damage done is reparable. If the patient has a reasonable degree of structural integrity left, then they can at least be kept alive long enough to heal naturally.

Once regeneratives come into play, very little physical damage cannot be healed. At this point, the GM need only worry about death itself, or the complete loss of the brain. Regeneration will heal stat loss to the physical stats.

More detailed guidelines on death and resuscitation can be found in *Spacemaster: Privateers*.

NEURAL PATHWAY RECONSTRUCTION (Tech Level 22)

In tech level 22, a new and marvelous technology is invented.

By combining nanite technology with advances in neurology, brain damage can be repaired on a large scale. This technology is called neural pathway reconstruction, and it revolutionizes medicine.

This process requires a skilled neurologist and a well-equipped medical facility. The neurologist must roll a Medical Science (Neurology) static maneuver, modified by the tech level, as listed below. Any result of less than zero is subtracted from each mental stat. A result of more than one hundred helps improve the stats. Subtract one hundred from the result, This is how much each stat is raised. Raise potentials first. When the potential reaches its old value, place the resulting points on the temporary stat. It is recommended that NPR therapy only be allowed once per death injury.

RADIATION THERAPY (Varies)

Most SF universes will have some way of treating radiation poisoning. A GM will have to decide how this is handled and what tech level it is. This could be anything from a magic bullet drug to genetic repair viruses.

NPR THERAPY TABLE EM-5.4

Tech Level	Penalty
22	-70
23	-50
24	-30
25	-20
26	-10
27	0
28	+10
29	+20
30	No Check Required

CRYOGENIC STATIC MANEUVER TABLE EM-5.3

-26 down Spectacular Failure: —
Wasn't that supposed to look human when it was thawed? The pulpy mess that you have created is beyond the ability of medical science to revive.

-25 — 04 Absolute Failure: —
The result of your ministrations looks like a Picasso painting, or perhaps a Salvador Dalli. An absurd medical static maneuver could probably revive this poor chump, but he's gonna take a lot of cosmetic surgery. Why don't you go have a lie down somewhere.

05 — 75 Failure: —
He's dead, Jim. An extremely hard static maneuver will be necessary to revive him. He'll be okay, after all those bruises heal.

GM 66 Unusual Event: —
Your patient is alive, but you took just a wee bit of time getting that oxygen flow supplied to the brain. He's okay now, though, you're sure of it. (In actuality, the patient has developed a strong psychotic trait, as determined by the GM.)

76 — 90 Partial Success: 25%
Well, he's thawed. You might want to try one of those hard static maneuver things to revive this guy.

91 — 110 Near Success: 100%
Okay, you thawed him out. It will require a light static maneuver to revive him.

GM 100 Unusual Success: 100%
It's alive! Your patient bolts upright and begins babbling incoherently. After a moment, he's himself again.

111 — 175 Success: 100%
He's thawed and looking good. A routine static maneuver will revive him.

176 up Absolute Success: 100%
Your patient is alive and breathing normally on his own. All his vitals look good. Well done!

Note: The "# %" notation indicates the extent to which a maneuver was successful. If partial or extra success is inappropriate, a GM should only take 100% or higher as success.

Tech Level adjustments:

Tech Level 16*	-70
Tech Level 17	-50
Tech Level 18	-30
Tech Level 19	-20
Tech Level 20	-10
Tech Level 21	0
Tech Level 22	+10
Tech Level 23	+20
Tech Level 24+	+30

* — It is not possible to thaw a person at tech level 16. This is merely included for tech level 17 technicians thawing an improperly frozen patient.

PART III
STANDARD EQUIPMENT

"There are a million things in this universe you can have, and there are a million things you can't have. It's no fun facing that, but that's the way things are."
— Gene Roddenberry

Technology is technology, but without all the gadgets, then what's the point? Equipment and interesting pieces of tech are more than just the gear of the modern age. They are the magic swords and magic armor of the science fiction game. They are the lost artifacts and toys of all kinds that players love to collect and brag about.

This section is perhaps the most important one for the *Spacemaster* game. It contains all of the marvelous gear that the players will want to get their hands on.

It is important for a GM to carefully examine the technology in this section. It would be very easy for a careless GM to overlook a piece of technology that alters the flavor of his game in unexpected ways.

• • •

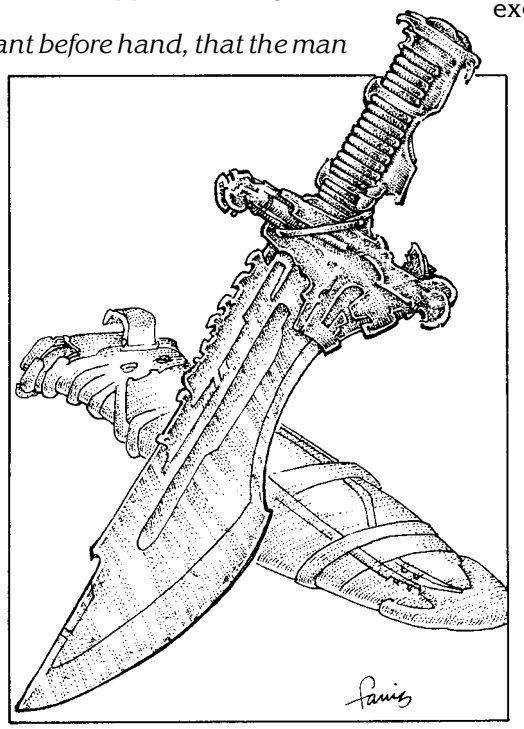
INTERLUDE THREE

Wilson stared at the tactical scanner as he hid behind the bulkhead. His opponent was moving behind him, on the other side of the wall. He checked the power level on his blaster, then moved to a better position.

The room had two doors and a thick control console. He positioned himself behind the console, his back to one door as he covered the other. It would take his opponent a while to track around, and in the meantime, Wilson would know what he was doing. In addition, whoever this killer was knew Wilson had a tactical scanner, and so he knew that trying to flank him was futile. That left the opponent only one approach.

Wilson knew, an instant before hand, that the man was charging. Suddenly the image on the tactical scanner blurred into motion. Wilson had his subassault blaster in continuous mode and fired even as the man passed through the door.

The particle beam sliced toward the man, veering at the last second, causing the walls of the room to flash into vapor. The man was wearing some sort of personal shield. Wilson felt his heart sink as the man dove through the cloud, his own blaster firing.



6.0 :: USING THIS SECTION

"The future belongs to those who prepare for it."
— Ralph Waldo Emerson

This section deals with the selection and usage of tech in *Spacemaster*. Uncontrolled technology can easily break a campaign, so a GM should read this section carefully before choosing the technology to include in his campaign.

6.1 AVAILABILITY

There are several important things a GM should consider before determining what technology is available in his campaign.

Tech Level

The first thing to consider is the tech level of the culture in question. This determines what tech might be available.

Each piece of technology listed in this book has been given a tech level. This represents the minimum tech level in which the piece of equipment is typically available.

The listed prices for all items assume that they are being purchased in the tech level in which they were invented. If the item is being purchased in a higher tech level than the one in which it was invented, divide the cost and the weight of the item by ten. Some items will not have their costs reduced in this manner; these items are noted in their descriptions.

Feel

Though a piece of tech may or may not be high enough tech level to be included in a game, this does not necessarily mean that the GM cannot make exceptions. Many high-tech items may be thoroughly appropriate for a campaign, even if the overall tech level is low.

For instance, say a specific gaming universe is tech level 18, but the GM, feels that personal force fields are vitally important to the feel of his universe. They can stop bullets and energy weapons, but a blade swung by a strong man can penetrate one (the force fields operate on a factor of speed and concentration, and a blade can penetrate). This will force many combats to be fought with melee weapons, which is exactly the feel the GM wants. The GM would be foolish not to include force fields, reducing their tech level appropriately.

Another example: Say a GM wants his campaign based after the high cyber age. However, social problems in his world have made cyberware unbelievably distasteful. In this sort of campaign, a GM would probably rule out any form of cyberware, even the simple gear in this book.

Game Balance

Game balance is a very important consideration when designing a campaign universe. Unregulated equipment can easily throw a game out of balance.

Of course, all of the items in this book have been carefully considered for game balance, but that isn't the entire story. The equipment must also be considered in light of the story the GM wishes to tell.

Larry Niven said it best. In his *Known Space* novels, each piece of tech introduced affected every story written thereafter. When he invented the Slaver stasis field he had to write every story thereafter asking himself the question: "Why will a Slaver stasis field not solve this problem?" When he was forced to create an indestructible hull to make the story *Neutron Star* work, he was left with the problem: "How does an indestructible hull *not* solve all the problems in this story?"

It is not enough to simply select the tech that seems appropriate to the setting. The GM needs to consider the type of stories that he wants to tell. He needs to make sure that the technology he is introducing isn't going to undermine that story.

6.2 NORMAL GEAR

Normal gear includes all items that the common citizen can easily obtain. There are little or no restrictions or controls placed on these items. They are easy to get and readily available.

This type of equipment can be purchased from the corner store and through the Internet. These items should be very common; the only restrictions to their availability should be plain old supply and demand.

6.3 PROFESSIONAL GEAR

Professional gear includes items which are generally restricted to the public. For the right person however, they are readily available.

Usually the person involved will be purchasing this gear through an institution, or an institution will purchase the gear and issue it to the recipient.

Law enforcement gear, medical supplies, and blasting equipment are good examples. If your typical civilian attempts to buy these things, they would have to provide a legal permit.

6.4 MILITARY-GRADE GEAR

This is the stuff that every player wants. Body tanks, guns, grenades, monoswords, and bioweapons all fall into this category.

The availability of these items depends on the culture involved. Most likely, this gear is restricted to military personel on active duty. In some cultures, pistols and hunting rifles are available to citizens with the right permits. In some areas, society might be in total anarchy, and these items would be not only available, but practically required.

Of course, even in the most lawful societies, it should be possible to obtain these goods through the black market. The cost for these goods would be at least tripled; obtaining them might be an adventure in itself.

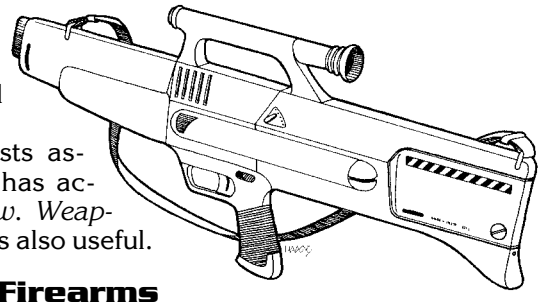
7.0 :: ARMS AND ARMOR

"Do not go gently into that good night"
— Dylan Thomas

This category includes armor, personal shields, and a variety of weapons. Specialty ammunition, sights, and goggles are also included.

PROJECTILE WEAPONS

Any weapon which fires a solid projectile (larger than the subatomic particles of lasers and blasters), is considered a projectile weapon. There are many different forms of propulsion for these slugs. Each of these are dealt with separately below, but as a general rule, the higher the tech level of the propulsion system, the more powerful the weapon is.



These weapon lists assume that the GM has access to *Blaster Law*. *Weapons Law: Firearms* is also useful.

Firearms

Firearms burn gunpowder to propel their slugs. This is a noisy, inefficient way to propel a round, and it is abandoned in favor of more advanced methods in tech level 18.

Electrochemical Propulsion (Tech Level 17)

Electrochemical propulsion is the next step above gunpowder. Using electricity to set off an advanced chemical compound, this form of propulsion is capable of higher velocities with a smaller charge than gunpowder. By tech level 18 the Muzzle Energy (ME) ratings on firearms takes a step up because of this. These weapons can be used in a vacuum.

Electromagnetic Propulsion (Tech Level 17)

Not commonly used in firearms, electromagnetic propulsion uses magnets to accelerate the round. This is seldom more convenient than gunpowder or electrochemical propulsion, as both the power cell and ammunition must be reloaded frequently. This type of propulsion can be used in a vacuum.

Gunpowder (Tech Level 8)

Gunpowder is invented at the end of tech level 8, when it revolutionizes warfare. It is used exclusively in firearms until tech level 18. More advanced firearms contain enough air in the cartridge to fire in a vacuum. Firearms from tech levels below 12 cannot fire in a vacuum.

Specialty Ammo

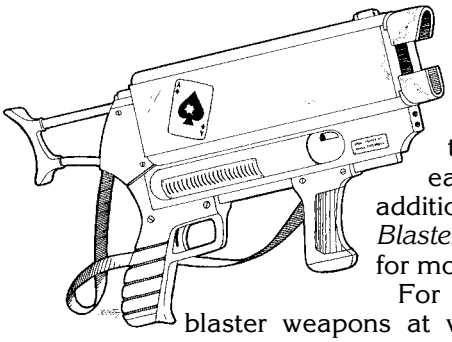
Firearms are a feature of many SF stories. Others use only energy weapons, but the reality of the fact is that firearms are probably here for quite some time.

Firearms by themselves are nice, but no firearm is complete without specialty ammo. Many of these rounds will be restricted or even illegal in most cultures.

Unless otherwise noted, kinetic armor negates any criticals caused by these rounds.

BLASTERS

Blasters are heavy particle beam weapons. They achieve popularity as kinetic armor reduces the effectiveness of projectile weapons. They are often capable of burst or continuous fire modes. They don't suffer the heat problems that lasers suffer.



Blasters can be designed with or without radioactive side effects. A blaster that generates radioactive side effects could cause an additional 1-100% damage with each strike, or it might give an additional Radiation critical. See *Blaster Law* or *Gamemaster Manual* for more details.

For an idea of the power of blaster weapons at various tech levels, see *Blaster Law*.

LASERS

Laser stands for Light Amplified by Stimulated Emission of Radiation. These weapons fire beams of coherent light, capable of burning through their targets. Lasers have excellent range, but generate inordinate amounts of heat. They are therefore hard to cool, and it's difficult to design one capable of continuous fire.

For an idea of the power of laser weapons at various tech levels, see *Blaster Law*.

PLASMA WEAPONS

Plasma weapons fire super-heated helium at their targets. The high-energy plasma tends to cling to the hapless victim, causing continual damage. This effect is reflected in the Plasma critical descriptions.

For an idea of the power of plasma weapons at various tech levels, see *Blaster Law*.

OTHER WEAPONS

Some weapons don't fit easily into other categories. They are included here to flesh out the *Tech Law* arsenal.

ARMOR

Ballistic armor (modern armor), kinetic armor and combat armor are described here. Archaic armor is described in *Arms Law*. For notes on converting futuristic armor to modern or archaic armor, see Appendix A-1.1.

WEAPON ACCESSORIES

Sometimes guns are not enough. Other devices are needed to enhance or downplay features of the weapon. These accessories come in many shapes and sizes.

7.1 NORMAL GEAR

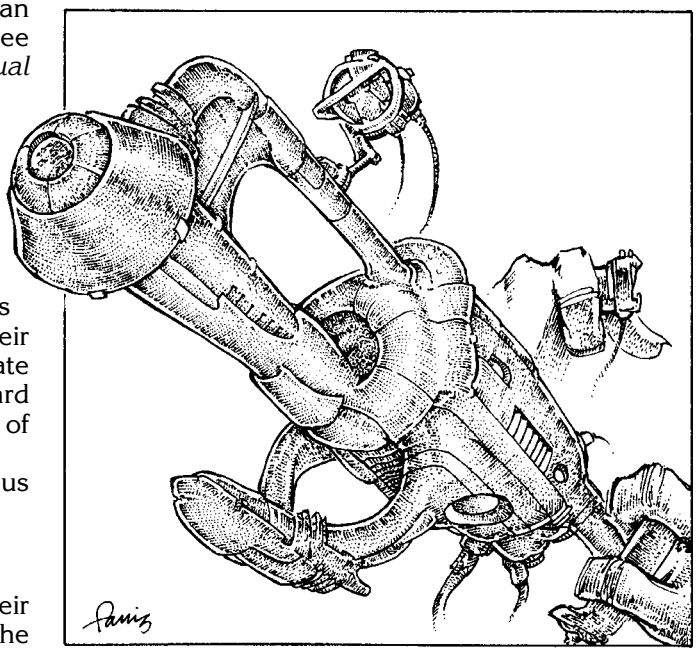
This gear is readily available to anyone in most societies. In extremely restrictive societies, even these might be outlawed.

Blaster Pistol (Tech Level 22)

Coming in light, medium, and heavy varieties, this is a semi-automatic, one-handed energy weapon. It is the sidearm of choice after its invention.

Flash Suppressor (Tech Level 14)

This device is added to a firearm. It hides much of the weapon's flash, making it difficult to see the weapon at night. This is often combined with a silencer to make the person more difficult to spot (though it's often tough to judge the direction of a gunshot at night). This causes a -30 penalty to determine the direction of the weapon at night.



Holo Sights (Tech Level 16)

Developed at the end of tech level 16, these sights cause a point to be placed on the target. This point shifts with the angle of the gun, making it unnecessary to "line up" the sights. This gives a +5 bonus when aiming.

Hunting/Sniping Blaster (Tech Level 19)

This is a rare creature, as lasers are more typical because of range considerations. It is a standard blaster carbine. Sniping blasters typically have good scopes. These are rarely capable of burst fire. They are two-handed energy weapons.

Hunting/Sniping Laser (Tech Level 19)

This is a standard laser carbine. Sniping lasers typically have good scopes. These are rarely capable of burst fire. They are two-handed energy weapons.

HUNTING/SNIPER RIFLE TABLE EM-7.1

Tech Level	LIGHT ME*	LIGHT Rnds	MEDIUM ME*	MEDIUM Rnds	HEAVY ME*	HEAVY Rnds
9	3/2	1	6/3	1	9/5	1
10	3/2	1	6/3	1	9/5	1
11	3/2	1	6/3	1	9/5	1
12	3/2	15	9/5	10	14/7	8
13	3/2	15	9/5	10	14/7	8
14	3/2	15	9/5	10	14/7	8
15	3/2	15	9/5	10	14/7	8
16	3/2	15	9/5	10	14/7	8
17	3/2	15	9/5	10	14/7	8
18	5/3	20	11/6	15	14/7	10
19	5/3	20	11/6	15	14/7	10
20	5/3	20	11/6	15	14/7	10
21	6/3	20	11/6	15	14/7	10
22	6/3	20	11/6	15	14/7	10
23	6/3	20	11/6	15	14/7	10
24	7/4	20	11/6	15	14/7	10
25	7/4	20	11/6	15	14/7	10
26	7/4	20	11/6	15	14/7	10
27	8/4	20	11/6	15	14/7	10
28	8/4	20	11/6	15	14/7	10
29	8/4	20	11/6	15	14/7	10

* — ME = Muzzle Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Muzzle Energy of the attack. If *Blaster Law* is being used, the number after the slash is the equivalent Blaster Energy (BE) of the attack.

Rnds — Standard number of rounds in the weapon.

Hunting/Sniping Plasma Carbine (Tech Level 20)

This is a standard plasma carbine. Sniping carbines typically have good scopes. These are rarely capable of burst fire. They are two-handed energy weapons.

Hunting/Sniping Rifle (Tech Level 11)

This is a standard rifle. Sniping rifles typically have good scopes. These are rarely capable of burst fire. They are two-handed firearms.

Laser Pistol (Tech Level 22)

Coming in light, medium, and heavy varieties, this is a semi or fully automatic, one-handed energy weapon.

Laser Sight (Tech Level 16)

This device attaches to a hand-held weapon, projecting a beam of light onto the target. This is usually activated when the stock of the weapon is grasped or the trigger is touched. This makes firing that much easier at night or in darkened conditions. This grants a +5 to any attacks made with the weapon, as long as a sight is not being used and the attack is not a snap action. The lighting conditions must also be at least somewhat subdued.

Luminous Sights (Tech Level 15)

These sights have glow-in-the-dark paint on each of the sight's points. This grants the user a +5 bonus whenever aiming at night.

Monosword (Tech Level 17)

This weapon is made from special composites which allow it to be sharpened to a nearly monomolecular edge. It attacks on the monosword table, and delivers Raking criticals.

Needler (Tech Level 17)

This one-handed electromagnetic firearm hurls needles at high velocities. These needles are valued for their penetration, and are actually tiny injectors that contain whatever drug or poison the user desires.

A needler holds 1,000 rounds, and can only be fired in burst mode. A short burst fires d5+2 needles, a long burst fires d10+5 needles, and an extended burst fires 2d10+10 needles. The number of needles fired increases the damage (x2 for 7-14 needles, x3 for 15-30 needles), and applies a penalty to the target's RR vs. the poison or drug that is used (-20 for 7-14 needles and -50 for 15-30 needles). In addition, a burst of 20 or more needles increases the critical delivered by one degree of severity.

Pistols
(Tech Level 13)

Coming in light, medium, and heavy varieties, this is a semi-automatic, one-handed firearm. It is the sidearm of choice from its invention till the creation of kinetic armor and the advent of the blaster pistol. Below is a list of Muzzle Energy (ME) figures for pistols by tech level.

Plasma Pistol
(Tech Level 22)

Coming in light, medium, and heavy varieties, this is a semi or fully automatic, one-handed energy weapon.

Recoil Compensator
(Tech Level 16)

This device compensates for all the recoil from a weapon. It was designed to allow for firearm combat in zero G. It reduces the penalty of an aimed burst to -10, just as with energy weapons.

Revolvers
(Tech Level 12)

The predecessor of the pistol is the revolver. This weapon uses a revolving chamber to feed fresh rounds. They are typically thought of as six-shooters. They are one-handed firearms.

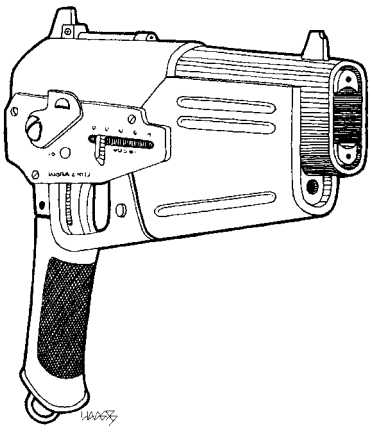
Scope
(Tech Level 10)

This device (when used with the Targeting skill) allows a character to reduce the range penalties of an attack. This means that the attack must be performed as a deliberate action.

Scopes come in classes. To find the maximum class of a scope, subtract nine from the tech level. For instance, at tech level 16, classes I through VII would exist. Multiply the class by 5 to receive the total reduction of penalties. A static maneuver must be made to use these devices. The total reduction is equal to the reduction ability of the scope, or the character's targeting bonus, whichever is less.

Shredder Rounds
(Tech Level 12)

As the ages progress, the hollowpoint round goes through many different permutations. Everything from true hollowpoints to shatter-points to rounds that explode into dozens of pellets are tried. This is the generic treatment of such rounds.



PISTOLS TABLE EM-7.2

Tech Level	LIGHT ME*	LIGHT Rnds	MEDIUM ME*	MEDIUM Rnds	HEAVY ME*	HEAVY Rnds
13	2/2	12	3/2	10	4/2	8
14	2/2	12	3/2	10	4/2	8
15	2/2	12	3/2	10	4/2	8
16	2/2	12	3/2	10	4/2	8
17	2/2	18	3/2	15	4/2	12
18	4/2	18	5/3	15	6/3	12
19	4/2	18	5/3	15	6/3	12
20	4/2	18	5/3	15	6/3	12
21	5/3	18	6/3	15	7/4	12
22	5/3	18	6/3	15	7/4	12
23	5/3	18	6/3	15	7/4	12
24	6/3	18	7/4	15	8/4	12
25	6/3	18	7/4	15	8/4	12
26	6/3	18	7/4	15	8/4	12
27	7/4	18	8/4	15	9/5	12
28	7/4	18	8/4	15	9/5	12
29	7/4	18	8/4	15	9/5	12

* — ME = Muzzle Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Muzzle Energy of the attack. If *Blaster Law* is being used, the number after the slash is the equivalent Blaster Energy (BE) of the attack.

Rnds — Standard number of rounds in the weapon.

REVOLVERS TABLE EM-7.3

Tech Level	LIGHT ME*	LIGHT Rnds	MEDIUM ME*	MEDIUM Rnds	HEAVY ME*	HEAVY Rnds
12	2/2	8	3/2	7	4/2	6
13	2/2	8	3/2	7	4/2	6
14	2/2	8	3/2	7	4/2	6
15	2/2	8	3/2	7	4/2	6
16	2/2	8	3/2	7	4/2	6
17	2/2	8	3/2	7	4/2	6
18	4/2	8	5/3	7	6/3	6
19	4/2	8	5/3	7	6/3	6
20	4/2	8	5/3	7	6/3	6
21	5/3	8	6/3	7	7/4	6
22	5/3	8	6/3	7	7/4	6
23	5/3	8	6/3	7	7/4	6
24	6/3	8	7/4	7	8/4	6
25	6/3	8	7/4	7	8/4	6
26	6/3	8	7/4	7	8/4	6
27	7/4	8	8/4	7	9/5	6
28	7/4	8	8/4	7	9/5	6
29	7/4	8	8/4	7	9/5	6

* — ME = Muzzle Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Muzzle Energy of the attack. If *Blaster Law* is being used, the number after the slash is the equivalent Blaster Energy (BE) of the attack.

Rnds — Standard number of rounds in the weapon.

SHOTGUN TABLE EM-7.4

Tech Level	LIGHT SG*	LIGHT Rnds	MEDIUM SG*	MEDIUM Rnds	HEAVY SG*	HEAVY Rnds
9	2/1/2	1	6/3/3	1	9/4/4	1
10	2/1/2	1	6/3/3	1	9/4/4	1
11	2/1/2	1	6/3/3	1	9/4/4	1
12	5/3/3	2	8/4/4	2	11/5/4	2
13	5/3/3	8	8/4/4	6	11/5/4	4
14	5/3/3	8	8/4/4	6	11/5/4	4
15	5/3/3	8	8/4/4	6	11/5/4	4
16	5/3/3	8	8/4/4	6	11/5/4	4
17	5/3/3	8	8/4/4	6	11/5/4	4
18	7/4/4	8	10/5/4	6	13/5/5	4
19	7/4/4	8	10/5/4	6	13/5/5	4
20	7/4/4	8	10/5/4	6	13/5/5	4
21	8/4/4	8	11/5/4	6	14/6/5	4
22	8/4/4	8	11/5/4	6	14/6/5	4
23	8/4/4	8	11/5/4	6	14/6/5	4
24	9/4/4	8	12/5/4	6	15/6/5	4
25	9/4/4	8	12/5/4	6	15/6/5	4
26	9/4/4	8	12/5/4	6	15/6/5	4
27	10/5/4	8	13/5/5	6	16/6/5	4
28	10/5/4	8	13/5/5	6	16/6/5	4
29	10/5/4	8	13/5/5	6	16/6/5	4

* — SG = Shotgun Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Shotgun Energy of the attack. If *Blaster Law* is being used, the middle number is the Plasma Enerty (PE) of the attack if option 1 is used—if option 2 is used, the last no. is the attack's PE.

Rnds — Standard number of rounds in the weapon.

These rounds act as normal bullets against armor, causing Ballistic Impact criticals. Against unarmored locations, their criticals are resolved as Ballistic Hollowpoint criticals.

Shotgun (Tech Level 9)

These weapons fire shot at the target. They run a wide gamut of powers, so these figures should be considered guidelines at best. They are two-handed firearms.

Sonic Stunners (Tech Level 17)

These weapons bombard the target with sonic waves which force his brainwave patterns into sleep mode. At the very minimum this causes severe stun.

These weapons can be tuned to ear pieces which set up counter harmonics. These ear pieces protect the user from the effects of the weapon, should it be turned on them. Sonic stunners cannot be used in a vacuum.

Tracer Rounds (Tech Level 16)

These rounds glow, leaving a visible path. They are often used to zone in with a burst.

When used in burst fire, tracers give a +5 bonus to the attack. All criticals, however, receive a -1 penalty.

7.2 PROFESSIONAL GEAR

This gear can be purchased by professionals. This typically only includes security personnel and specially licensed private citizens (such as bodyguards).

Armor Enhancements

Reflect Armor: This outer coating gives advantages only against laser attacks. Lasers that hit reflect armor deliver Burn Through or Scorch criticals instead of Laser or Raking criticals. (**Tech Level:** 17)

Ablative Armor: This outer coating gives advantages against blasters. When struck with a particle beam, it dissipates the energy around the entire outer covering, which reduces the power of the attack. These coatings have a limited number of uses before the coating is gone. Blasters deliver Burn Through or Scorch criticals instead of Heat or Burst criticals. The cost given on table 7.30 is for ten coats. (**Tech Level:** 18)

Armor Piercing Rounds (Tech Level 15)

These rounds are designed to pass through armor. They do this by drilling a smaller, cleaner hole through their targets. This increases the round's armor piercing capabilities and decreases the round's damage (via the criticals done).

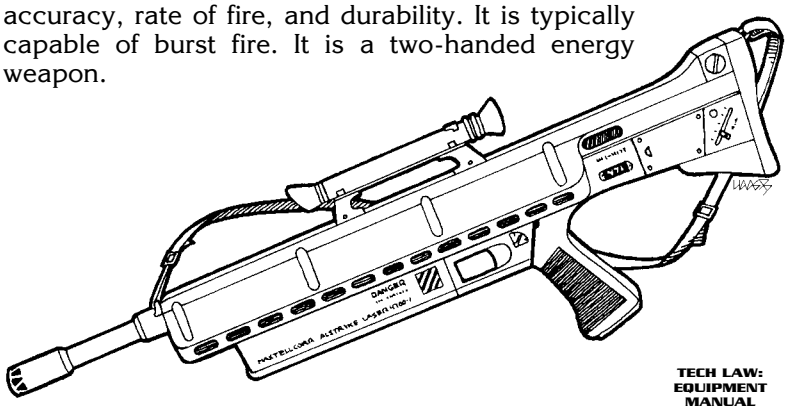
These rounds always deliver Ballistic Armor Piercing criticals. This occurs even if they hit an armored location (unless the armor is kinetic, in which case the critical is ignored).

Assault Blaster (Tech Level 20)

Designed for combat infantry, this is the weapon of choice for the soldier. It is designed to be a compromise between accuracy, rate of fire, and durability. It is typically capable of burst fire. It is a two-handed energy weapon.

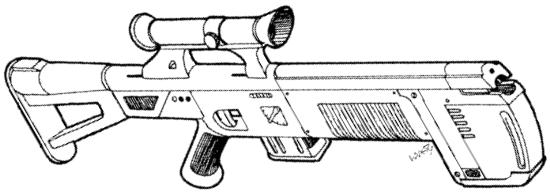
Assault Laser (Tech Level 21)

Designed for combat infantry, this weapon is well received by soldiers, second only to the assault blaster. It is designed to be a compromise between accuracy, rate of fire, and durability. It is typically capable of burst fire. It is a two-handed energy weapon.



Assault Plasma Carbine (Tech Level 22)

Designed for combat infantry, this weapon is designed to be a compromise between accuracy, rate of fire, and durability. It is typically capable of burst fire. It is a two-handed energy weapon.



Assault Rifle (Tech Level 13)

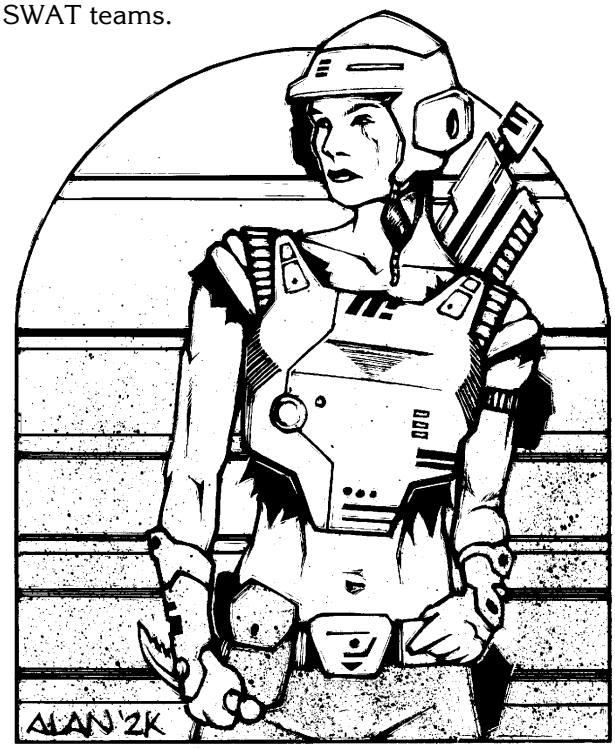
Designed for combat infantry, this is the firearm of choice for the soldier. It is designed to be a compromise between accuracy, rate of fire, and durability. It is a two-handed firearm.

Combat Armor (Tech Level 19)

This armor is a hardened composite shell. It is relatively lightweight, and is efficient both at energy dispersal and projectile deflection. It ignores Ballistic Puncture and Ballistic Hollowpoint criticals. Ballistic Armor Piercing criticals are resolved normally. It has no special effects against lasers and blasters; it will accept either a reflective or an ablative coating. Plasma weapons cause Burn Through or Scorch criticals the first round they hit the armor, but after that they deliver Plasma criticals.

Type VIII: This combat armor consists of a one piece, full torso covering, including front, back, and sides.

Type IX: This combat armor includes greaves. It therefore is more restrictive in movement, but includes greater areas of coverage, including most everything but hands, feet, and joints. With its invention, it becomes the armor of choice for SWAT teams.



ASSAULT RIFLE TABLE EM-7.5

Tech Level	LIGHT ME*	LIGHT Rnds	MEDIUM ME*	MEDIUM Rnds	HEAVY ME*	HEAVY Rnds
15	8/4	30	11/6	25	14/7	20
16	8/4	30	11/6	25	14/7	20
17	8/4	50	11/6	40	14/7	30
18	10/5	50	13/7	40	16/8	30
19	10/5	50	13/7	40	16/8	30
20	10/5	50	13/7	40	16/8	30
21	11/6	50	14/7	40	17/8	30
22	11/6	50	14/7	40	17/8	30
23	11/6	50	14/7	40	17/8	30
24	12/6	50	15/8	40	18/9	30
25	12/6	50	15/8	40	18/9	30
26	12/6	50	15/8	40	18/9	30
27	13/7	50	16/8	40	19/9	30
28	13/7	50	16/8	40	19/9	30
29	13/7	50	16/8	40	19/9	30

* — ME = Muzzle Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Muzzle Energy of the attack. If *Blaster Law* is being used, the number after the slash is the equivalent Blaster Energy (BE) of the attack.

Rnds — Standard number of rounds in the weapon.

Type X: This combat armor covers the entire body. It includes an under suit and at least a rudimentary joint coverage. It also includes gloves and boot covers. This armor type is often made into powered versions, including full, waldo-enhanced movement, built in weapons, sensors or weapons.

A Note on Powered Armor

Powered armor can be handled in different ways, depending on the size of the armor. If the armor is relatively light, then simply treat it as normal armor, but in a heavy mechanical suit, then it's the suit that takes damage, not necessarily the occupant.

If the armor takes damage, this too can be handled two different ways, depending on the size of the suit.

If the armor is relatively man-sized, the armor takes no hits, as man portable weapons aren't much of a threat, and damage is dealt with by the criticals. Resolve the attack on the character normally, but ignore all damage. Resolve the critical on the Powered Armor Critical Strike Table. Any hits or bleeding caused by the critical are applied to the armor's occupant. Any penalties are applied to the armor itself, and are not applied to the occupant at all once he evacuates the armor.

Use the Powered Armor Critical Strike Table EM-A-3.1 for all criticals. If the attack was a burst fire, or delivered a Shrapnel critical, add five to the critical result; for Raking criticals, add ten.

Larger suits of powered armor might be treated as vehicles. In this case, only vehicle sized weapons would damage them, but they would have hits.

Some criticals cause additional criticals to be rolled against the occupant. All the effects of these secondary criticals are applied to the occupant alone. They do not affect the armor.

Dual-purpose Rounds (Tech Level 16)

These rounds contain an armor piercing core inside a shell designed to shatter on impact.

Against an unarmored body, these rounds inflict Ballistic Hollowpoint criticals. When they hit armor, they delliver Ballistic Armor Piercing criticals. Kinetic armor negates the criticals altogether.

Explosive Rounds (Tech Level 16)

These rounds are designed to explode inside the body of their target. Hard objects, such as armor, tend to cause premature detonation.

Against an unarmored location, these rounds give Shrapnel criticals. Against an armored location, they cause Ballistic Impact criticals (unless the armor is kinetic) of one severity less than indicated by the attack (an A becomes an A - 25).

Flechette Rounds (Tech Level 16)

These rounds can be used in shotguns or conventional firearms. They fire a burst of flechettes (tiny darts) instead of solid slugs or shot. This causes increased armor piercing capabilities by sacrificing power. Flechettes impart less energy than shot, but tend to have a more efficient flight path, so they have no additional range penalties.

When using flechettes, halve the muzzle energy (or equivalent blaster energy) of the weapon. However, the blast ignores ballistic armor, and still delivers Shrapnel criticals. In pistols and rifles, since the round now spreads like shot, all ranges are halved and all range penalties are doubled. Combat armor negates the criticals caused by these rounds.

MACHINE PISTOL/ SUBMACHINE GUN TABLE EM-7.6

Tech Level	MACHINE PISTOL ME*	MACHINE PISTOL Rnds	SUBMACHINE GUN ME*	SUBMACHINE GUN Rnds
13	–	–	5/3	30
14	4/2	15	5/3	30
15	4/2	15	5/3	30
16	4/2	15	5/3	30
17	4/2	20	5/3	45
18	6/3	20	7/4	45
19	6/3	20	7/4	45
20	6/3	20	7/4	45
21	7/4	20	8/4	45
22	7/4	20	8/4	45
23	7/4	20	8/4	45
24	8/4	20	9/5	45
25	8/4	20	9/5	45
26	8/4	20	9/5	45
27	9/5	20	10/5	45
28	9/5	20	10/5	45
29	9/5	20	10/5	45

* — ME = Muzzle Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Muzzle Energy of the attack. If *Blaster Law* is being used, the number after the slash is the equivalent Blaster Energy (BE) of the attack.

Rnds — Standard number of rounds in the weapon.

Kinetic Armor (Tech Level 18)

These armors harden in direct proportion to the energy applied. In other words, the harder the armor is struck, the more rigid it becomes. This means that the armor is flexible most of the time, but becomes rigid when hit.

If a firearm is used against this type of armor and the round hits an armored location, the critical is ignored.

See Appendix A-1.1 for details on how to handle melee attacks against kinetic armor.

Type V: This kinetic armor is worked into a vest, covering the torso from the waist up.

Type VI: This kinetic armor is worked into a jacket. It covers the torso, arms, groin, and upper legs.

Type VII: This kinetic armor is designed as a full suit. It covers the entire body, and comes complete with gloves, boot coverings and a transparent polymer helmet. With it's invention, it quickly becomes the preferred armor of bomb squads.

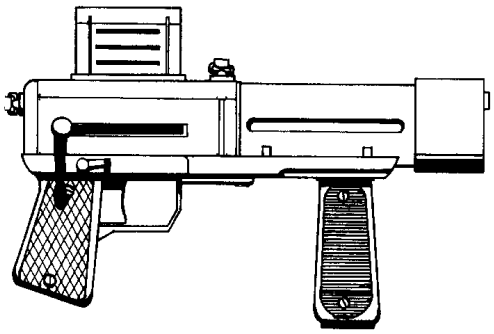
Knockout Rounds (Tech Level 18)

These rounds fire a specially designed flechette. This flechette has a short needle-like point, but quickly expands into a larger round. It will therefore penetrate soft armor and flesh up to one half inch, then stop. It is used to deliver knockout drugs.

This round ignores soft armor but does Tiny criticals. Against class II and IV armor, it only works half the time. If a critical is indicated, the effects of the drug (usually Mickey Finn) take effect, and the target must make a Resistance Roll. This is useless against a location armored with kinetic or combat armor.

Machine Pistol/Submachine Gun (Tech Level 13)

Basically, this is a fully automatic pistol, or a cross between a machine pistol and an assault rifle. It is capable of burst fire. The machine pistol is a one-handed firearm. The submachine gun is a two-handed firearm.



Modern Armor (Tech Level 16)

This armor typically consists of ballistic cloth and metal plates. Ballistic armor often becomes obsolete when kinetic armor becomes cost effective.

An armor piercing round or any round that hits an unarmored location is handled normally. If any other critical result specifies an armored location, apply the Ballistic Impact critical of the same severity and die roll.

See Appendix A-1.1 for options on handling melee attacks against these armor types.

Type I: This is often the classification of light ballistic armors. It covers only the torso. Armored clothing and armored underclothing is typically this class of armor.

Type II: This is the heavier ballistic cloth. It covers the torso and shoulders, and is thicker than class I. Armored winter gear, overcoats, and other, heavier material often fits this classification.

Type III: This is heavy ballistic cloth with metal plates. It covers torso, shoulders and thighs. It is hard to conceal as clothing, but bulky clothing, such as overcoats, is still sometimes made of this type of armor.

Type IV: This is heavy full-bodied ballistic cloth with metal plates. It covers the entire body. Armored vac suits are often this type of armor.

Nullifier Rounds (Tech Level 25)

These rounds, when spun at a certain rate, create an electromagnetic field which nullifies force fields. This round can be either normal or armor piercing.

This requires a special gun which monitors atmospheric pressure (x5 cost) and adjusts the burn rate of these rounds so that they achieve the optimum spin rate. This gun could fire normal electrochemical rounds.

Shields (Tech Level 24)

Shields are available in either belt or backpack size. When activated, a shield covers the user's body with an invisible field of force. This field adds to a character's defensive bonus. The amount added depends on the type of shield.

Though this shield is invisible, it causes spatial vibrations that are almost perceptible to Human senses. These vibrations give a -10 penalty to any Stalking or Hiding maneuvers attempted by the user. A shield's energy output is detectable with scanners.

A shield will to cover any object held or worn by the character. One tenth of a kiloliter of additional matter can be covered by a shield before it disperses. If this happens, all bonuses are halved and the shield has a 5% chance per round of going dead. Since the user's own magnetic field is the conductor of the shield, the size of the user doesn't matter (unless they're very large, GM's discretion). A shield will not cover two living beings, unless the mass of the second does not exceed 10% of the mass of the first.

Because of the nature of shields, a dissipater -- a device attached to the barrel of a gun -- is required. This opens a hole in the shield large enough for the weapon to poke through. This can even be used to poke through someone else's shield.

Shields can be activated instantly.

Only one shield may be active around a character at one time. Trying to activate another will cause both to suffer an Extremely Severe malfunction.

Shield Usage

Activating a shield drains 5 energy units (EU) from the power cell. It takes one EU a round to maintain (these costs are doubled for large and quadrupled for super large creatures). When the shield is activated, make a non open-ended d100 roll. An unmodified roll of 01-03 indicates that the power cell is completely drained, regardless of the previous energy level. An unmodified roll of 04-05 indicates that the shield suffers a Moderate malfunction. Any attack on a shield drains energy units equal to the equivalent Blaster Energy (BE), Laser Energy (LE), Plasma Energy (PE), or Muzzle Energy (ME) of the weapon. Primitive and melee attacks drain an energy unit for every point of damage inflicted by the attack.

Force Shields

Force shields are typically very strong. They generate a small, circular field of force that behaves as a solid shield. The generators of these fields are worn on the forearm of the user.

Buckler: This type of shield is fairly small. It confers a DB bonus of 20 vs. melee and 10 vs. missile.

Normal: This is a larger shield. It confers a DB bonus of 20 vs. melee and missiles.

Full: This is a larger shield. It confers a +25 bonus vs. melee and missiles.

Absorption Shield

This is a lesser version of the barrier shield. It grants equal protection versus all types of attacks. The absorbtion shield is not as effective as the barrier shield.

Barrier Shield

The ultimate evolution of the personal shield, the barrier shield provides good protection against all attacks. It is the most popular shield made.

Deflector Shield

The deflector shield is most effective against energy weapons.

Velocity Shield

The velocity shield is very effective against projectiles, but it is useless against energy weapons.

The bonuses from shields are summarized below.

SHIELD DEFENSIVE BONUS TABLE EM-7.7

Shield Type	Energy	Projectile	Missile	Melee
Absorption	+30	+30	+30	+30
Barrier	+90	+70	+70	+60
Deflector	+60	+40	+15	+5
Velocity	0	+60	+45	+30

Silencer
(Tech Level 14)

This device only works on automatic or semi-automatic firearms. This device captures the gasses, greatly reducing the volume of the weapon's discharge. This will not work on revolvers, or other weapons where the gasses can escape through areas other than the bullet path.

A silencer must be fitted to the barrel of the weapon. It cannot, therefore be switched with the silencer from a different sized weapon.

This item is often illegal. Where it is legal, it is usually heavily restricted.

This accessory reduces the noise of the weapon by 80%. It is still possible to hear it up to a block away. Supersonic rounds will still make a cracking sound as the leave the barrel.

A silencer does bleed some energy from the round. All attacks are therefore at -10.

Special Dual-purpose Rounds
(Tech Level 17)

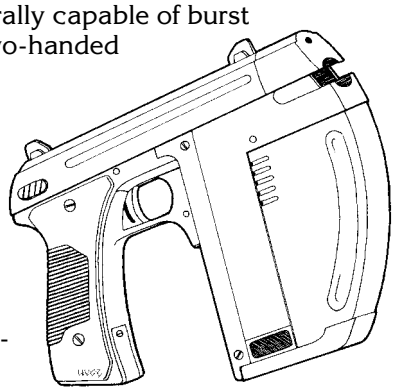
These rounds have a conical tip which, when pressure is applied to the back, cracks into a shredder round. Unless the target is wearing multiple layers of armor, he suffers Ballistic Hollowpoint criticals. Kinetic armor will (of course) negate these criticals.

Subassault Blaster
(Tech Level 21)

This is a happy medium between an assault blaster and blaster pistol. It is capable of burst fire, at a minimum. They are two-handed energy weapons.

Subassault Laser
(Tech Level 22)

This is a happy medium between an assault laser and laser pistol. They are generally capable of burst fire, at a minimum. They are two-handed energy weapons.



Subassault Plasma Carbine
(Tech Level 23)

This is a happy medium between an assault plasma carbine and plasma pistol. They are generally capable of burst fire, at a minimum. They are two-handed energy weapons.

7.3 MILITARY-GRADE GEAR

This gear is available only to the military and special law enforcement units. The private citizen must buy this on the black market.

Flamer
(Tech Level 14)

The flamer drenches its victim with chemical mix which ignites with a satisfying "whoosh." This is almost impossible to get off, but it will not burn in oxygen-deprived environments, such as a vacuum.

It can take a while for flamer fuel to burn out. If the target receives a critical, they continue taking criticals for subsequent rounds, each round of one severity less than the round before, until the critical is less than an "A," and the fire burns out.

Most high-tech flamers (tech level 17 or higher) use some napalm-like substance, and are much deadlier. This means that when used on a target, the target automatically catches on fire. On rounds after the subsequent attack, the target continues taking a critical equal to the severity of the original critical, or an "A" if no critical was indicated. Putting these out depends a great deal on the nature of the flamer fuel. It should, at the very least, require a Very Hard maneuver on the part of the target. It might be nearly impossible however, burning under water or even in the vacuum of space. It is up to the GM to decide the details. It will burn out naturally, after a number of rounds equal to its tech level.

Grenade
(Tech Level 10)

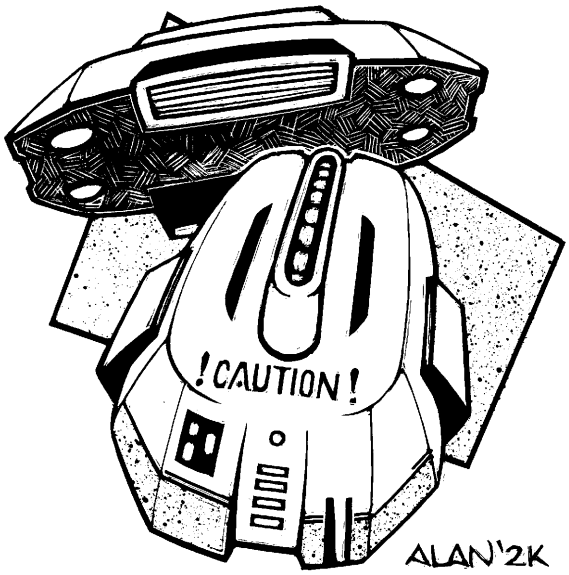
A grenade is a hand-held explosive. It typically hurls shrapnel across a significant area. If fired from a grenade launcher, treat this as a support weapon. If hurled, it is a thrown weapon.

Grenade attacks are resolved on the Grenade Attack Table A-EM-2.8. If the grenade was thrown, then the character may add his skill with Weapon Thrown (Grenade) to his open-ended roll to see how close the grenade lands to its target. Any range modifications are added to this roll, not the roll on the attack chart itself.

Note: *All rules presented here presume that the grenade is armed when thrown. Other rules may be necessary if the grenade has a different delivery method or method of arming.*

The GM may allow any character to make an Awareness maneuver to notice the grenade in time to dive for cover. Rules for diving for cover are located in both *Weapons Law: Firearms* and *Blaster Law*. If the accuracy roll was less than 100, then the difference is added as a positive modifier to the maneuver. A GM may also rule that results over 100 act as a negative modifier.

The character rolls a d100 (open-ended), adding any modifiers for range, his skill, or special conditions. At the same time, the GM rolls a d100 (not open ended). If the GM rolls doubles (11, 22, etc.), then the grenade hits the target dead on, regardless of the player's roll. Otherwise, an even roll on the part of the GM means the grenade lands to the right of the target, an odd roll, to the left. Finally, the lesser roll is subtracted from the greater and the result is compared to the Grenade Accuracy chart to determine how many degrees off the throw was. The final result shows where the grenade finally came to a rest (assuming some bouncing was involved).



GRENADE ACCURACY TABLE EM-7.8

Difference Between Rolls	Degrees Off	Meters Off
0 to 10	9d10°	4d10m
11to 20	8d10°	4d8m
21 to 30	7d10°	3d10m
31 to 40	6d10°	3d8m
41 to 50	5d10°	2d10m
51 to 60	4d10°	2d8m
61 to 70	3d10°	2d6m
71 to 80	2d10°	1d10m
81 to 95	d10°	1d6m
96 to 100	0°	1d3m
Greater than 100	0°	0m

Note: In all cases, if the random result indicates that the grenade ends up somewhere that is physically impossible the GM should determine the result of grenade placement using common sense (e.g., if the grenade cannot go 5' behind the target without going through the wall, the grenade will hit the wall and bounce back a few feet).

Example: *Fitt throws a grenade at the nearest of the bad guys, 15m away. There is no modification for the attack at this range. He rolls a 35 (about average for his luck), but gets to add 76 for his skill. The GM rolls a 56. The grenade lands to the right of the target, and subtracting 56 from 111 (35 + 76), the GM finds that the throw was 4d10° off. Fitt rolls and, typically, gets a 38. The grenade flies 38° off target, to the right. Maybe Fitt was feeling suicidal and threw a nuclear grenade.*

A similar method is used to determine how many meters off the throw was. The player and GM each roll. If the GM rolls doubles, then the grenade was thrown the right distance. An even number indicates a long throw, and an odd number indicates a short throw. Note that this is relative to the distance the grenade should have been thrown. In the example above, if meters off result in 0 feet, then the grenade will still fall sort, as the grenade flies 15m, 38° to the right.

HEAP Rounds
(Tech Level 16)

HEAP stands for High-Explosive Armor Piercing. These rounds detonate a shaped charge upon impact, firing a slug (often depleted uranium) through the armor. If this is hard armor, this slug often becomes molten.

HEAP rounds deliver Shrapnel criticals against an unarmored body location. Against AT I and AT II, they deliver Armor Piercing criticals. Against AT III and AT IV, there is an equal chance that they will cause an Armor Piercing critical or a Shrapnel critical with an additional Heat critical of the same severity. Against kinetic and combat armor, they give a Shrapnel critical with an additional Heat critical of equal severity.

MACHINE GUNS TABLE EM-7.9

Tech Level	LIGHT ME*	LIGHT Rnds	MEDIUM ME*	MEDIUM Rnds	HEAVY ME*	HEAVY Rnds
12	11/6	Belt	12/6	Belt	13/7	Belt
13	11/6	Belt	12/6	Belt	13/7	Belt
14	11/6	Belt	12/6	Belt	13/7	Belt
15	13/7	Belt	16/8	Belt	19/9	Belt
16	13/7	Belt	16/8	Belt	19/9	Belt
17	13/7	Belt	16/8	Belt	19/9	Belt
18	15/8	Belt	18/9	Belt	21/9	Belt
19	15/8	Belt	18/9	Belt	21/9	Belt
20	15/8	Belt	18/9	Belt	21/9	Belt
21	16/8	Belt	19/9	Belt	22/10	Belt
22	16/8	Belt	19/9	Belt	22/10	Belt
23	16/8	Belt	19/9	Belt	22/10	Belt
24	17/8	Belt	20/9	Belt	23/10	Belt
25	17/8	Belt	20/9	Belt	23/10	Belt
26	17/8	Belt	20/9	Belt	23/10	Belt
27	18/9	Belt	21/9	Belt	24/11	Belt
28	18/9	Belt	21/9	Belt	24/11	Belt
29	18/9	Belt	21/9	Belt	24/11	Belt

* — ME = Muzzle Energy. If *Weapon Law: Firearms* is being used, the number before the slash is the Muzzle Energy of the attack. If *Blaster Law* is being used, the number after the slash is the equivalent Blaster Energy (BE) of the attack.

Rnds — Standard number of rounds in the weapon.

Machine Guns (Tech Level 12)

This is a huge combat rifle, typically a barely man-portable version of the assault rifle. It is often fired with the barrel supported by tripods or fortifications. It is capable of burst fire. It is a two-handed firearm, though some are big enough to qualify as support weapons.

Nuclear Grenade (Tech Level 24)

This device carries a small piece of weapons grade plutonium. The plutonium is crushed by a small but very powerful spherical force field, until it becomes super-critical. The force field is neutron-opaque, and will reflect neutrons back, not allowing escape. This makes the effect very efficient and, for a nuclear weapon, very clean. The capacitor has just enough power to hold the compression two or three micro-seconds longer than necessary.

NUCLEAR GRENADE BLAST RADII TABLE EM-7.10

	Blast Radius (in Meters)				
Size	1st	2nd	3rd	4th	5th*
Small	10	20	30	40	50
Medium	20	40	60	80	100
Large	30	60	90	120	150

* — Subsequent blast radii continue at the indicated rate.

The highest evolution of man-portable weapons, the nuclear grenade is devastating in the extreme. It often cannot be thrown far enough to be safe for its user. Therefore, most nuclear grenades have a variable timer.

Everything within the first blast radius is obliterated. Everything within the other blast radii is damaged as indicated on the Nuclear Grenade Attack Table A-EM-2.13.

Nuclear grenades cause secondary radiation. If *Gamemaster Manual* is not being used, assign a Radiation critical of the same severity as the grenade's critical. Otherwise, use the rules presented there.

Poison Rounds (Tech Level 14)

These rounds are typically hollowpoints with a drop of poison placed on the tip, and then sealed with lead or wax. They are almost always illegal.

These act exactly like hollowpoint ammunition. If a Ballistic Hollowpoint critical is delivered, the target must also make a RR against the poison.

Seeker Rounds (Tech Level 25)

These rounds use a special gun (x5 cost) which allows the shooter to achieve a sensor lock before firing. Only sniping rifles are typically capable of this function.

The sniper begins by taking a preparatory round to achieve a sensor lock. The sniper makes an attack roll as though he were actually firing at his target. If a critical is achieved, then a sensor lock is obtained, and no damage is delivered to the target (because no shot is fired). The player should roll the critical result to determine the location of the lock. (The Sniping skill can be used to modify the results of this critical.) If the location is unsatisfactory, the sniper may abort the lock and attempt to obtain another lock at a later time.

Once the lock is obtained, the sniper may fire at any later time and his attack will automatically hit the target, delivering the same result that was obtained when the lock was established. (i.e., If a sensor lock was obtained on a result of 13 hits and an "A" critical that indicated a wound to the knee, then the subsequent shot would automatically deliver 13 hits and a wound to the knee.)

If the target detects the sensor lock, he may attempt to evade the shot, but any attempt is at least a Sheer Folly maneuver. To evade a sensor lock, the target must have some way to hide from the sensors or hide behind some bullet-proof material.

Seeker rounds contain a tiny reactionless engine, and are self-guiding. They are very difficult to evade once they have been fired. For obvious reasons, these rounds are usually restricted. Anyone found in possession of these rounds would have some serious explaining to do.

Support Blaster (Tech Level 19)

This is a huge combat blaster, typically a barely man-portable version of the assault blaster. It is often fired with the barrel supported by tripods or fortifications. It is typically capable of burst fire. Despite its name, it is a two-handed energy weapon.

Support Laser (Tech Level 20)

This is a huge combat laser, typically a barely man-portable version of the assault laser. It is often fired with the barrel supported by tripods or fortifications. It is typically capable of burst fire. Despite its name, it is a two handed-energy weapon.

Support Plasma Cannon (Tech Level 20)

This is a huge combat plasma cannon, typically a barely man-portable version of the assault plasma carbine. It is often fired with the barrel supported by tripods or fortifications. It is typically capable of burst fire. Despite its name, it is a two-handed energy weapon.

Sample Energy Weapons

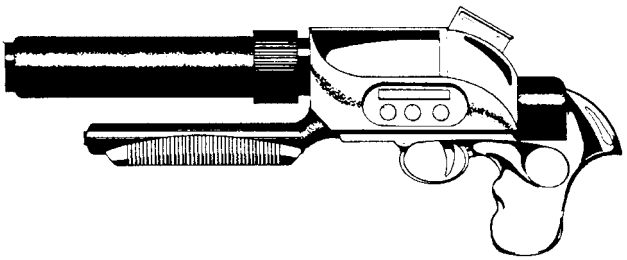
Blaster Law contains many weapons for the Privateers universe. There are times, however, when a GM just needs a tech level 19 blaster, and doesn't want to go through the effort of creating one using the weapon creation rules. This is especially true in time travel campaigns.

Therefore, in the next few pages, generic weapon lists will be provided. The purpose of this sampling is to cover the common basis of weapons that a GM might need, and to provide them in an easy format, so he can pull one out whenever necessary.

As you read these weapons, it will become obvious why a campaign over tech level 26 might be hard to run. During tech levels 27, 28, and 29, a society is rapidly approaching god-like power. It is therefore recommended that a campaign be restricted to level 26 or lower.

MASTER ASSAULT BLASTER TABLE EM-7.11

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
20	Heavy	1	6	65	3	–	+0	Auto	2	16	4	1	10	20	100	200
21	Light	1	6	65	3	–	+0	Auto	1	16	3	1	10	20	100	200
21	Medium	1	6	65	3	–	+0	Auto	1	16	3.5	1	10	20	100	200
21	Heavy	2	6	65	3	–	+0	Auto	2	16	4	1	10	20	100	200
22	Light	2	6	65	3	–	+0	Auto	1	16	3	1	10	20	100	200
22	Medium	2	6	65	3	–	+0	Auto	1	16	3.5	1	10	20	100	200
22	Heavy	1	7	55	3	–	+0	Continuous	1	32	4	1	10	20	100	200
23	Light	2	7	55	3	–	+0	Continuous	1	32	3	1	10	20	100	200
23	Medium	3	7	55	3	–	+0	Continuous	1	21	3.5	1	10	20	100	200
23	Heavy	4	7	55	3	I	+0	Continuous	1	16	4	1	10	20	100	200
24	Light	3	7	55	3	–	+0	Continuous	1	42	3	1	10	20	100	200
24	Medium	4	7	55	3	I	+0	Continuous	1	32	3.5	1	10	20	100	200
24	Heavy	5	7	55	3	I	+0	Continuous	1	25	4	1	10	20	100	200
25	Light	4	7	55	3	I	+0	Continuous	1	64	3	1	10	20	100	200
25	Medium	5	7	55	3	I	+0	Continuous	1	51	3.5	1	10	20	100	200
25	Heavy	6	7	55	3	I	+0	Continuous	1	42	4	1	10	20	100	200
26	Light	5	7	55	3	I	+0	Continuous	1	102	3	1	10	20	100	200
26	Medium	6	7	55	3	I	+0	Continuous	1	85	3.5	1	10	20	100	200
26	Heavy	7	7	55	3	I	+0	Continuous	1	73	4	1	10	20	100	200
27	Light	13	7	55	3	III	+10	Continuous	1	68	3	1	10	20	100	200
27	Medium	13	7	55	3	III	+20	Continuous	1	60	3.5	1	10	20	100	200
27	Heavy	13	7	55	3	III	+30	Continuous	1	53	4	1	10	20	100	200
28	Light	13	7	55	3	III	+50	Continuous	1	89	3	1	10	20	100	200
28	Medium	13	7	55	3	III	+60	Continuous	1	81	3.5	1	10	20	100	200
28	Heavy	13	7	55	3	III	+70	Continuous	1	75	4	1	10	20	100	200
29	Light	13	7	55	3	III	+130	Continuous	1	105	3	1	10	20	100	200
29	Medium	13	7	55	3	III	+135	Continuous	1	102	3.5	1	10	20	100	200
29	Heavy	13	7	55	3	III	+145	Continuous	1	99	4	1	10	20	100	200



MASTER ASSAULT LASER TABLE EM-7.12

Tech Level	Class	LE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
21	Heavy	1	4	85	3	–	+0	Auto	2	32	3.2	5	50	100	500	1,000
22	Light	1	4	85	3	–	+0	Auto	2	64	2.4	5	50	100	500	1,000
22	Medium	1	4	85	3	–	+0	Auto	2	64	2.8	5	50	100	500	1,000
22	Heavy	2	4	85	3	–	+0	Auto	2	32	3.2	5	50	100	500	1,000
23	Light	3	4	85	3	–	+0	Auto	1	42	2.4	5	50	100	500	1,000
23	Medium	4	4	85	3	I	+0	Auto	1	32	2.8	5	50	100	500	1,000
23	Heavy	5	4	85	3	I	+0	Auto	1	25	3.2	5	50	100	500	1,000
24	Light	4	4	85	3	I	+0	Auto	1	32	2.4	5	50	100	500	1,000
24	Medium	5	4	85	3	I	+0	Auto	1	25	2.8	5	50	100	500	1,000
24	Heavy	6	4	85	3	I	+0	Auto	1	21	3.2	5	50	100	500	1,000
25	Light	5	4	85	3	I	+0	Auto	1	51	2.4	5	50	100	500	1,000
25	Medium	6	4	85	3	I	+0	Auto	1	42	2.8	5	50	100	500	1,000
25	Heavy	7	4	85	3	I	+0	Auto	1	36	3.2	5	50	100	500	1,000
26	Light	6	4	85	3	I	+0	Auto	1	85	2.4	5	50	100	500	1,000
26	Medium	7	4	85	3	I	+0	Auto	1	73	2.8	5	50	100	500	1,000
26	Heavy	8	4	85	3	II	+0	Auto	1	64	3.2	5	50	100	500	1,000
27	Light	13	5	75	3	III	+15	Auto	1	78	2.4	5	50	100	500	1,000
27	Medium	13	5	75	3	III	+25	Auto	1	68	2.8	5	50	100	500	1,000
27	Heavy	13	5	75	3	III	+35	Auto	1	60	3.2	5	50	100	500	1,000
28	Light	11	5	75	3	III	+0	Continuous	1	186	2.4	5	50	100	500	1,000
28	Medium	13	5	75	3	III	+0	Continuous	1	157	2.8	5	50	100	500	1,000
28	Heavy	13	5	75	3	III	+10	Continuous	1	136	3.2	5	50	100	500	1,000
29	Light	13	5	75	3	III	+70	Continuous	1	151	2.4	5	50	100	500	1,000
29	Medium	13	5	75	3	III	+75	Continuous	1	146	2.8	5	50	100	500	1,000
29	Heavy	13	5	75	3	III	+85	Continuous	1	136	3.2	5	50	100	500	1,000

MASTER ASSAULT PLASMA CARBINE TABLE EM-7.13

Tech Level	Class	PE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
22	Heavy	1	8	45	3	–	+0	Auto	2	32	5.2	1	5	10	50	100
23	Light	1	8	45	3	–	+0	Auto	2	64	3.9	1	5	10	50	100
23	Medium	1	8	45	3	–	+0	Auto	2	64	4.6	1	5	10	50	100
23	Heavy	2	8	45	3	–	+0	Auto	2	32	5.2	1	5	10	50	100
24	Light	3	8	45	3	I	+0	Auto	2	42	3.9	1	5	10	50	100
24	Medium	4	8	45	3	I	+0	Auto	2	32	4.6	1	5	10	50	100
24	Heavy	5	8	45	3	I	+0	Auto	2	24	5.2	1	5	10	50	100
25	Light	4	8	45	3	I	+0	Auto	1	32	3.9	1	5	10	50	100
25	Medium	5	8	45	3	I	+0	Auto	1	25	4.6	1	5	10	50	100
25	Heavy	6	8	45	3	II	+0	Auto	1	21	5.2	1	5	10	50	100
26	Light	5	8	45	3	I	+0	Auto	1	51	3.9	1	5	10	50	100
26	Medium	6	8	45	3	II	+0	Auto	1	42	4.6	1	5	10	50	100
26	Heavy	7	8	45	3	II	+0	Auto	1	36	5.2	1	5	10	50	100
27	Light	6	8	45	3	II	+0	Auto	1	85	3.9	1	5	10	50	100
27	Medium	7	8	45	3	II	+0	Auto	1	73	4.6	1	5	10	50	100
27	Heavy	8	8	45	3	II	+0	Auto	1	64	5.2	1	5	10	50	100
28	Light	10	8	45	3	III	+30	Auto	1	64	3.9	1	5	10	50	100
28	Medium	10	8	45	3	III	+40	Auto	1	56	4.6	1	5	10	50	100
28	Heavy	10	8	45	3	III	+50	Auto	1	51	5.2	1	5	10	50	100
29	Light	10	8	45	3	III	+70	Auto	1	85	3.9	1	5	10	50	100
29	Medium	10	8	45	3	III	+80	Auto	1	78	4.6	1	5	10	50	100
29	Heavy	10	8	45	3	III	+90	Auto	1	73	5.2	1	5	10	50	100

MASTER HUNTING/SNIPING BLASTER TABLE EM-7.14

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
19	Heavy	1	5	75	2	–	+0	Semi-Auto	1	4	3.5	1	15	30	150	300
19	Hv. Sniping	2	5	75	2	–	+0	Semi-Auto	1	2	4	2	23	45	225	450
20	Light	1	5	75	2	–	+0	Semi-Auto	1	8	3	1	15	30	150	300
20	Medium	1	5	75	2	–	+0	Semi-Auto	1	8	3.5	1	15	30	150	300
20	Heavy	2	5	75	2	–	+0	Semi-Auto	1	4	4	1	15	30	150	300
20	Hv. Sniping	3	5	75	2	–	+0	Semi-Auto	1	2	18	2	23	45	225	450
21	Light	2	5	75	2	–	+0	Semi-Auto	1	8	3	1	15	30	150	300
21	Medium	2	5	75	2	–	+0	Semi-Auto	1	8	3.5	1	15	30	150	300
21	Heavy	3	5	75	2	–	+0	Semi-Auto	1	5	4	1	15	30	150	300
21	Hv. Sniping	4	5	75	2	I	+0	Semi-Auto	1	4	18	2	23	45	225	450
22	Light	3	5	75	2	–	+0	Semi-Auto	1	10	3	1	15	30	150	300
22	Medium	3	5	75	2	–	+0	Semi-Auto	1	10	3.5	1	15	30	150	300
22	Heavy	4	5	75	2	I	+0	Semi-Auto	1	8	4	1	15	30	150	300
22	Hv. Sniping	5	5	75	2	I	+0	Semi-Auto	1	6	18	2	23	45	225	450
23	Light	5	5	75	2	I	+0	Semi-Auto	1	12	3	1	15	30	150	300
23	Medium	6	5	75	2	I	+0	Semi-Auto	1	10	3.5	1	15	30	150	300
23	Heavy	7	5	75	2	I	+0	Semi-Auto	1	9	4	1	15	30	150	300
23	Hv. Sniping	9	5	75	2	II	+0	Semi-Auto	1	7	18	2	23	45	225	450
24	Light	6	5	75	2	I	+0	Semi-Auto	1	21	3	1	15	30	150	300
24	Medium	7	5	75	2	I	+0	Semi-Auto	1	18	3.5	1	15	30	150	300
24	Heavy	8	5	75	2	II	+0	Semi-Auto	1	16	4	1	15	30	150	300
24	Hv. Sniping	10	5	75	2	II	+0	Semi-Auto	1	12	18	2	23	45	225	450
25	Light	7	5	75	2	I	+0	Semi-Auto	1	36	3	1	15	30	150	300
25	Medium	8	5	75	2	II	+0	Semi-Auto	1	32	3.5	1	15	30	150	300
25	Heavy	9	5	75	2	II	+0	Semi-Auto	1	28	4	1	15	30	150	300
25	Hv. Sniping	11	5	75	2	II	+0	Semi-Auto	1	23	18	2	23	45	225	450
26	Light	8	5	75	2	II	+0	Semi-Auto	1	64	3	1	15	30	150	300
26	Medium	9	5	75	2	II	+0	Semi-Auto	1	56	3.5	1	15	30	150	300
26	Heavy	10	5	75	2	II	+0	Semi-Auto	1	51	4	1	15	30	150	300
26	Hv. Sniping	12	5	75	2	II	+0	Semi-Auto	1	42	18	2	23	45	225	450
27	Light	13	5	75	2	III	+25	Semi-Auto	1	56	3	1	15	30	150	300
27	Medium	13	5	75	2	III	+35	Semi-Auto	1	51	3.5	1	15	30	150	300
27	Heavy	13	5	75	2	III	+45	Semi-Auto	1	46	4	1	15	30	150	300
27	Hv. Sniping	13	5	75	2	III	+70	Semi-Auto	1	37	18	2	23	45	225	450
28	Light	13	5	75	2	III	+65	Semi-Auto	1	78	3	1	15	30	150	300
28	Medium	13	5	75	2	III	+75	Semi-Auto	1	73	3.5	1	15	30	150	300
28	Heavy	13	5	75	2	III	+85	Semi-Auto	1	68	4	1	15	30	150	300
28	Hv. Sniping	13	5	75	2	III	+110	Semi-Auto	1	58	18	2	23	45	225	450
29	Light	13	5	75	2	III	+145	Semi-Auto	1	97	3	1	15	30	150	300
29	Medium	13	5	75	2	III	+150	Semi-Auto	1	95	3.5	1	15	30	150	300
29	Heavy	13	5	75	2	III	+160	Semi-Auto	1	91	4	1	15	30	150	300
29	Hv. Sniping	13	5	75	2	III	+185	Semi-Auto	1	81	18	2	23	45	225	450

Key

Class: The weapon's class (hold-out, light, medium, heavy, or heavy sniping).

BE, LE, PE: The aperture energy of the weapon (Blaster Energy, Laser Energy, Plasma Energy).

B#: The average breakage number of the weapon (see Blaster Law).

R#: The average reliability of the weapon (see Blaster Law).

F#: The fumble range.

H#: The hunting classification (see Blaster Law).

Bonus: Special attack bonus.

Action: The fire capability (automatic, semi-automatic, continuous, etc.).

Shts: The number of shots the weapon gets from a full load of power cells (or a pack).

Pwr: The number of power cells that can be loaded into the weapon at one time; if the weapon uses a power pack instead of power cells, "pack" is indicated instead of a number.

Wt.: The typical weight in kilograms.

Range in Meters: The maximum number of meters for each range increment.

PB: Point blank range (attack modification is +10).

Sh: Short range (attack modification is 0).

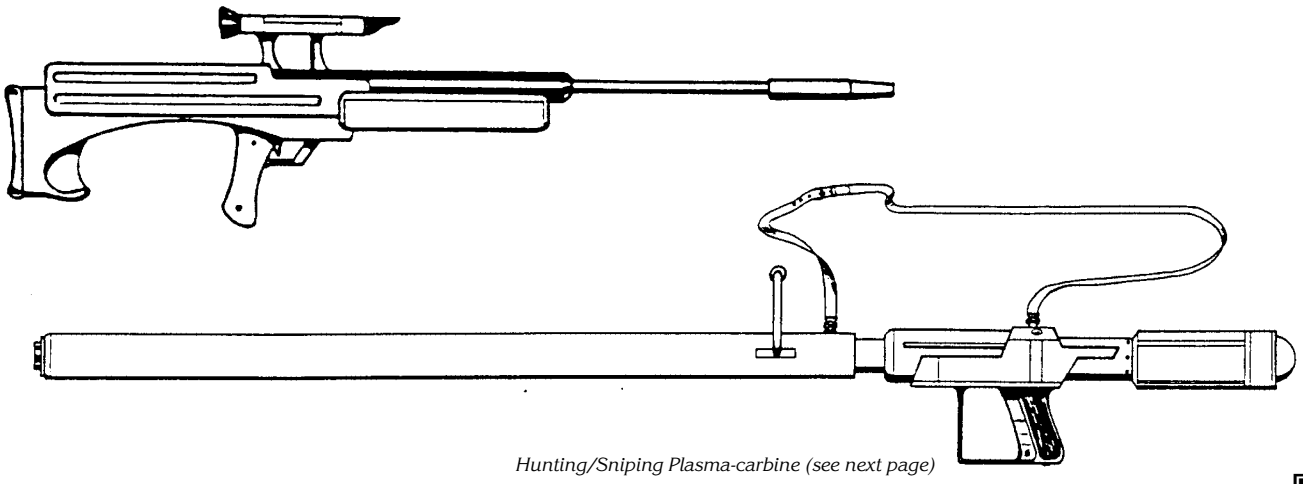
Md: Medium range (attack modification is -25).

Lg: Long range (attack modification is -50).

Ex: Extreme range (attack modification is -100).

MASTER HUNTING/SNIPING LASER TABLE EM-7.15

Tech Level	Class	LE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
19	Heavy	1	3	95	2	–	+0	Semi-Auto	1	4	3.2	5	75	150	750	1,500
19	Hv. Sniping	2	3	95	2	–	+0	Semi-Auto	1	2	14.4	8	113	225	1,125	2,250
20	Light	1	3	95	2	–	+0	Semi-Auto	1	8	2.4	5	75	150	750	1,500
20	Medium	1	3	95	2	–	+0	Semi-Auto	1	8	2.8	5	75	150	750	1,500
20	Heavy	2	3	95	2	–	+0	Semi-Auto	1	4	3.2	5	75	150	750	1,500
20	Hv. Sniping	3	3	95	2	–	+0	Semi-Auto	1	2	14.4	8	113	225	1,125	2,250
21	Light	2	3	95	2	–	+0	Semi-Auto	1	8	2.4	5	75	150	750	1,500
21	Medium	2	3	95	2	–	+0	Semi-Auto	1	8	2.8	5	75	150	750	1,500
21	Heavy	3	3	95	2	–	+0	Semi-Auto	1	5	3.2	5	75	150	750	1,500
21	Hv. Sniping	4	3	95	2	I	+0	Semi-Auto	1	4	14.4	8	113	225	1,125	2,250
22	Light	3	3	95	2	–	+0	Semi-Auto	1	10	2.4	5	75	150	750	1,500
22	Medium	3	3	95	2	–	+0	Semi-Auto	1	10	2.8	5	75	150	750	1,500
22	Heavy	4	3	95	2	I	+0	Semi-Auto	1	8	3.2	5	75	150	750	1,500
22	Hv. Sniping	5	3	95	2	I	+0	Semi-Auto	1	6	14.4	8	113	225	1,125	2,250
23	Light	5	3	95	2	I	+0	Semi-Auto	1	12	2.4	5	75	150	750	1,500
23	Medium	6	3	95	2	I	+0	Semi-Auto	1	10	2.8	5	75	150	750	1,500
23	Heavy	7	3	95	2	I	+0	Semi-Auto	1	9	3.2	5	75	150	750	1,500
23	Hv. Sniping	9	3	95	2	II	+0	Semi-Auto	1	7	14.4	8	113	225	1,125	2,250
24	Light	6	3	95	2	I	+0	Semi-Auto	1	21	2.4	5	75	150	750	1,500
24	Medium	7	3	95	2	I	+0	Semi-Auto	1	18	2.8	5	75	150	750	1,500
24	Heavy	8	3	95	2	II	+0	Semi-Auto	1	16	3.2	5	75	150	750	1,500
24	Hv. Sniping	10	3	95	2	II	+0	Semi-Auto	1	12	14.4	8	113	225	1,125	2,250
25	Light	7	3	95	2	I	+0	Semi-Auto	1	36	2.4	5	75	150	750	1,500
25	Medium	8	3	95	2	II	+0	Semi-Auto	1	32	2.8	5	75	150	750	1,500
25	Heavy	9	3	95	2	II	+0	Semi-Auto	1	28	3.2	5	75	150	750	1,500
25	Hv. Sniping	11	3	95	2	II	+0	Semi-Auto	1	23	14.4	8	113	225	1,125	2,250
26	Light	8	3	95	2	II	+0	Semi-Auto	1	64	2.4	5	75	150	750	1,500
26	Medium	9	3	95	2	II	+0	Semi-Auto	1	56	2.8	5	75	150	750	1,500
26	Heavy	10	3	95	2	II	+0	Semi-Auto	1	51	3.2	5	75	150	750	1,500
26	Hv. Sniping	12	3	95	2	II	+0	Semi-Auto	1	42	14.4	8	113	225	1,125	2,250
27	Light	13	3	95	2	III	+25	Semi-Auto	1	56	2.4	5	75	150	750	1,500
27	Medium	13	3	95	2	III	+35	Semi-Auto	1	51	2.8	5	75	150	750	1,500
27	Heavy	13	3	95	2	III	+45	Semi-Auto	1	46	3.2	5	75	150	750	1,500
27	Hv. Sniping	13	3	95	2	III	+70	Semi-Auto	1	37	14.4	8	113	225	1,125	2,250
28	Light	13	3	95	2	III	+65	Semi-Auto	1	78	2.4	5	75	150	750	1,500
28	Medium	13	3	95	2	III	+75	Semi-Auto	1	73	2.8	5	75	150	750	1,500
28	Heavy	13	3	95	2	III	+85	Semi-Auto	1	68	3.2	5	75	150	750	1,500
28	Hv. Sniping	13	3	95	2	III	+110	Semi-Auto	1	58	14.4	8	113	225	1,125	2,250
29	Light	13	3	95	2	III	+145	Semi-Auto	1	97	2.4	5	75	150	750	1,500
29	Medium	13	3	95	2	III	+150	Semi-Auto	1	95	2.8	5	75	150	750	1,500
29	Heavy	13	3	95	2	III	+160	Semi-Auto	1	91	3.2	5	75	150	750	1,500
29	Hv. Sniping	13	3	95	2	III	+185	Semi-Auto	1	81	14.4	8	113	225	1,125	2,250



Hunting/Sniping Plasma-carbine (see next page)

MASTER HUNTING/SNIPING PLASMA-CARBINE TABLE EM-7.16

Tech Level	Class	PE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
20	Heavy	1	7	55	2	–	+0	Semi-Auto	1	4	5.2	1	8	15	75	150
20	Hv. Sniping	2	7	55	2	–	+0	Semi-Auto	1	2	23.4	1	11	23	113	225
21	Light	1	7	55	2	–	+0	Semi-Auto	1	8	3.9	1	8	15	75	150
21	Medium	1	7	55	2	–	+0	Semi-Auto	1	8	4.6	1	8	15	75	150
21	Heavy	2	7	55	2	–	+0	Semi-Auto	1	4	5.2	1	8	15	75	150
21	Hv. Sniping	3	7	55	2	I	+0	Semi-Auto	1	2	23.4	1	11	23	113	225
22	Light	2	7	55	2	–	+0	Semi-Auto	1	8	3.9	1	8	15	75	150
22	Medium	2	7	55	2	–	+0	Semi-Auto	1	8	4.6	1	8	15	75	150
22	Heavy	3	7	55	2	I	+0	Semi-Auto	1	6	5.2	1	8	15	75	150
22	Hv. Sniping	4	7	55	2	I	+0	Semi-Auto	1	4	23.4	1	11	23	113	225
23	Light	3	7	55	2	I	+0	Semi-Auto	1	10	3.9	1	8	15	75	150
23	Medium	3	7	55	2	I	+0	Semi-Auto	1	10	4.6	1	8	15	75	150
23	Heavy	4	7	55	2	I	+0	Semi-Auto	1	8	5.2	1	8	15	75	150
23	Hv. Sniping	5	7	55	2	I	+0	Semi-Auto	1	6	23.4	1	11	23	113	225
24	Light	5	7	55	2	I	+0	Semi-Auto	1	12	3.9	1	8	15	75	150
24	Medium	6	7	55	2	II	+0	Semi-Auto	1	10	4.6	1	8	15	75	150
24	Heavy	7	7	55	2	II	+0	Semi-Auto	1	9	5.2	1	8	15	75	150
24	Hv. Sniping	9	7	55	2	II	+0	Semi-Auto	1	7	23.4	1	11	23	113	225
25	Light	6	7	55	2	II	+0	Semi-Auto	1	21	3.9	1	8	15	75	150
25	Medium	7	7	55	2	II	+0	Semi-Auto	1	18	4.6	1	8	15	75	150
25	Heavy	8	7	55	2	II	+0	Semi-Auto	1	16	5.2	1	8	15	75	150
25	Hv. Sniping	10	7	55	2	III	+0	Semi-Auto	1	12	23.4	1	11	23	113	225
26	Light	7	7	55	2	II	+0	Semi-Auto	1	36	3.9	1	8	15	75	150
26	Medium	8	7	55	2	II	+0	Semi-Auto	1	32	4.6	1	8	15	75	150
26	Heavy	9	7	55	2	II	+0	Semi-Auto	1	28	5.2	1	8	15	75	150
26	Hv. Sniping	10	7	55	2	III	+5	Semi-Auto	1	25	23.4	1	11	23	113	225
27	Light	8	7	55	2	II	+0	Semi-Auto	1	64	3.9	1	8	15	75	150
27	Medium	9	7	55	2	II	+0	Semi-Auto	1	56	4.6	1	8	15	75	150
27	Heavy	10	7	55	2	III	+0	Semi-Auto	1	51	5.2	1	8	15	75	150
27	Hv. Sniping	10	7	55	2	III	+10	Semi-Auto	1	42	23.4	1	11	23	113	225
28	Light	10	7	55	2	III	+40	Semi-Auto	1	56	3.9	1	8	15	75	150
28	Medium	10	7	55	2	III	+50	Semi-Auto	1	51	4.6	1	8	15	75	150
28	Heavy	10	7	55	2	III	+60	Semi-Auto	1	46	5.2	1	8	15	75	150
28	Hv. Sniping	10	7	55	2	III	+85	Semi-Auto	1	37	23.4	1	11	23	113	225
29	Light	10	7	55	2	III	+80	Semi-Auto	1	78	3.9	1	8	15	75	150
29	Medium	10	7	55	2	III	+90	Semi-Auto	1	73	4.6	1	8	15	75	150
29	Heavy	10	7	55	2	III	+100	Semi-Auto	1	68	5.2	1	8	15	75	150
29	Hv. Sniping	10	7	55	2	III	+125	Semi-Auto	1	58	23.4	1	11	23	113	225

MASTER BLASTER PISTOL TABLE EM-7.17

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
21	Heavy	1	5	75	3	–	+0	Semi-Auto	1	16	.6	3	5	8	13	35
22	Medium	1	5	75	3	–	+0	Semi-Auto	1	32	.4	3	5	8	13	35
22	Heavy	2	5	75	3	–	+0	Semi-Auto	1	16	.6	3	5	8	13	35
23	Light	1	5	75	3	–	+0	Semi-Auto	1	64	.2	3	5	8	13	35
23	Medium	2	5	75	3	–	+0	Semi-Auto	1	32	.4	3	5	8	13	35
23	Heavy	3	5	75	3	–	+0	Semi-Auto	1	21	.6	3	5	8	13	35
24	Hold-Out	1	5	75	5	–	+0	Semi-Auto	Sp.	12	.1	1	3	4	7	18
24	Light	2	5	75	3	–	+0	Semi-Auto	1	64	.2	3	5	8	13	35
24	Medium	3	5	75	3	–	+0	Semi-Auto	1	42	.4	3	5	8	13	35
24	Heavy	4	5	75	3	I	+0	Semi-Auto	1	32	.6	3	5	8	13	35
25	Hold-Out	1	5	75	5	–	+0	Semi-Auto	Sp.	25	.1	1	3	4	7	18
25	Light	3	5	75	3	–	+0	Semi-Auto	1	85	.2	3	5	8	13	35
25	Medium	4	5	75	3	I	+0	Semi-Auto	1	64	.4	3	5	8	13	35
25	Heavy	5	5	75	3	I	+0	Semi-Auto	1	51	.6	3	5	8	13	35

MASTER BLASTER PISTOL TABLE EM-7.17 (Continued)

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
26	Hold-Out	2	5	75	5	–	+0	Semi-Auto	Sp.	25	.1	1	3	4	7	18
26	Light	4	5	75	3	I	+0	Semi-Auto	1	128	.2	3	5	8	13	35
26	Medium	5	5	75	3	I	+0	Semi-Auto	1	102	.4	3	5	8	13	35
26	Heavy	6	5	75	3	I	+0	Semi-Auto	1	85	.6	3	5	8	13	35
27	Hold-Out	4	5	75	5	I	+0	Semi-Auto	Sp.	25	.1	1	3	4	7	18
27	Light	8	5	75	3	II	+0	Semi-Auto	1	128	.2	3	5	8	13	35
27	Medium	10	5	75	3	II	+0	Semi-Auto	1	102	.4	3	5	8	13	35
27	Heavy	12	5	75	3	II	+0	Semi-Auto	1	85	.6	3	5	8	13	35
28	Hold-Out	6	5	75	5	I	+0	Semi-Auto	Sp.	34	.1	1	3	4	7	18
28	Light	10	7	55	3	III	+0	Auto	1	204	.2	3	5	8	13	35
28	Medium	12	7	55	3	III	+0	Auto	1	170	.4	3	5	8	13	35
28	Heavy	13	7	55	3	III	+5	Auto	1	146	.6	3	5	8	13	35
29	Hold-Out	8	5	75	5	II	+0	Semi-Auto	Sp.	51	.1	1	3	4	7	18
29	Light	13	7	55	3	III	+30	Continuous	1	215	.2	3	5	8	13	35
29	Medium	13	7	55	3	III	+40	Continuous	1	195	.4	3	5	8	13	35
29	Heavy	13	7	55	3	III	+50	Continuous	1	178	.6	3	5	8	13	35

Sp. — Means the weapon is powered by a special power cap.

MASTER LASER PISTOL TABLE EM-7.18

Tech Level	Class	LE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
21	Heavy	1	3	95	3	–	+0	Semi-Auto	1	16	.5	15	25	40	65	175
22	Medium	1	3	95	3	–	+0	Semi-Auto	1	32	.3	15	25	40	65	175
22	Heavy	2	3	95	3	–	+0	Semi-Auto	1	16	.5	15	25	40	65	175
23	Light	1	3	95	3	–	+0	Semi-Auto	1	64	.2	15	25	40	65	175
23	Medium	2	3	95	3	–	+0	Semi-Auto	1	32	.3	15	25	40	65	175
23	Heavy	3	3	95	3	–	+0	Semi-Auto	1	21	.5	15	25	40	65	175
24	Hold-Out	1	3	95	5	–	+0	Semi-Auto	Sp.	12	.1	5	15	20	35	90
24	Light	2	3	95	3	–	+0	Semi-Auto	1	64	.2	15	25	40	65	175
24	Medium	3	3	95	3	–	+0	Semi-Auto	1	42	.3	15	25	40	65	175
24	Heavy	4	3	95	3	I	+0	Semi-Auto	1	32	.5	15	25	40	65	175
25	Hold-Out	1	3	95	5	–	+0	Semi-Auto	Sp.	25	.1	5	15	20	35	90
25	Light	3	3	95	3	–	+0	Semi-Auto	1	85	.2	15	25	40	65	175
25	Medium	4	3	95	3	I	+0	Semi-Auto	1	64	.3	15	25	40	65	175
25	Heavy	5	3	95	3	I	+0	Semi-Auto	1	51	.5	15	25	40	65	175
26	Hold-Out	2	3	95	5	–	+0	Semi-Auto	Sp.	25	.1	5	15	20	35	90
26	Light	4	3	95	3	I	+0	Semi-Auto	1	128	.2	15	25	40	65	175
26	Medium	5	3	95	3	I	+0	Semi-Auto	1	102	.3	15	25	40	65	175
26	Heavy	6	3	95	3	I	+0	Semi-Auto	1	85	.5	15	25	40	65	175
27	Hold-Out	4	3	95	5	I	+0	Semi-Auto	Sp.	25	.1	5	15	20	35	90
27	Light	8	3	95	3	II	+0	Semi-Auto	1	128	.2	15	25	40	65	175
27	Medium	10	3	95	3	II	+0	Semi-Auto	1	102	.3	15	25	40	65	175
27	Heavy	12	3	95	3	II	+0	Semi-Auto	1	85	.5	15	25	40	65	175
28	Hold-Out	8	3	95	5	II	+0	Semi-Auto	Sp.	25	.1	5	15	20	35	90
28	Light	9	4	85	3	III	+0	Auto	1	227	.2	15	25	40	65	175
28	Medium	11	4	85	3	III	+0	Auto	1	186	.3	15	25	40	65	175
28	Heavy	13	4	85	3	III	+0	Auto	1	157	.5	15	25	40	65	175
29	Hold-Out	9	4	85	5	III	+0	Auto	Sp.	45	.1	5	15	20	35	90
29	Light	13	5	75	3	III	+20	Continuous	1	240	.2	15	25	40	65	175
29	Medium	13	5	75	3	III	+30	Continuous	1	215	.3	15	25	40	65	175
29	Heavy	13	5	75	3	III	+40	Continuous	1	195	.5	15	25	40	65	175

Sp. — Means the weapon is powered by a special power cap.

MASTER PLASMA PISTOL TABLE EM-7.19

Tech Level	Class	PE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
22	Heavy	1	7	55	3	–	+0	Semi-Auto	1	16	.8	2	3	4	7	18
23	Medium	1	7	55	3	–	+0	Semi-Auto	1	32	.5	2	3	4	7	18
23	Heavy	2	7	55	3	–	+0	Semi-Auto	1	16	.8	2	3	4	7	18
24	Light	1	7	55	3	–	+0	Semi-Auto	1	64	.3	2	3	4	7	18
24	Medium	2	7	55	3	–	+0	Semi-Auto	1	32	.5	2	3	4	7	18
24	Heavy	3	7	55	3	I	+0	Semi-Auto	1	21	.8	2	3	4	7	18
25	Hold-Out	1	7	55	5	–	+0	Semi-Auto	Sp.	12	.1	1	2	3	4	9
25	Light	2	7	55	3	–	+0	Semi-Auto	1	64	.3	2	3	4	7	18
25	Medium	3	7	55	3	I	+0	Semi-Auto	1	42	.5	2	3	4	7	18
25	Heavy	4	7	55	3	I	+0	Semi-Auto	1	34	.8	2	3	4	7	18
26	Hold-Out	1	7	55	5	–	+0	Semi-Auto	Sp.	25	.1	1	2	3	4	9
26	Light	3	7	55	3	I	+0	Semi-Auto	1	85	.3	2	3	4	7	18
26	Medium	4	7	55	3	I	+0	Semi-Auto	1	64	.5	2	3	4	7	18
26	Heavy	5	7	55	3	I	+0	Semi-Auto	1	51	.8	2	3	4	7	18
27	Hold-Out	2	7	55	5	–	+0	Semi-Auto	Sp.	25	.1	1	2	3	4	9
27	Light	4	7	55	3	I	+0	Semi-Auto	1	128	.3	2	3	4	7	18
27	Medium	5	7	55	3	I	+0	Semi-Auto	1	102	.5	2	3	4	7	18
27	Heavy	6	7	55	3	II	+0	Semi-Auto	1	85	.8	2	3	4	7	18
28	Hold-Out	4	7	55	5	I	+0	Semi-Auto	Sp.	25	.1	1	2	3	4	9
28	Light	8	7	55	3	II	+0	Semi-Auto	1	128	.3	2	3	4	7	18
28	Medium	10	7	55	3	III	+0	Semi-Auto	1	102	.5	2	3	4	7	18
28	Heavy	10	7	55	3	III	+10	Semi-Auto	1	85	.8	2	3	4	7	18
29	Hold-Out	8	7	55	5	II	+0	Semi-Auto	Sp.	25	.1	1	2	3	4	9
29	Light	9	8	45	3	II	+0	Auto	1	227	.3	2	3	4	7	18
29	Medium	10	8	45	3	III	+5	Auto	1	186	.5	2	3	4	7	18
29	Heavy	10	8	45	3	III	+15	Auto	1	157	.8	2	3	4	7	18

Sp. — Means the weapon is powered by a special power cap.

MASTER SUBASSAULT BLASTER TABLE EM-7.20

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
21	Heavy	1	6	65	3	–	+0	Auto	1	16	3.5	1	10	20	50	100
22	Light	1	6	65	3	–	+0	Auto	1	32	2.5	1	10	20	50	100
22	Medium	1	6	65	3	–	+0	Auto	1	32	3	1	10	20	50	100
22	Heavy	2	6	65	3	–	+0	Auto	1	16	3.5	1	10	20	50	100
23	Light	2	6	65	3	–	+0	Auto	1	32	2.5	1	10	20	50	100
23	Medium	1	7	55	3	–	+0	Continuous	1	64	3	1	10	20	50	100
23	Heavy	2	7	55	3	–	+0	Continuous	1	32	3.5	1	10	20	50	100
24	Light	1	7	55	3	–	+0	Continuous	1	128	2.5	1	10	20	50	100
24	Medium	2	7	55	3	–	+0	Continuous	1	64	3	1	10	20	50	100
24	Heavy	3	7	55	3	–	+0	Continuous	1	42	3.5	1	10	20	50	100
25	Light	2	7	55	3	–	+0	Continuous	1	128	2.5	1	10	20	50	100
25	Medium	3	7	55	3	–	+0	Continuous	1	85	3	1	10	20	50	100
25	Heavy	4	7	55	3	I	+0	Continuous	1	64	3.5	1	10	20	50	100
26	Light	3	7	55	3	–	+0	Continuous	1	170	2.5	1	10	20	50	100
26	Medium	4	7	55	3	I	+0	Continuous	1	128	3	1	10	20	50	100
26	Heavy	5	7	55	3	I	+0	Continuous	1	102	3.5	1	10	20	50	100
27	Light	10	7	55	3	II	+0	Continuous	1	102	2.5	1	10	20	50	100
27	Medium	12	7	55	3	II	+0	Continuous	1	85	3	1	10	20	50	100
27	Heavy	13	7	55	3	III	+5	Continuous	1	73	3.5	1	10	20	50	100
28	Light	13	7	55	3	III	+25	Continuous	1	113	2.5	1	10	20	50	100
28	Medium	13	7	55	3	III	+35	Continuous	1	102	3	1	10	20	50	100
28	Heavy	13	7	55	3	III	+45	Continuous	1	93	3.5	1	10	20	50	100
29	Light	13	7	55	3	III	+105	Continuous	1	120	2.5	1	10	20	50	100
29	Medium	13	7	55	3	III	+115	Continuous	1	113	3	1	10	20	50	100
29	Heavy	13	7	55	3	III	+125	Continuous	1	107	3.5	1	10	20	50	100

MASTER SUBASSAULT LASER TABLE EM-7.21

Tech Level	Class	LE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
22	Heavy	1	4	85	3	–	+0	Auto	1	32	2.8	5	50	100	250	500
23	Light	1	4	85	3	–	+0	Auto	1	64	2	5	50	100	250	500
23	Medium	2	4	85	3	–	+0	Auto	1	32	2.4	5	50	100	250	500
23	Heavy	3	4	85	3	–	+0	Auto	1	21	2.8	5	50	100	250	500
24	Light	2	4	85	3	–	+0	Auto	1	64	2	5	50	100	250	500
24	Medium	3	4	85	3	–	+0	Auto	1	42	2.4	5	50	100	250	500
24	Heavy	4	4	85	3	I	+0	Auto	1	32	2.8	5	50	100	250	500
25	Light	3	4	85	3	–	+0	Auto	1	85	2	5	50	100	250	500
25	Medium	4	4	85	3	I	+0	Auto	1	64	2.4	5	50	100	250	500
25	Heavy	5	4	85	3	I	+0	Auto	1	51	2.8	5	50	100	250	500
26	Light	4	4	85	3	I	+0	Auto	1	128	2	5	50	100	250	500
26	Medium	5	4	85	3	I	+0	Auto	1	102	2.4	5	50	100	250	500
26	Heavy	6	4	85	3	I	+0	Auto	1	85	2.8	5	50	100	250	500
27	Light	11	4	85	3	II	+0	Auto	1	93	2	5	50	100	250	500
27	Medium	13	4	85	3	III	+0	Auto	1	78	2.4	5	50	100	250	500
27	Heavy	13	4	85	3	III	+10	Auto	1	78	2.8	5	50	100	250	500
28	Light	11	5	75	3	II	+0	Continuous	1	186	2	5	50	100	250	500
28	Medium	13	5	75	3	III	+0	Continuous	1	157	2.4	5	50	100	250	500
28	Heavy	13	5	75	3	III	+10	Continuous	1	136	2.8	5	50	100	250	500
29	Light	13	5	75	3	III	+80	Continuous	1	141	2	5	50	100	250	500
29	Medium	13	5	75	3	III	+70	Continuous	1	132	2.4	5	50	100	250	500
29	Heavy	13	5	75	3	III	+90	Continuous	1	124	2.8	5	50	100	250	500

MASTER SUBASSAULT PLASMA CARBINE TABLE EM-7.22

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
23	Heavy	1	8	45	3	–	+0	Auto	1	32	4.6	1	5	10	25	50
24	Light	1	8	45	3	–	+0	Auto	1	64	3.3	1	5	10	25	50
24	Medium	2	8	45	3	–	+0	Auto	1	32	3.9	1	5	10	25	50
24	Heavy	3	8	45	3	I	+0	Auto	1	21	4.6	1	5	10	25	50
25	Light	2	8	45	3	–	+0	Auto	1	64	3.3	1	5	10	25	50
25	Medium	3	8	45	3	I	+0	Auto	1	42	3.9	1	5	10	25	50
25	Heavy	4	8	45	3	I	+0	Auto	1	32	4.6	1	5	10	25	50
26	Light	3	8	45	3	I	+0	Auto	1	85	3.3	1	5	10	25	50
26	Medium	4	8	45	3	I	+0	Auto	1	64	3.9	1	5	10	25	50
26	Heavy	5	8	45	3	I	+0	Auto	1	51	4.6	1	5	10	25	50
27	Light	4	8	45	3	I	+0	Auto	1	128	3.3	1	5	10	25	50
27	Medium	5	8	45	3	I	+0	Auto	1	102	3.9	1	5	10	25	50
27	Heavy	6	8	45	3	II	+0	Auto	1	85	4.6	1	5	10	25	50
28	Light	10	8	45	3	III	+5	Auto	1	93	3.3	1	5	10	25	50
28	Medium	10	8	45	3	III	+15	Auto	1	78	3.9	1	5	10	25	50
28	Heavy	10	8	45	3	III	+25	Auto	1	68	4.6	1	5	10	25	50
29	Light	10	8	45	3	III	+45	Auto	1	107	3.3	1	5	10	25	50
29	Medium	10	8	45	3	III	+55	Auto	1	97	3.9	1	5	10	25	50
29	Heavy	10	8	45	3	III	+65	Auto	1	89	4.6	1	5	10	25	50

Key

Class: The weapon's class (hold-out, light, medium, heavy, or heavy sniping).
BE, LE, PE: The aperture energy of the weapon (Blaster Energy, Laser Energy, Plasma Energy).
B#: The average breakage number of the weapon (see Blaster Law).
R#: The average reliability of the weapon (see Blaster Law).
F#: The fumble range.
H#: The hunting classification (see Blaster Law).
Bonus: Special attack bonus.
Action: The fire capability (automatic, semi-automatic, continuous, etc.).
Shts: The number of shots the weapon gets from a full load of power cells (or a pack).
Pwr: The number of power cells that can be loaded into the weapon at one time; if the weapon uses a power pack instead of power cells, "pack" is indicated instead of a number.
Wt.: The typical weight in kilograms.
Range in Meters: The maximum number of meters for each range increment.
PB: Point blank range (attack modification is +10).
Sh: Short range (attack modification is 0).
Md: Medium range (attack modification is -25).
Lg: Long range (attack modification is -50).
Ex: Extreme range (attack modification is -100).

MASTER SUPPORT BLASTER TABLE EM-7.23

Tech Level	Class	BE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
19	Heavy	1	6	65	4	–	+0	Auto	4	16	18	1	15	30	150	300
20	Light	1	6	65	4	–	+0	Auto	4	32	6	1	15	30	150	300
20	Medium	1	6	65	4	–	+0	Auto	4	32	12	1	15	30	150	300
20	Heavy	2	6	65	4	–	+0	Auto	4	16	18	1	15	30	150	300
21	Light	2	6	65	4	–	+0	Auto	2	16	6	1	15	30	150	300
21	Medium	2	6	65	4	–	+0	Auto	2	16	12	1	15	30	150	300
21	Heavy	1	7	55	4	–	+0	Continuous	2	32	18	1	15	30	150	300
22	Light	1	7	55	4	–	+0	Continuous	2	64	6	1	15	30	150	300
22	Medium	1	7	55	4	–	+0	Continuous	2	64	12	1	15	30	150	300
22	Heavy	2	7	55	4	–	+0	Continuous	2	32	18	1	15	30	150	300
23	Light	4	7	55	4	I	+0	Continuous	2	32	6	1	15	30	150	300
23	Medium	5	7	55	4	I	+0	Continuous	2	25	12	1	15	30	150	300
23	Heavy	6	7	55	4	I	+0	Continuous	2	21	18	1	15	30	150	300
24	Light	5	7	55	4	I	+0	Continuous	1	25	6	1	15	30	150	300
24	Medium	6	7	55	4	I	+0	Continuous	1	21	12	1	15	30	150	300
24	Heavy	7	7	55	4	I	+0	Continuous	1	18	18	1	15	30	150	300
25	Light	6	7	55	4	I	+0	Continuous	1	42	6	1	15	30	150	300
25	Medium	7	7	55	4	I	+0	Continuous	1	36	12	1	15	30	150	300
25	Heavy	8	7	55	4	II	+0	Continuous	1	32	18	1	15	30	150	300
26	Light	7	7	55	4	I	+0	Continuous	1	73	6	1	15	30	150	300
26	Medium	8	7	55	4	II	+0	Continuous	1	64	12	1	15	30	150	300
26	Heavy	9	7	55	4	II	+0	Continuous	1	56	18	1	15	30	150	300
27	Light	13	7	55	4	III	+35	Continuous	1	51	6	1	15	30	150	300
27	Medium	13	7	55	4	III	+45	Continuous	1	46	12	1	15	30	150	300
27	Heavy	13	7	55	4	III	+55	Continuous	1	42	18	1	15	30	150	300
28	Light	13	7	55	4	III	+75	Continuous	1	73	6	1	15	30	150	300
28	Medium	13	7	55	4	III	+85	Continuous	1	68	12	1	15	30	150	300
28	Heavy	13	7	55	4	III	+95	Continuous	1	64	18	1	15	30	150	300
29	Light	13	7	55	4	III	+150	Continuous	1	95	6	1	15	30	150	300
29	Medium	13	7	55	4	III	+160	Continuous	1	91	12	1	15	30	150	300
29	Heavy	13	7	55	4	III	+170	Continuous	1	87	18	1	15	30	150	300

Key

Class: The weapon's class (hold-out, light, medium, heavy, or heavy sniping).
BE, LE, PE: The aperture energy of the weapon (Blaster Energy, Laser Energy, Plasma Energy).
B#: The average breakage number of the weapon (see Blaster Law).
R#: The average reliability of the weapon (see Blaster Law).
F#: The fumble range.
H#: The hunting classification (see Blaster Law).
Bonus: Special attack bonus.
Action: The fire capability (automatic, semi-automatic, continuous, etc.).
Shts: The number of shots the weapon gets from a full load of power cells (or a pack).
Pwr: The number of power cells that can be loaded into the weapon at one time; if the weapon uses a power pack instead of power cells, "pack" is indicated instead of a number.
Wt.: The typical weight in kilograms.
Range in Meters: The maximum number of meters for each range increment.
PB: Point blank range (attack modification is +10).
Sh: Short range (attack modification is 0).
Md: Medium range (attack modification is -25).
Lg: Long range (attack modification is -50).
Ex: Extreme range (attack modification is -100).

MASTER SUPPORT LASER TABLE EM-7.24

Tech Level	Class	LE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
20	Heavy	1	4	85	4	–	+0	Auto	2	16	14.4	5	75	150	750	1,500
21	Light	1	4	85	4	–	+0	Auto	2	32	4.8	5	75	150	750	1,500
21	Medium	1	4	85	4	–	+0	Auto	2	32	9.6	5	75	150	750	1,500
21	Heavy	2	4	85	4	–	+0	Auto	2	16	14.4	5	75	150	750	1,500
22	Light	2	4	85	4	–	+0	Auto	2	32	4.8	5	75	150	750	1,500
22	Medium	2	4	85	4	–	+0	Auto	2	32	9.6	5	75	150	750	1,500
22	Heavy	3	4	85	4	–	+0	Auto	2	21	14.4	5	75	150	750	1,500
23	Light	5	4	85	4	I	+0	Auto	2	25	4.8	5	75	150	750	1,500
23	Medium	6	4	85	4	I	+0	Auto	2	21	9.6	5	75	150	750	1,500
23	Heavy	7	4	85	4	I	+0	Auto	2	18	14.4	5	75	150	750	1,500
24	Light	6	4	85	4	I	+0	Auto	1	21	4.8	5	75	150	750	1,500
24	Medium	7	4	85	4	I	+0	Auto	1	18	9.6	5	75	150	750	1,500
24	Heavy	8	4	85	4	II	+0	Auto	1	16	14.4	5	75	150	750	1,500
25	Light	7	4	85	4	I	+0	Auto	1	36	4.8	5	75	150	750	1,500
25	Medium	8	4	85	4	II	+0	Auto	1	32	9.6	5	75	150	750	1,500
25	Heavy	9	4	85	4	II	+0	Auto	1	28	14.4	5	75	150	750	1,500
26	Light	8	4	85	4	II	+0	Auto	1	64	4.8	5	75	150	750	1,500
26	Medium	9	4	85	4	II	+0	Auto	1	56	9.6	5	75	150	750	1,500
26	Heavy	10	4	85	4	II	+0	Auto	1	51	14.4	5	75	150	750	1,500
27	Light	13	5	75	4	III	+0	Continuous	1	78	4.8	5	75	150	750	1,500
27	Medium	13	5	75	4	III	+10	Continuous	1	68	9.6	5	75	150	750	1,500
27	Heavy	13	5	75	4	III	+20	Continuous	1	60	14.4	5	75	150	750	1,500
28	Light	13	5	75	4	III	+40	Continuous	1	97	4.8	5	75	150	750	1,500
28	Medium	13	5	75	4	III	+50	Continuous	1	89	9.6	5	75	150	750	1,500
28	Heavy	13	5	75	4	III	+60	Continuous	1	81	14.4	5	75	150	750	1,500
29	Light	13	5	75	4	III	+115	Continuous	1	113	4.8	5	75	150	750	1,500
29	Medium	13	5	75	4	III	+125	Continuous	1	107	9.6	5	75	150	750	1,500
29	Heavy	13	5	75	4	III	+135	Continuous	1	102	14.4	5	75	150	750	1,500

MASTER SUPPORT PLASMA-CANNON TABLE EM-7.25

Tech Level	Class	PE	B#	R#	F#	H#	Bonus	Action	Pwr	Shts.	Wt.	PB	Range in Meters Sh	Md	Lg	Ex
21	Heavy	1	8	45	4	–	+0	Auto	4	32	23.4	1	8	15	75	150
22	Light	1	8	45	4	–	+0	Auto	4	64	7.8	1	8	15	75	150
22	Medium	1	8	45	4	–	+0	Auto	4	64	15.6	1	8	15	75	150
22	Heavy	2	8	45	4	–	+0	Auto	4	32	23.4	1	8	15	75	150
23	Light	2	8	45	4	–	+0	Auto	3	48	7.8	1	8	15	75	150
23	Medium	2	8	45	4	–	+0	Auto	3	48	15.6	1	8	15	75	150
23	Heavy	3	8	45	4	I	+0	Auto	3	32	23.4	1	8	15	75	150
24	Light	5	8	45	4	I	+0	Auto	3	38	7.8	1	8	15	75	150
24	Medium	6	8	45	4	II	+0	Auto	3	32	15.6	1	8	15	75	150
24	Heavy	7	8	45	4	II	+0	Auto	3	27	23.4	1	8	15	75	150
25	Light	6	8	45	4	II	+0	Auto	2	42	7.8	1	8	15	75	150
25	Medium	7	8	45	4	II	+0	Auto	2	36	15.6	1	8	15	75	150
25	Heavy	8	8	45	4	II	+0	Auto	2	32	23.4	1	8	15	75	150
26	Light	7	8	45	4	II	+0	Auto	2	73	7.8	1	8	15	75	150
26	Medium	8	8	45	4	II	+0	Auto	2	64	15.6	1	8	15	75	150
26	Heavy	9	8	45	4	II	+0	Auto	2	56	23.4	1	8	15	75	150
27	Light	8	8	45	4	II	+0	Auto	1	64	7.8	1	8	15	75	150
27	Medium	9	8	45	4	II	+0	Auto	1	56	15.6	1	8	15	75	150
27	Heavy	10	8	45	4	III	+0	Auto	1	51	23.4	1	8	15	75	150
28	Light	10	8	45	4	III	+65	Auto	1	48	7.8	1	8	15	75	150
28	Medium	10	8	45	4	III	+75	Auto	1	44	15.6	1	8	15	75	150
28	Heavy	10	8	45	4	III	+85	Auto	1	40	23.4	1	8	15	75	150
29	Light	10	8	45	4	III	+95	Auto	1	70	7.8	1	8	15	75	150
29	Medium	10	8	45	4	III	+105	Auto	1	66	15.6	1	8	15	75	150
29	Heavy	10	8	45	4	III	+115	Auto	1	62	23.4	1	8	15	75	150

7.4 PRICE LIST

These charts give the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the weapon is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The item's weight, in kilograms. Remember this is reduced to ten percent, in all devices except weapons and ammo, in subsequent tech levels.

Cost: The cost of the weapon. Some items are highly variable, and they have been given Low, Average, and High costs. Remember the cost is divided by ten for tech levels after the item was created, except where noted otherwise.

FIREARMS TABLE EM-7.26

Item*	Weight	COSTS Low	Average	High
Assault Rifles:				
Light (P)	3.5	100	250	500
Medium (P)	4	500	600	1K
Heavy (P)	4.5	2K	4K	5K+
Hunting/Sniping Rifles:				
Light (N)	3	150	400	600+
Medium (N)	4	250	500	700+
Heavy (N)	5	400	700	900+
Machine Guns:				
Light (M)	7	1K	1.2K	1.5K
Medium (M)	14	1.5K	2K	2.2K
Heavy (M)	21	4K	5K	5.5K+
Pistols:				
Light (N)	.3	180	350	600
Medium (N)	.6	200	400	625+
Heavy (N)	1	350	550	900+
Revolvers:				
Light (N)	.3	80	250	350+
Medium (N)	.6	150	350	500+
Heavy (N)	1	200	425	600+
Shotguns:				
Light (N)	3	100	200	300
Medium (N)	4	150	250	350
Heavy (N)	5	175	350	500
Auto (P)	5	500	900	1.5K
Small Automatics:				
Machine Pistol (P)	2	400	600	1K
Submachine Gun (P)	3.5	600	900	1.2K

WEAPON ACCESSORIES TABLE EM-7.27

Item*	Weight	Cost
Recoil Compensator (N)	.2	100
Flash Suppressor (N)	.3	50
Holo-Sight (N)	.05	50
Laser Sight (N)	.3	80
Scope (N)	.3	25 x Class
Silencer (P)	.3	80
Luminous Sights (N)		50

BLASTERS TABLE EM-7.28

Item*	Weight	Cost
Assault Blasters:		
Light (P)	3	800
Medium (P)	3.5	1,000
Heavy (P)	4	1,400
Blaster Pistols:		
Hold-Out (N)	.1	700
Light (N)	.2	350
Medium (N)	.4	400
Heavy (N)	.6	550
Hunting/Sniping Blasters:		
Light (N)	3	400
Medium (N)	3.5	500
Heavy (N)	4	700
Heavy Sniping Blaster	18	7,500
Subassault Blaster:		
Light (N)	2.5	1,000
Medium (N)	3	1,600
Heavy (N)	3.5	2,200
Support Blaster:		
Light (N)	6	2,400
Medium (N)	12	4,000
Heavy (N)	18	10,000

LASERS TABLE EM-7.29

Item*	Weight	Cost
Assault Lasers:		
Light (P)	2.4	520
Medium (P)	2.8	650
Heavy (P)	3.2	910
Hunting/Sniping Lasers:		
Light (N)	2.4	320
Medium (N)	2.8	400
Heavy (N)	3.2	560
Heavy Sniping Laser	14.4	9,000
Laser Pistols:		
Hold-Out (N)	.1	560
Light (N)	.2	280
Medium (N)	.3	320
Heavy (N)	.5	440
Subassault Laser:		
Light (N)	2	650
Medium (N)	2.4	1,040
Heavy (N)	2.8	1,430
Support Laser:		
Light (N)	4.8	1,560
Medium (N)	9.6	2,600
Heavy (N)	14.4	6,500

* — These weapons are not effected in price and weight by tech level.

PLASMA WEAPONS TABLE EM-7.30

Item*	Weight	Cost
Assault Plasma Carbine:		
Light (P)	3.9	800
Medium (P)	4.6	1,000
Heavy (P)	5.2	1,400
Hunting/Sniping Plasma Carbine:		
Light (N)	3.9	600
Medium (N)	4.6	750
Heavy (N)	5.2	1,050
Heavy Sniping Plasma Carbine	23.4	10,000
Plasma Pistols:		
Hold-Out (N)	.1	1,050
Light (N)	.3	525
Medium (N)	.5	600
Heavy (N)	.8	825
Subassault Plasma Carbine:		
Light (P)	3.3	1,000
Medium (P)	3.9	1,600
Heavy (P)	4.6	2,200
Support Plasma Cannon:		
Light (M)	7.8	2,400
Medium (M)	15.6	4,000
Heavy (M)	23.4	10,000

AMMUNITION TABLE EM-7.32

Item*	Weight	Cost
Submachine Guns and Smaller (Box of 100):		
Light (N)	2	5
Medium (N)	4	10
Heavy (N)	6	15
Rifles (Box of 100):		
Light (N)	3	10
Medium (N)	5	15
Heavy (N)	7	20
Machine Gun (Box of 100):		
Light (P)	5	20
Medium (P)	10	30
Heavy (P)	15	40
Shotgun (Box of 100):		
Light (N)	4	5
Medium (N)	6	10
Heavy (N)	8	1
Needler (Box of 1,000):		
Standard (N)	.1	10
Knockout (N)	.1	20
Poison (M)	.1	100
Special Rounds:		
Armor Piercing Rounds (P)	x1	x1
Dual-Purpose Rounds (P)	x1	x10
Explosive Rounds (P)*	x1	x100
Flechette Rounds (P)*	x1	x50
HEAP Rounds (M)*	x1	x150
Knock-Out Rounds (N)*	x1	x50
Nullifier Rounds (M)*	x1	x1000
Poison Rounds (M)*	x1	x100

ARMOR TABLE EM-7.31

Item*	Weight	Cost
Helmets:		
Bullet Proof Helmet (P)	1	500
With Visor (Tech Level 17) (P)	1.5	700
Kevlar (Tech Level 16):		
Flak Vest (AT I)(P)	1	500
Extended Flak Vest (AT II)(P)	1.5	700
Reinforced Flak Vest (AT III)(P)	2	1K
Reinforced Flak Armor (AT IV)(P)	3	2K
Kinetic Armor (Tech Level 18):		
Vest (AT V)(P)	1.5	1K
Jacket (AT VI)(P)	2.5	2K
Body Armor (AT VII)(P)	5	5K
Combat Armor (Tech Level 19):		
Torso (AT VIII)(P)	10	50K
Torso and Greaves (AT IX)(P)	30	100K
Full Combat Armor (AT X)(P)	100	1 Mil.
Powered Armor (M)	1,000	10 Mil.
Armor Enhancements (Tech Level 18):		
Reflect Coating (P)		1K
Ablative Coating (10 Layers) (P)		1K

OTHER WEAPONS/ARMOR TABLE EM-7.34

		COSTS		
Item	Weight	Low	Average	High
Flamer (M)	5	500	1K	1.5K
Grenade (M)	.1	50	100	150
Monosword or Monowhip (N)	1	800	1K	1.2K
Needler (N)	.5	200	500	800
Sonic Stunner (N)	.01	300	400	500
Nullifier (2 Ear Pieces)	.01	30	40	50
Nuclear Grenade:				
Small (M)	.2	1K	2K	3K
Medium (M)	.4	1K	2K	3K

SHIELD TABLE EM-7.33

	WEIGHT		COST	
Item †	Pack	Belt	Pack	Belt
Absorption Shield (P)	65	16	20K	80K
Barrier Shield (P)	85	20	150K	600K
Deflector Shield (P)	65	15	20K	80K
Velocity Shield (P)	65	15	20K	80K
Weapon Dissipater	.1	.1	100	100
Arm-Mounted Force Shields:				
Buckler (P)	50	10	10K	30K
Normal (P)	50	10	10K	40K
Full (P)	50	10	10K	05K

† — Tech Level 24.

* — These weapons are not affected in price and weight by tech level.

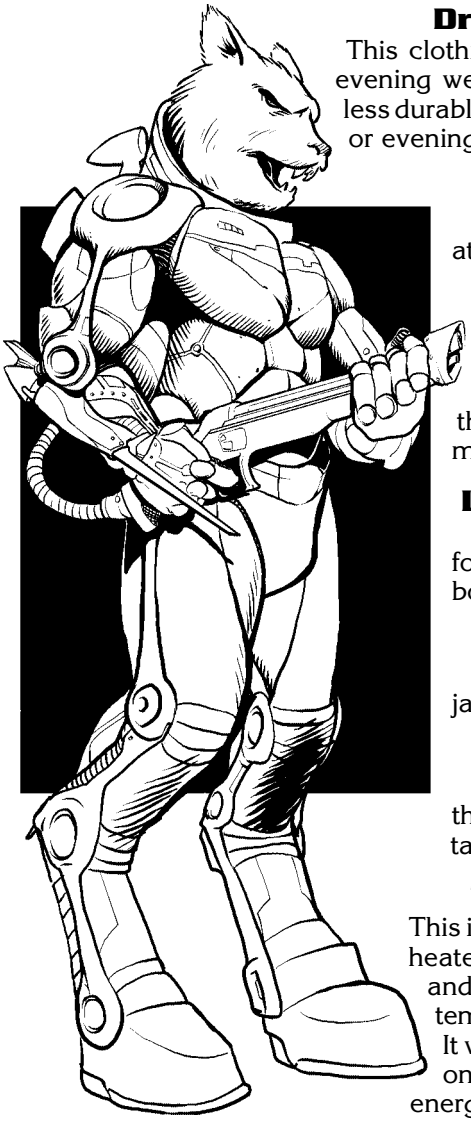
8.0 :: CLOTHING

"Cuz every girl's crazy
'bout a sharp dressed man."
— ZZ Top

This category includes the various drapings Humans use to cover themselves. It does not include armor. All clothing is tech level 16 or less.

8.1 NORMAL GEAR

This is standard wear, good for casual events and parties. As with all categories in this section, there is some duplication with other sections.



Dress Attire

This clothing is generally meant for evening wear. It is finer looking and less durable than either business wear or evening wear.

Dress Footwear

To complement appropriate attire. This does not tend to be very durable.

Leisure Attire

This clothing is less formal and more comfortable than other clothing. It is also more rugged.

Leisure Footwear

Rugged and comfortable footwear. Usually shoes or boots.

Light Jacket

This is a general purpose jacket. It's for cool weather.

Thermal Jacket

This is a light jacket with a thermal heater. It has a detachable hood and gloves.

Thermal Suit

This is a jumpsuit with a thermal heater. It has a hood, gloves, and footwear. It can be used in temperatures from -50° to 75°. It will operate many hours on one power cell (five hours per energy unit).

8.2 PROFESSIONAL GEAR

This is standard wear, good for professional events and parties. As with all categories in this section, there is some duplication with other sections.

Business Attire

This clothing is appropriate for business. It is often passable for evening dress. It is more durable than dress attire, but less durable than leisure wear.

Business Footwear

This footwear is appropriate for business. They are often more durable than dress footwear, but less so than leisure footwear.

Dress Attire

This clothing is generally meant for evening wear. It is finer looking and less durable than either business wear or evening wear.

Dress Footwear

To complement appropriate attire. This does not tend to be very durable.

Light Jacket

This is a general purpose jacket. It's for cool weather.

Thermal Jacket

This is a light jacket with a thermal heater. It has a detachable hood and gloves.

Thermal Suit

This is a jumpsuit with a thermal heater. It has a hood, gloves and footwear. It can be used in temperatures from -50° to 75°. It will operate many hours on one power cell (five hours per energy unit).

Uniform

This is generally military or paramilitary in nature, though certain professions wear them as well. It is often a simple jumpsuit.

8.3 MILITARY GEAR

This is unusual wear, necessary for the military life. As with all categories in this section, there is some duplication with other sections.

Business Footwear

This footwear is appropriate for business. They are often more durable than dress footwear, but less so than leisure footwear.

Dress Uniform

This is a more formal version of another uniform. Its used for formal presentations, state occasions, etc.

Leisure Footwear

Rugged and comfortable footwear. Usually shoes or boots.

Light Jacket

This is a general purpose jacket. It's for cool weather.

Thermal Jacket

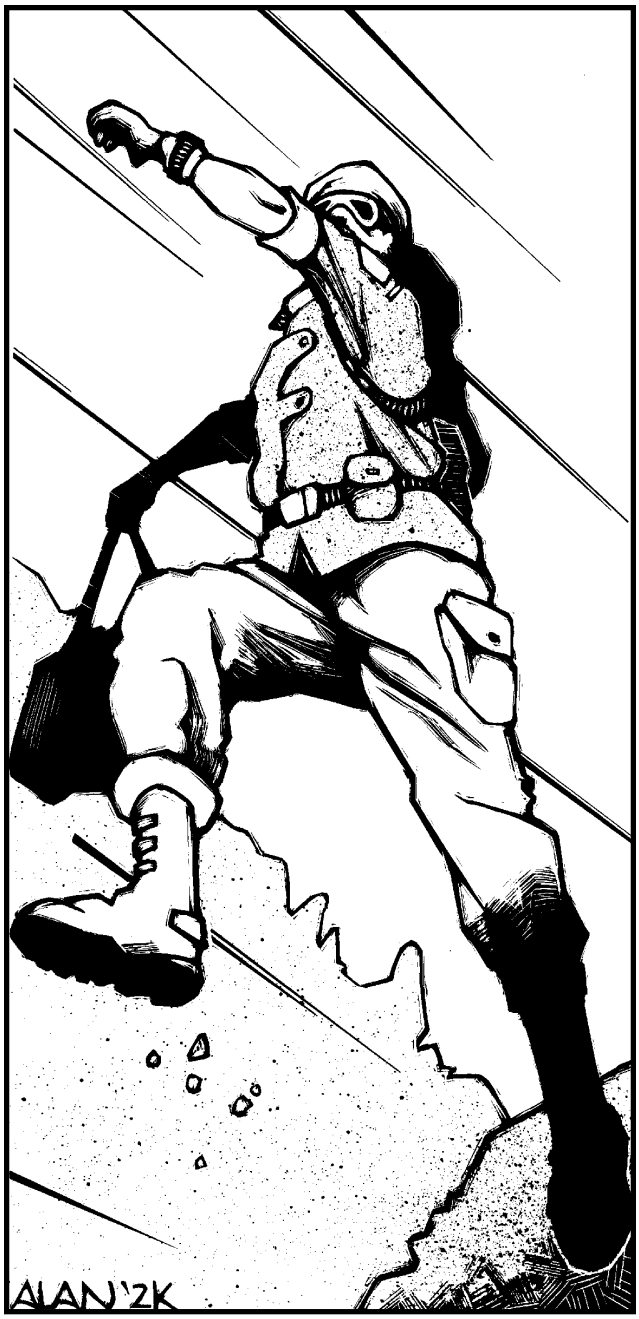
This is a light jacket with a thermal heater. It has a detachable hood and gloves.

Thermal Suit

This is a jump suit with a thermal heater. It has a hood, gloves and footwear. It can be used in temperatures from -50° to 75°. It will operate many hours on one power cell (five hours per energy unit).

Uniform

This is generally military or paramilitary in nature, though certain professions wear them as well. It is often a simple jumpsuit.



8.4 PRICE LIST

This chart gives the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the item is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The item's weight, in kilograms. Clothing is not reduced in weight in subsequent tech levels.

Cost: The cost of the item.

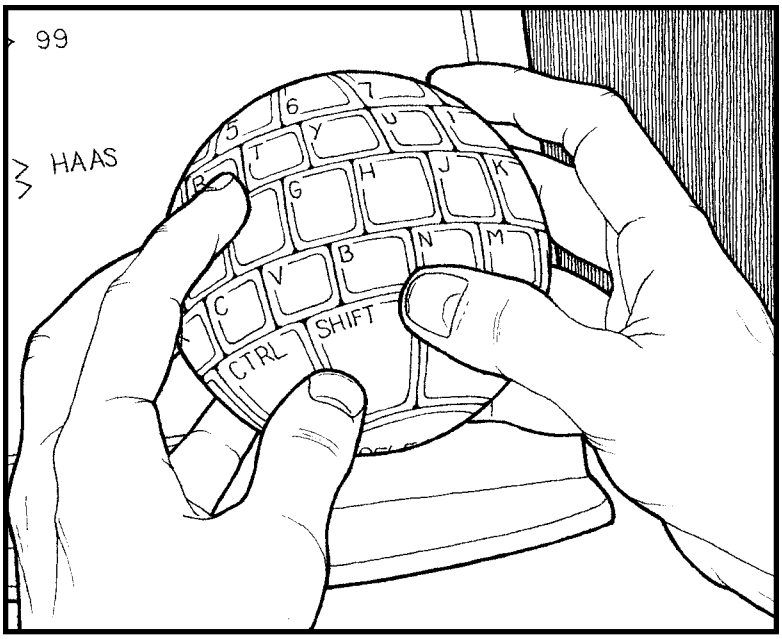
CLOTHING TABLE EM-8.1

Item	Tech Level	Weight	Cost
Business Attire (P)	2	Varies	100
Business Footwear (P)	2	Varies	20
Dress Attire (N, P)	2	Varies	100
Dress Footwear (N, P)	2	Varies	20
Dress Uniform (M)	2	Varies	120
Leisure Attire (N)	2	Varies	50
Leisure Footwear (N, M)	2	Varies	10
Light Jacket (N, P, M)	2	Varies	10
Thermal Jacket (N, P, M)	15	Varies	300
Thermal Suit (N, P, M)	15	Varies	500
Uniform (P, M)	2	Varies	80

9.0 :: DATA STORAGE AND RETRIEVAL

"640K ought to be enough for anybody."
— Bill Gates, Circa 1981

This primarily includes computers. It also picks up all the little miscellaneous electronics, such as personal organizers, which handle the storage of data, but cannot rightly be called "computers."



9.1 NORMAL GEAR

Nearly everything in this section can be called "normal gear." There is little that is restricted to professional or military use (at least little that falls within the scope of this book). Those that are in other categories can easily be moved back to fit the GM's world system.

Audio Disks (Tech Level 18)

These two centimeter disks can hold hundreds of hours of audio. Data quality is incredibly high and data retrieval is nearly instantaneous.

Audio Recorder (Tech Level 17)

This audio recorder is about the size of a pack of cigarettes. It uses cassette tapes until the invention of the audio disk.

Computers (Tech Level 15)

Computers are difficult to handle in a science fiction game. The reason has to do with Moore's law. Moore's law states that the power of computers doubles every twelve to eighteen months. This means that every fifty years, the power of computers increases four billion fold. This constant shift in power is difficult to represent in a game, even more so in a general treatment of a game.

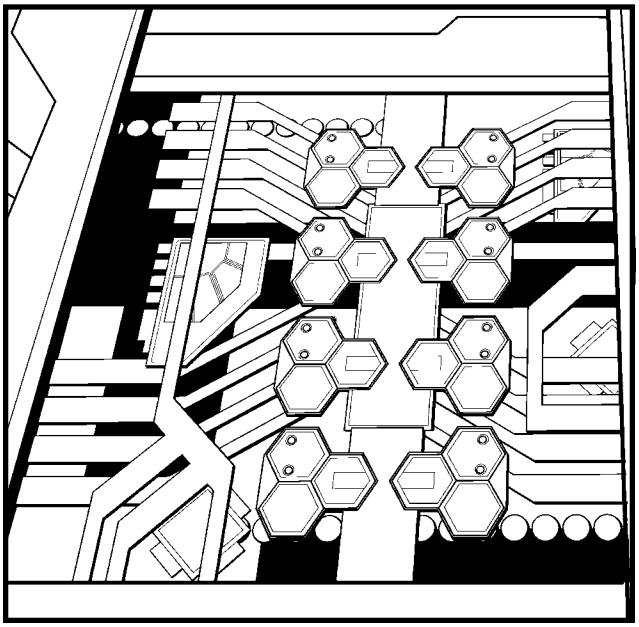
Because of the constant shift in power, personal computers are never more than half an age behind the power of a mainframe. Listed below are computers of each age and their general capabilities. Because the technology is constantly shifting, the prices tend to remain the same, but the technology that money can buy is always changing.

Tech Level 17: Full compute/neural interaction becomes possible. Computers of this age become faster and faster. Most of the processing time is dedicated to simulated intelligence. Simulated intelligence is very crude, too crude to have yet replaced the Graphic User Interface (GUI). The neural interface turns the Internet into the Datanet, a vast virtual reality data library. An offshoot, the Sensenet, is born. It is a vast, virtual reality playground, complete with dance clubs, games, and interactive novels.

Tech Level 18: Hardware innovation begins to decrease. Clock speeds are as fast as relativity allows. Fiberoptic systems are now used exclusively. Simulated intelligence becomes more and more realistic, replacing the GUI. Computers are increasingly capable of rudimentary leaps in logic.

Tech Level 19: Moore's law is dead. Computer technology increases, but its heyday of growth is over. Simulated intelligence is generally considered to be perfected. Computer scientists begin to wonder whether true sapient intelligence will ever be manufactured. This is sometimes referred to as the "dark age of computing." Almost all advances during this period are software related. Simulated intelligence is as perfect as it's going to be.

Tech Level 20: The light barrier is broken, and with it a flurry of computer growth that puts Moore's law to shame. With the light barrier no longer a problem, the top is blown off the clock-speed barrier. Molecutronic computers are born. Simulated intelligence is left by the roadside. Artificial intelligence becomes the norm. During this age, computers increase in power six or seven billion fold.



Tech Level 21: The growth spurt of the last age leaves computer hardware tech with little to achieve. Computers can still be made faster and faster, but uses for this kind of speed are difficult to come by. Refinements in artificial intelligence are the great achievements of this age. Personality controls are put into place, making artificial intelligences easier to mold and shape, making them more user friendly.

Tech Level 22: Computing power has exceeded the needs of its creators by so far that research nearly ceases. Another computer dark age ensues. There seems to be nothing more to achieve. The software industry focuses its resources on cosmetic enhancements and bug-free development.

Tech Level 23: Vacuum energy is fully utilized, making teleportation a reality. Computer technology once again advances at an amazing rate. The strides of this age are geared toward teleportation, as corporate, scientific and personal computers have little need for more computational power.

Tech Level 24: Teleportation-applied computing achieves macro teleportation. Human beings can now be teleported, thanks to the incredible computational power of the computers of this age. Personal and business applications are still in a dark age.

Tech Level 25: Teleportation of small vehicles is possible, with the aide of dedicated computers. Personal and business applications are still in a dark age.

Tech Level 26: Computer ability now exceeds power restrictions of teleportation. Personal and business applications are still in a dark age.

Tech Level 27: Personal and business applications are still in a dark age.

Tech Level 28: Zero fault technology, coupled with generations of striving to produce bug-free software (there was nothing else to do) produce systems where errors are almost unheard of.

Tech Level 29: The beginnings of quantum manipulation become outlined. The computational requirements far exceed the abilities of the age. A major push for computational power begins.

Tech Level 30: Direct, mathematical manipulation of reality is possible. This requires massive computational ability, which is achieved.

Tech Level 31: ...?

Datapad
(Tech Level 17)

This is a simple portable computer. Its abilities are roughly comparable to those of a personal computer from one tech level earlier.

Digital Camera
(Tech Level 17)

This can take up to ten high quality images or thousands of low (TV) quality images. This can be used to film continuous video in low quality. By tech level 18, it can film continuous video of high quality images. By tech level 19, it can film continuous video in holographic images. The digital camera stores all data internally.

Holocamera
(Tech Level 18)

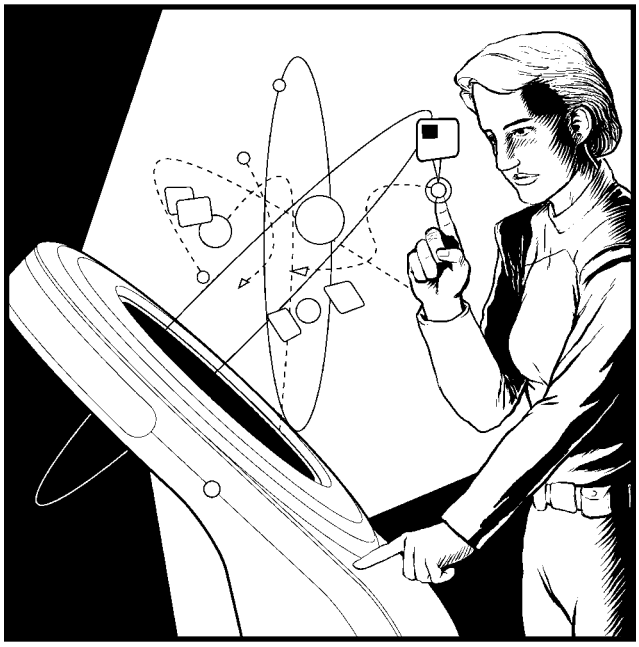
This camera is able to record images and sound onto a holoplate. This camera is 10 cm x 5 cm x 7 cm and has four lenses.

Holoplate
(Tech Level 18)

This is the storage material for holographic images. In tech level 18, a holoplate can store up to six minutes of images. By tech level 19, it can hold up to ten hours. Multiply this number by 100 for each tech level after 19.

Holoprojector
(Tech Level 18)

This projector has the capability of projecting holographic images. It can project images into a two by two meter cube.



Holoviewer
(Tech Level 18)

This tiny device is mounted with a 12 x 12 cm screen. It can be used to view holoplates.

Memory Disks
(Tech Level 16)

These data disks are purchased in packs of 10. They are used with data pads, certain recorders, and computers.

Memory Recorder
(Tech Level 17)

This is a recorder the size of a pack of cigarettes. It stores data on memory disks.

9.2 PROFESSIONAL GEAR

Most items that fit in the "professional" category either fit into other sections or are beyond the scope of this book. Those that we do place in this category can easily be moved to another category to fit the GM's world system.

Neural Interface (Tech Level 17)

This device allows a direct interface between the brain and a computer. This is typically a surgically installed device, with jacks for the interface plugs in the skull. By tech level 18, an interface harness can be purchased, which can merely be worn, and requires no plugs.

The neural interface does not give the character any bonuses to using a computer. It does, however, quarter the amount of time any tasks require.

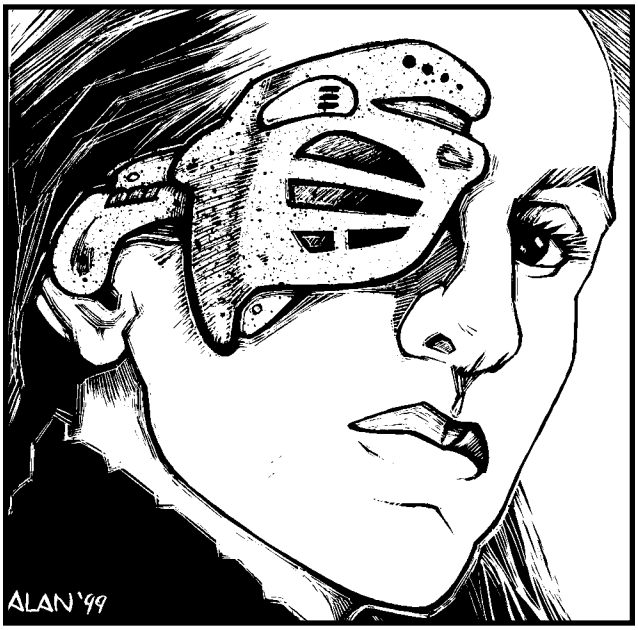
This is only included if more involved cybernetics rules are not used in the game. If they are, use the appropriate cyberware instead.

Neural Translator (Tech Level 17)

This subcranial implant links directly into the character's speech centers. This microcomputer can store up to fifty language programs and has an external jack, just behind the ear, which can be used to switch programs.

This device operates to translate any language spoken in the presence of the character. He will comprehend them as if they were his native tongue.

This is only included if more involved cybernetics rules are not used in the game. If they are, use the appropriate cyberware instead.



9.3 MILITARY GEAR

Most items that fit in the "military" category either fit into other section or are beyond the scope of this book. That which we do place in this category can easily be moved to another category by a GM to fit his world system.

Neural Recorder (Tech Level 17)

This device allows a character to record all of his experiences, in all five senses, for later playback. This device must be plugged into a neural interface, of either the tech level 17 or 18 variety.

This can either be played back through a neural interface, or through a special holo link. This allows the neural recordings to be played back on a standard holoviewer.

This is only included if more involved cybernetics rules are not used in the game. If they are, use the appropriate cyberware instead.

9.4 PRICE LIST

This chart gives the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the item is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The item's weight, in kilograms. Remember this is reduced to ten percent, except where noted otherwise, in subsequent tech levels.

Cost: The cost of the item.

DATA STORAGE AND RETRIEVAL TABLE EM-9.1

Item	Tech Level	Weight	Cost
Audio Disks* (N)	18	.08	2
Audio Recorder (N)	17	2	400
Datapad* (N)	17	.5	100-10K
Digital Camera (N)	17	5	2K
Holocamera (N)	18	5	500
Holoplate* (N)	18	.1	15
Holoprojector (N)	18	15	500
Holoviewer (N)	18	10	700
Memory Disks (10)* (N)	16	.05	20
Memory Recorder (N)	17	15	1.2K
Neural Interface (P)	17	1	1K
Neural Recorder (M)	17	5	800
Neural Translator (P)	17		20K
Computers:*			
Mainframe Computer (N)	15	1-10K	10K-1mil
Personal Computer (N)	16	5	1K-10K

* — These items do not decrease in size and cost as tech levels increase. They merely become more and more powerful, adding features, storage capacity, etc.

10.0 :: DRUGS

"The fact is that a few of us saw what was happening and we wrestled the power of LSD away from the CIA, and now the power of computers away from the IBM, just as we rescued psychology away from the doctors and analysts. In every generation I've been part of a group of people who, like Prometheus, have wrestled with the power in order to give it back to the individual."
— Timothy Leary

Drugs can be a difficult subject in a role playing game. As such a prospective GM is encouraged to read this section carefully to determine which drugs are appropriate and which are inappropriate to his game. Regardless of what a GM feels is appropriate for his game, it should be noted that drug use should never be endorsed, and as such, great pains have been taken to make drug use very dangerous in *Spacemaster*. For more information on addiction and withdrawal, see *Gamemaster Manual*.

10.1 UNRESTRICTED DRUGS

These drugs are easily available over the counter. They are unrestricted pharmaceuticals, the likes of which can be purchased at any drug store.

Beard-Suppressor (Tech Level 18)

This chemical retards hair growth for a period of one week. This is often used by men who do not wish to shave more than once every seven days.

Addiction Factor: Non-Addictive

E-Z-Sleep (Tech Level 17)

This level 5 drug puts people to sleep. The minimum duration of the effect is eight hours, plus or minus 15 minutes for every point of failure or success on the character's resistance roll, up to a maximum of 15 hours. This is only the minimum sleep. If the user does not exert effort to wake up, they will continue to sleep for twice that. This does not require a resistance roll, only conscious effort. The onset time for this drug is ten minutes.

Addiction Factor: 5

Korteline (Tech Level 17)

This is a useful and fast-acting stimulant. It relieves d10 accumulated rounds of stun.

Addiction Factor: 20

Siradrel (Tech Level 17)

This mild stimulant is much like caffeine. It is often used by students to stay alert while cramming.

Addiction Factor: 20

Smelling Salts (Tech Level 13)

These capsules are broken under the nose of a person who is suffering from stun or a loss of consciousness. If the person is unconscious, they automatically wake up, unless this loss of consciousness is due to a failed resistance roll.

If it is due to a failed resistance roll, then the character may make another RR with a +30 modification. Success means the character wakes up immediately.

If the character is stunned, they may make a Stunned Removal maneuver at +30. On any success, the effects of the stun are completely thrown off. On a Failure, the duration of the stun is reduced by one. On an Absolute Failure, no benefit is gained.

Addiction Factor: Non-Addictive

Stims (Tech Level 18)

These stimulants eliminate all of a character's exhaustion points. The character makes a resistance roll against a level 5 drug. The effect will last for one hour, plus or minus one minute per point of success or failure.

While under the effects of stims, the character can accumulate more exhaustion, but it is acquired at half the normal rate. When the stims wear off, all the exhaustion points that have been accumulated are quadrupled.

Addiction Factor: 15

Thiagorex III (Tech Level 17)

This over the counter pain medication cures headaches and relieves minor muscle tension and swelling. An addiction result indicates that the user merely requires twice as much thiagorex to gain the same effect in the future.

Addiction Factor: 15

10.2 RESTRICTED DRUGS

Pharmaceuticals are an important part of medicine. They help healing, alleviate shock, cure disease, fight infection, reduce pain and much more. As technology progresses, there is little that cannot be done with pharmaceuticals.

These pharmaceuticals are restricted to medicinal uses. As such, typically they are only available to licensed physicians.

Alerene (Tech Level 20)

This ultra-safe stimulant allows the user to operate without sleep for up to 24 hours. Alerene can be taken for up to 336 hours without detrimental effects; after that it acts as a level one nerve poison. Douple the level for each subsequent dose.

When a character comes off of alerene, he must sleep for his normal sleep period, plus four hours for every dose he took. The character is catatonic during this period.

Addiction Factor: 10

Amboathorphin
(Tech Level 17)

This is a universal nerve gas antidote for Humans. One dose will protect a Human for twelve hours. During this time, no standard nerve agents will harm him. If the victim has been affected by a nerve agent and still lives, this can be injected directly into the heart to save him. (A Hard maneuver.)

Addiction Factor: 10

Anacept
(Tech Level 20)

This is the product of centuries of endocrinology. This universal contraceptive is 100% effective and available for both men and women. When taken at least fifteen minutes prior to sexual intercourse, it renders the user sterile (the effect lasts 103 hours for a male, 28 days for a female). If a female takes up to one hour after intercourse, it will cause the egg to abort before division. (This usage may very well be illegal in many societies, others will rule that an undivided egg is not a person.)

Addiction Factor: 1

Andeline
(Tech Level 22)

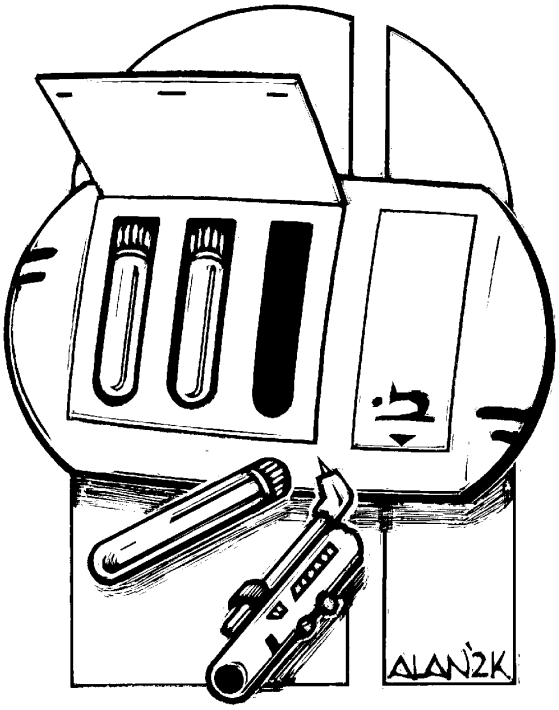
This regenerative heals 30 hits. It takes one minute to do so.

Addiction Factor: 10

Arelnex
(Tech Level 18)

This drug cures the common cold. It takes fifteen minutes to take effect. It often causes increased stuffiness for two hours (as the body purifies itself).

Addiction Factor: 10



Cedoraline
(Tech Level 17)

This level 10 drug makes the user extremely susceptible to suggestion. While this drug is in effect (one hour plus or minus one minute for every point of failure or success of the user's resistance roll) the user must make an Absurd maneuver to disbelieve anything told to him. Extra doses of this drug are not recommended unless administered toward the end of the drug's period. They extend the drug's effectiveness from that point on, to the end of its normal duration.

While the drug is in effect, the user is very happy, and trusts everyone implicitly. When it is done, the user experiences a fit of deep depression for four times the duration of the drug's effect.

Addiction Factor: 15

Decilage
(Tech Level 18)

This microorganism takes 31-60 minutes to gestate. Once active, it hunts down and destroys all ingested toxins and microorganisms. Decilage dies out about twelve hours after it runs out of foreign toxins and microorganisms to consume. A side effect is the user is immune to alcohol for the duration.

Addiction Factor: 15

Fir-Queline
(Tech Level 23)

This is a powerful regenerative. It heals 10 hits almost instantly.

Addiction Factor: 5

Hemoflux
(Tech Level 22)

This regenerative is geared to increase the production of blood. Within two hours the user will be very dehydrated, but all blood loss will be regenerated. The person must have enough blood to sustain life functions the entire time. The patient will be at a -25 penalty for one day after use.

Addiction Factor: 20

Interferon IV
(Tech Level 23)

This anti-viral therapy grants the patient a second resistance roll at a +100 versus whatever viral affliction he has been subject to. If this RR is successful, complete recovery takes one hour. If this roll fails, he receives another +100 RR every hour for six hours, or until a success is made.

If this fails, taking the drug again is unsafe. Each repeated use within a 24 hour period gives a cumulative 5% chance of cancer. Each subsequent use on the same virus gives 10 less to the resistance roll penalty. That is, +90 on the second use, +80 on the third, and so on.

Addiction Factor: 10

Luryadrenaline
(Tech Level 17)

This system stimulant is used for patients in suspended animation caused by tyreline. It helps revive a patient without the use of a stasis chamber.

Addiction Factor: 5

Perserverine Compound
(Tech Level 18)

This is a highly effective painkiller often used by military physicians. Though it does not heal any actual damage, this reduces the effects of accumulated hits or exhaustion points by one level. For instance, a character who taken 51-75 percent of his hits operates as if he had only taken 26-50 percent.

The great drawback of this drug is that it is highly addictive. If the addiction roll is failed by more than 50, then a double dosage is necessary to make the drug effective. If not, then a normal addiction ensues, though the psychological effects of this are devastating. An additional -20 penalty is applied to the character for all actions, until the withdrawal symptoms have run their course.

Addiction Factor: 50

Regenex III
(Tech Level 23)

This drug will stimulate the regeneration of lost body parts. This is not cheap, nor is it quick. It takes 20 days to regrow a finger. An arm or a leg would take as long as 150 to 200 days. The limb is perfect in every way, however, assuming that there is no genetic defect inhibiting the development of the limb. While the limb is regenerating, the subject requires twice the normal food.

Addiction Factor: Non-Addictive

Stirene
(Tech Level 17)

This potent antibiotic grants a RR with a +100 bonus to bacterial infections. This takes one day to take full effect. It takes two hours for even a skilled physician to determine whether or not it worked.

Addiction Factor: Non-Addictive

Thetacoagulin
(Tech Level 17)

This is injected intravenously after the receiving of a bleeding wound. It will cause instant clotting of the blood, sealing all bleeding wounds up to and including five hits per round. The user must then be relatively immobile until after medical aid is received, or else the wounds will reopen.

Using this drug more than once per day is dangerous. It can cause stroke, hemorrhages, and heart failure. Treat subsequent doses as a level five poison that increases five levels for each subsequent dose. It still seals bleeding wounds, but it often kills the patient.

Addiction Factor: Non-Addictive

Torethene
(Tech Level 24)

This powerful regenerative will heal 100 hits. This takes two minutes to take effect.

Addiction Factor: 10

Tyreline
(Tech Level 28)

Tyreline is an emergency drug that “freezes” the body into a state of deep, suspended animation. This will postpone death for one hour. If the character reaches a stasis chamber or a life support unit before the duration is up, he can either be put into permanent stasis or revived with a dose of luryadrenaline. If the latter option is chosen, the character must then roll over 100 - (3 x Co bonus) or die from shock.

Addiction Factor: 100

Verex Compound
(Tech Level 20)

This is a universal poison antidote. It allows the character to make and additional poison RR at +100.

Addiction Factor: 25

Virlene
(Tech Level 17)

This level 20 drug is a heavy sedative. It puts the patient to sleep for three hours, plus or minus one minute for every point of RR failure or success.

Addiction Factor: 30

Ziclomene
(Tech Level 21)

This drug causes nitrogen bubbles to be reabsorbed by the blood instantly, provided that the pressure is high enough that this is possible. While this won’t protect a character from the ravages of vacuum exposure, it will cure him instantly of the bends after pressure is regained.

This drug does have a side effect, however. During the hour it’s in effect the patient’s blood is thinned. This causes the patient to bleed an extra hit per round from any bleeding wound.

Addiction Factor: 10

10.3 MILITARY-GRADE DRUGS

Most governments have, at one time or another, experimented with drug-augmented soldiers. For governments who still perform this act, here is a list of combat drugs. Many of these drugs would be much sought after in the private sector.

Andrex
(Tech Level 18)

This level 20 combat drug allows the user to take 50% more hits before losing consciousness. It also doubles the user's exhaustion points. The duration is 15 rounds, plus or minus one round for every 5 points of RR failure or success.

Addiction Factor: 25

Jirolene
(Tech Level 17)

This stimulant aids a user's alertness, granting a +20 bonus to his Awareness • Perception skill category. Jirolene works for one hour. Prolonged use (more than three days) causes a temporary deterioration of all stats at a rate of five points per hour, until a full rest is taken.

Addiction Factor: 35

Triadrenaline
(Tech Level 20)

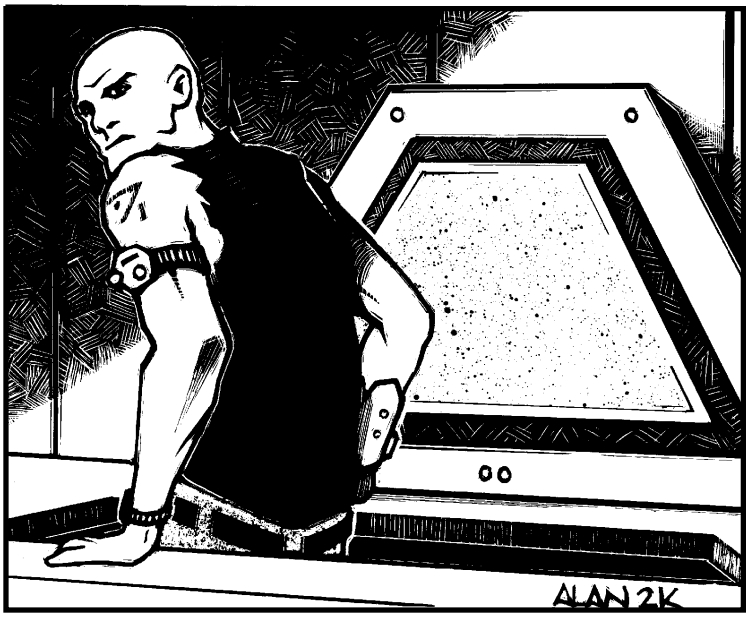
This powerful stimulant grants the user 200% activity each round. This allows the user to make two attacks, use two psychic powers, etc. This operates for four rounds.

Addiction Factor: 40

White Burn
(Tech Level 19)

This level 7 combat drug is designed to give its users heightened speed and endurance. While this drug is in effect (one hour plus or minus one minute per point of success or failure of the RR) the user gains +5 to his initiative and all stuns are reduced by five rounds. (i.e., He must receive a wound that delivers 6 or more rounds of stun before he is stunned at all.) While under the effects of this drug, the user must roll above 100 - (SD x 3) to avoid attacking anyone who irritates him in the slightest way.

Addiction Factor: 25



10.4 RECREATIONAL/ ILLEGAL DRUGS

These drugs are typically illegal. They are often used for recreational purposes. The availability of these drugs is greatly dependent of the nature of the law in the universe the GM has created.

After the second dose in a single day, every additional dose has a chance of giving the character an overdose. Treat the drug as a nerve poison and have the character make a RR against it's level. See *Gamemaster Manual* for more details on poisons and their effects. If a drug has no level, assume it is a level one substance.

Ambrosia
(Tech Level 18)

This drug causes intense euphoria, heightened sexual arousal, a feeling of invulnerability, and reduced inhibitions. This makes it an extremely popular drug. Its only drawback is that it's highly addictive.

Addiction Factor: 75

Berserk
(Tech Level 17)

This level 15 drug instantly sends the user into a frenzy. This has all the effects of the Frenzy skill. The duration of the effect is 10 + d10 minutes.

Addiction Factor: 25

Doseline
(Tech Level 22)

This variant of virlene is also an extremely powerful sedative. This sedative, however, is altered to change the user's sleep patterns. This drug causes immediate unconsciousness, but the user wakes after one quarter of his normal sleep period. He is fully refreshed and gains all the benefits of a good night's rest. Addicted users lose five points from their potential Reasoning, Memory, and Intuition for each additional use of doseline every a ten days.

Addiction Factor: 50

Gorteline
(Tech Level 18)

This euphoric acts much like cocaine. It is less powerful and much safer. Its effects last about one hour.

Addition Factor: 50

Mickey Finn
(Tech Level 18)

This level 30 drug was named after the old sleeping pill trick. It is a powerful knockout drug, laying the victim out in 10 + d10 rounds. The person is out cold for one hour, plus or minus one minute for every point of failure or success.

Addiction Factor: 1

Soar
(Tech Level 16)

This level one drug causes mild euphoria and overconfidence. As a side effect, the user suffers mild paranoia while under the effects. In addition, all stun effects are reduced by one round. This drug lasts 10 + d10 minutes.

Addiction Factor: 5

Urlene
(Tech Level 17)

This is a powerful hallucinogenic. It has been know to cause deaths and very bad accidents. Most governments ban this drug and mount huge adverrtising campaigns against its use. It is quite popular in the Jeronan Empire.

Addiction Factor: 80

10.5 PRICE LIST

These charts give the prices of the items listed in this section. Below is a list of the necessary definitions.

Name: This is the name of the pharmaceutical in question.

Tech Level: This is the tech level at which the drug is first created.

Usage: This shows how the drug is administered. Ingested drugs are taken by mouth. Injected drugs must be introduced directly into the patient's bloodstream.

Cost: The cost of the drug. Remember the cost is divided by ten the tech level after the drug was first synthesized.

AF: Addiction factor represents exactly how addictive a substance is. Whenever the substance is taken, roll percentile and add the addiction factor. If the result is over 100, then the patient is addicted to the substance. They have a level one addiction. For each level of addiction that the character has, he must take that many doses of the drug per week (making addiction rolls every time he take another dose). Each subsequently failed addiction roll results in raising the addiction level by one. If the character fails to take enough of the drug in a given week, he will suffer the effects of withdrawal (see *Gamemaster Manual* for rules on chemical dependency and withdrawal).

Effect: This is a summary of the effects of the drug.

PHARMACEUTICAL TABLE EM-10.1

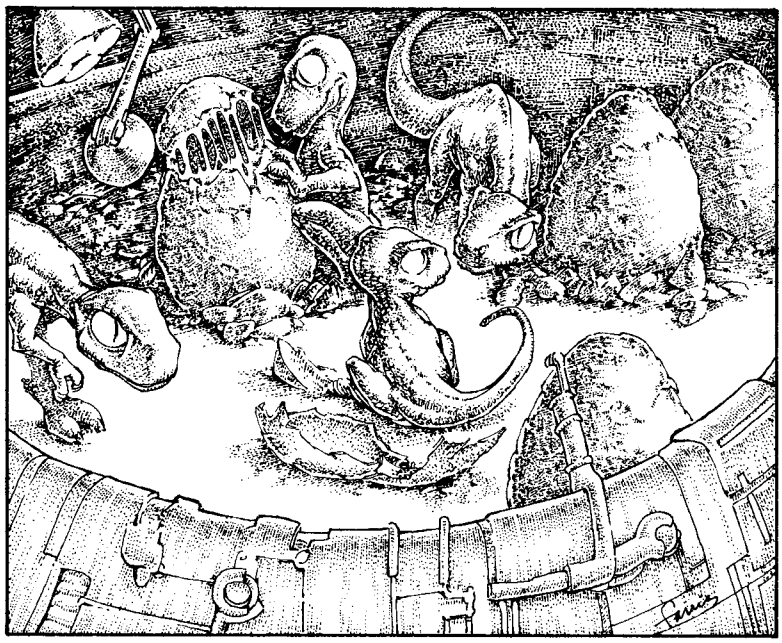
Name	Tech Level	Usage	Cost	AF	Effect
Unrestricted					
Beard-Suppressor	18	Apply	1	Non	Retards hair growth for one week.
E-Z-Sleep	17	Ingest	1	5	Level five sleeping drug.
Korteline	17	Apply	250	20	Stimulant. Relieves d10 rounds of stun.
Siradrel	17	Ingest	20	20	Mild stimulant, much like caffeine.
Smelling Salts	13	Inhale	5	Non	Instantly wakes from normal unconsciousness. +30 RR otherwise.
Stims	18	Ingest	5	15	Accumulates half exhaustion. Eliminates current exhaustion.
Thiagorex III	17	Ingest	10	15	Relives headaches and minor muscle tension.
Restricted					
Alerlene	20	Ingest	150	10	Stimulant, allows user to operate all day without penalties.
Amboathorphin	17	Inject	230	10	Universal nerve gas antidote. Protects for twelve hours.
Anacept	20	Ingest	300	1	100% effective contraceptive. Male: 103 hrs. Female 28 days.
Andeline	22	Inject	100	10	Regenerates 30 hits over one minute.
Arelnex	18	Ingest	15	10	Cures the common cold.
Cedoraline	17	Ingest	50	15	Makes the user extremely susceptible to suggestion.
Decilage	18	Inject	600	15	Microorganism. Hunts down all toxins and other M.O.s.
Fir-Queline	23	Inject	100	5	This powerful regenerative heals 10 hits instantly.
Hemoflux	22	Inject	120	20	Regenerative. Replaces all blood loss within two hours.
Interferon IV	23	Ingest	100	10	Grants +100 RR against viral infection.
Luryadrenaline	17	Inject	100	5	Removes character from suspended animation without shock.
Perserverine Compound	18	Inject	120	50	Ignore one level of exhaustion/damage penalties.
Regenex III	23	Ingest	250	Non	Regrows body parts. 20 days for finger, 150-200 for arm/leg.
Stirene	17	Ingest	25	Non	+100 RR vs. Bacterial infections.
Thetacoagulin	17	Ingest	25	Non	Seals all wounds up to 5 hits/round. Dangerous to O.D.
Torethene	24	Inject	150	10	Regenerative. Heals 100 hits over two minutes.
Tyreline	28	Inject	150	100	Suspends life functions for one hour.
Verex Compound	20	Inject	100	25	+100 RR versus poison.
Virlene	17	Inject	50	30	Level 20 sedative.
Ziclomene	21	Inject	60	10	Cures the bends. Causes character to bleed an extra hit/rnd.
Military					
Andrex	18	Inject	550	25	Allows 50% more hits. Doubles exhaustion points.
Jirolene	17	Apply	2	35	+20 to perception checks.
Triadrenaline	20	Apply	200	40	Grants 200% activity for four rounds.
White Burn	19	Inject	40	25	Stuns are reduced by 5 rounds. Initiative +5.
Recreational					
Ambrosia	18	Ingest	25	75	Causes feelings of euphoria, sexual arousal, invulnerability, etc.
Berserk	17	Apply	40	25	Puts user into frenzy for 10 + d10 minutes.
Doseline	22	Ingest	50	50	Allows full night's rest in 1/4 time.
Gorteline	18	Inhale	20	50	Euphoric. Like cocaine, but milder and safer.
Mickey Finn	18	Ingest	10	1	Puts the person into a very deep sleep.
Soar	16	Ingest	10	5	Euphoria and overconfidence.
Urlene	17	Ingest	30	80	Powerful hallucinogenic.

11.0 :: MEDICAL EQUIPMENT

"He's dead, Jim"
— A Doctor, not a Miracle Worker

This section includes the medical equipment that a doctor might need. It also includes all the relevant field equipment necessary for a high-tech doctor to get by.

Where the effects of this technology are variable, the effect in the ISC of the Privateers universe will be noted in parenthesis. For instance, if an entry reads "The bonus doubles every tech level thereafter (+200)," this means that in the ISC, the bonus is exactly +200.



11.1 NORMAL GEAR

This gear can be purchased by any private citizen. It does not require any medical certification to use, though certain items must be checked periodically by medically-certified technicians.

Autodoctor (Tech Level 21)

This coffin-like device is a miracle of modern medicine. With sophisticated diagnostic programs and simulated intelligence, this robotic doctor is capable of handling most medical situations with an equal amount of skill (which at lower tech levels is not great).

Consider an autodoc to have all medical skills with a +10 bonus. This doubles every tech level as programming improves (+200).

Note that this is a practicing surgeon. As such, most societies will demand regular check ups. Just like a living surgeon, autodocs would be strictly policed.

Field Splint (Tech Level 17)

This inflatable sleeve is used to immobilize a broken limb. If the GM makes checks to determine whether a limb healed properly, this splint will grant a +70 bonus.

First Aid Kit (All Tech Levels)

This kit contains all the equipment necessary to perform First Aid static maneuvers. Beginning in tech level 18, this kit grants a +1 bonus to First Aid maneuvers. This bonus doubles every tech level after that (+150). First Aid maneuvers without a kit recieve a -5 to -30 penalty.

Medispenser (Tech Level 17)

This device is strapped to the patient's arm. It dispenses medications slowly, intravenously, over a period of time. This is programmed by a doctor to release pharmaceuticals over a period of time, as per the doctor's prescription. Tampering with one of these devices is generally a criminal offense.

11.2 PROFESSIONAL GEAR

This gear can typically only be purchased by a licensed physician. It includes all of the tools of the trade of a surgeon and physician.

Arterial Sealer (Tech Level 21)

This device is a more specialized version of the dermal closer. It can perform all the actions of the dermal closer.

An arterial sealer can seal arterial or venous damage at a rate of 3 hits/round, with no limit other than the power cell. This will heal one hit of bleeding for every energy unit (ISC sealers have 375 energy units). There are engineering considerations which keep this from being hooked up to a microgenerator until tech level 26.

This tool requires a Very Hard Medical Practice static maneuver to use.

Dermal Closer (Tech Level 21)

Regeneratives are invented during tech level 18. These are all in the form of pharmaceuticals and multi-phase therapies. By tech level 20, enough about cell regeneration is understood to handle this in a single beam therapy.

During tech level 20, this can be accomplished with a large, elaborate machine. At this point in the history of the tech, however, it is easier to accomplish this with the multi-phase chemotherapy than with beam therapy.

By tech level 21, however, regeneration can be stimulated quickly with a portable device. The dermal closer is one of the end results of this tech.

Using the dermal closer is a Light Medical Practice maneuver. It will heal concussion hits at a rate of one per round. It will also heal bleeding, if the wound is bleeding less than 6 hits a round, at a rate of one per round. Finally, it will heal up to 2nd degree burns.

It takes two energy units to heal one hit with this device (187 hits total). There are engineering considerations which keep this from being run on a microgenerator until tech level 26.

Diagnostic Computer
(Tech Level 19)

This computer is about twice as big as a medscanner. It is used in conjunction with a medscanner, diagnosing and prescribing treatment. A diagnostic computer has a Diagnostics skill bonus of +5. For every tech level above 19, this doubles (+400). The computer receives a +15 to its check if it is programmed with a complete medical history of the patient. As should be obvious, this quickly renders the Diagnostics skill a lost art.

Field Cast
(Tech Level 17)

This plastic sleeve hardens to a rigid form when applied with a catalyst solution. It can be softened later with a different solution. Use of such a cast reduces any penalties due to broken bones by half. If the GM checks to see how well the break healed, a +90 bonus is added. Both catalysts are included with every cast.

Hypodermic Spray
(Tech Level 16)

This device sprays its medication straight through the patient's skin. Though this is invented during tech level 16, it doesn't enter wide use until tech level 18.

Laserscapel (Field)
(Tech Level 17)

This hand-held scalpel is used for field surgery. It is better than conventional scalpels in that it doesn't require sterilization. It would be difficult to use this as a weapon, though a great deal of damage could be done to a patient by an unskilled surgeon.

Laserscalpel (Infirmary)
(Tech Level 16)

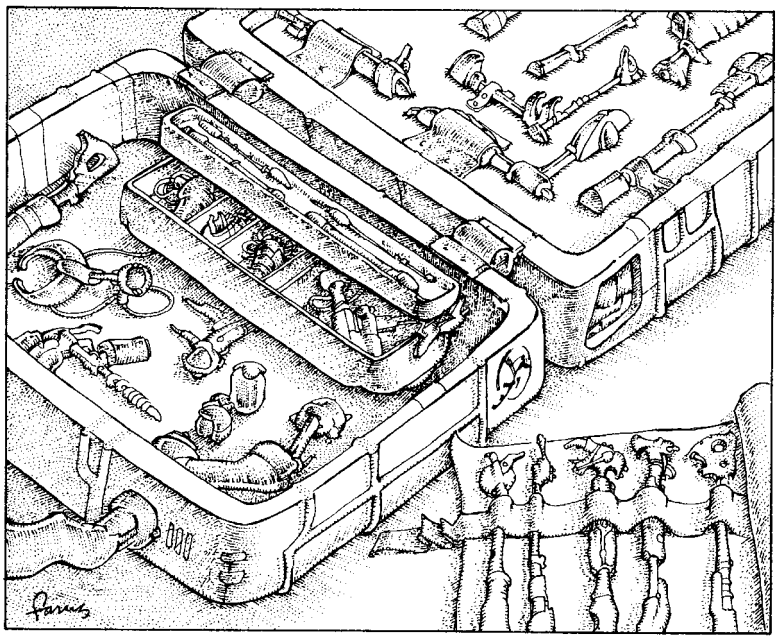
This tool is an invaluable surgical aid. It is used to cut away flesh to get to hemorrhages, damaged tissue, etc. Even in the modern age of regeneratives, the damaged areas must often be exposed to be healed.

Medscanner
(Tech Level 19)

This is a bioscanner with several advanced functions. It is capable of scanning a life form for basic vitals, as well as abnormalities. This requires sophisticated, specialized programs. This makes a medscanner only as good as the medical data on the species. It can detect problems, such as poisons in the subject's system or a dangerous viral infection. It provides information on problems, but will not suggest treatment methods without a diagnostic computer.

NPR Gear
(Tech Level 22)

This equipment is used to perform Neural Pathway Reconstruction. It consists of scanners, nanites, regeneratives, and the requisite pharmaceuticals. Without this equipment, Neural Pathway Reconstruction is not possible.



Scannerbed
(Tech Level 18)

This invaluable tool is the heart of any medical facility. The scannerbed is a sophisticated diagnostic tool, able to perform detailed scans on the patient's body. This, coupled with a fully programmed diagnostic computer, makes a complete diagnosis possible. A full medical history, though not necessary, is helpful to speed the diagnosis.

Skeletal Knitter
(Tech Level 21)

This is a more specialized version of the tissue knitter. It can heal a sprain for 15 energy units, a break for 20 energy units, or one shatter for 45 energy units. It has three power cells (375 each, 1125 total). These are healed at a rate of one hit per round. The patient is physically drained after this ordeal, suffering a -25 penalty to all actions for one day after the procedure.

Stasis Chamber
(Tech Level 17)

This chamber allows a patient to be put into suspended animation. When in the chamber, the patient ages slowly. How slowly depends upon the tech level of the chamber (see Table EM-5.2). Hopefully, the patient's injury or affliction will not progress to the fatal level before the patient is brought to proper medical aid.

Surgical Arterial Sealer (Tech Level 20)

Using this instrument is a Hard Medical Practice maneuver. It will repair damaged arterial and venous tissue, reducing bleeding by ten hits per round. This can only be used on one wound per round. This is a piece of infirmary equipment, and is not portable.

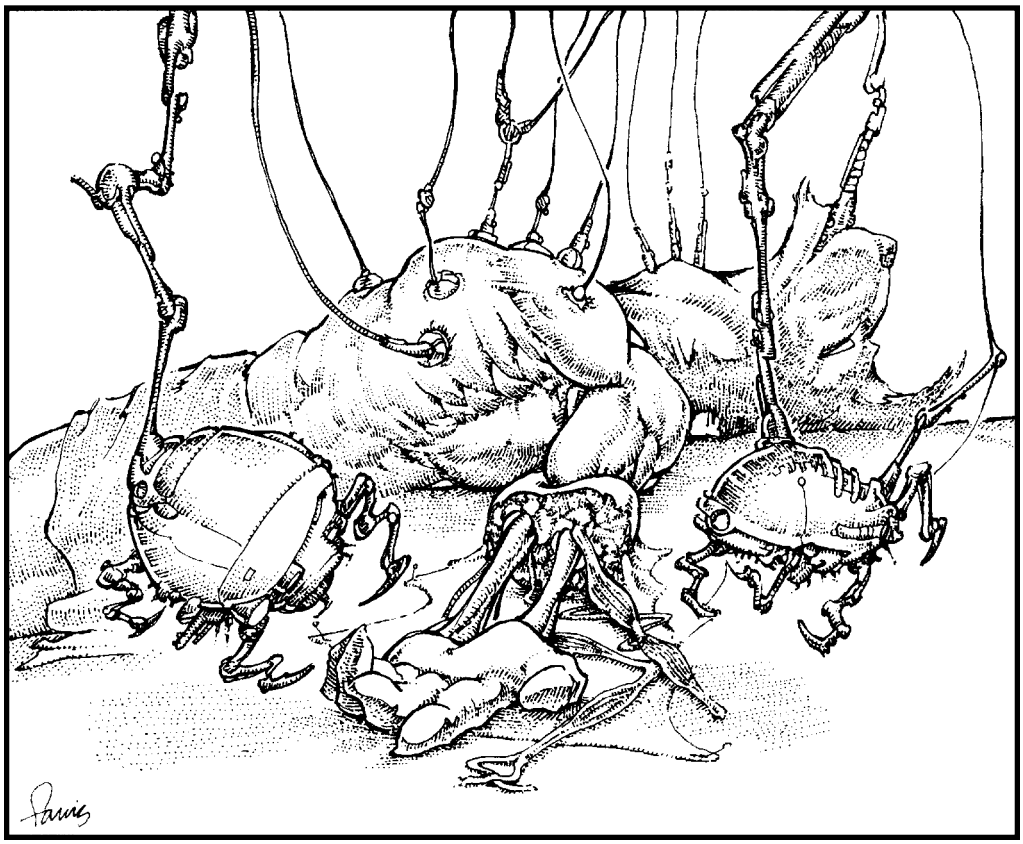
Surgical Dermal Sealer (Tech Level 20)

Using this is a Medium Medical Practice maneuver. It is capable of healing five hits per round. This is a piece of infirmary equipment, and is not portable.

Tissue Knitter (Tech Level 21)

Using a tissue knitter requires a Hard Medical Practice maneuver. It is a more powerful version of the dermal closer. It is capable of healing muscle, tendon and cartilage damage. As this requires aligning of severed tissues, fixing bone damage is not recommended with this tool (an Absurd maneuver). Roll normally for the healing time, but treat the results as minutes instead of hours.

This device has a finite number of uses. It can be used once for 15 energy units. By tech level 26, these are built with micropower generators.



Tissue Regenerator (Tech Level 21)

This is a more powerful version of the dermal closer and tissue knitter. Using this tool usually requires a Hard Medical Practice maneuver.

This will regenerate destroyed tissue of lesser complexity: muscle, tendons, cartilage, and skin. This can repair simple tissues at the rates listed under dermal closer or tissue knitter. All burns will regenerate at a rate of ten hits per minute. Cartilage, tendons, and bones can be regenerated at a rate of about one per hour.

This cannot regenerate more complicated tissues like organs. The patient is at a -25 penalty for one day after receiving treatment with a tissue regenerator.

One specific wound can be regenerated for 15 energy units. At tech level 26 and above, microgenerators can be added to this instrument.

Surgical Tissue Knitter (Tech Level 20)

Using this instrument is a Hard Medical Practice maneuver. It can heal torn (not destroyed) muscle, tendons, or cartilage. It can also repair broken or shattered bones. It takes d10 hours to repair each wound. This is a piece of infirmary equipment, and is not portable.

Surgical Tissue Regenerator (Tech Level 20)

This is the most powerful of all surgical tools. It is actually an array of five separate instruments. Each instrument can fully regenerate tissues, muscles, cartilage, bones, and organs from just a few cells. Using this tool is a Very Hard Medical Practice maneuver. It takes 2d10 hours to regenerate each missing or damaged area. This is a piece of infirmary equipment, and is not portable.

11.3 MILITARY-GRADE GEAR

This equipment is not considered particularly useful to the standard medical profession. It tends to be of a more temporary nature, used to keep a patient alive until proper medical treatment can be administered.

Cryochamber (Tech Level 17)

Sometimes a patient will die before they can be returned to safety. At other times, death is so imminent that a stasis chamber cannot stop it. In these cases, the only hope is to freeze the patient. This chamber is used for freezing these patients.

Patients in a cryochamber can be safely kept "on ice" for 1 day for each point of temporary Constitution. If they are frozen for longer periods, the difficulty of the Cryogenics maneuver to revive them is increased by two steps.

Life Support Unit (Tech Level 17)

This device is designed to provide life support to a patient in the field. Naturally, this is only necessary if the patient is dying and beyond the help of field medicine, it requires a Hard Medical Practice maneuver to use.

This comes with a chest unit which regulates the life support process. Various tubes and cables are attached to different parts of the anatomy, injecting drugs, monitoring electrolytes, stimulating heart-rate, etc. A polymer bag is included to zip the patient into afterwards.

Note that this unit does not stop blood loss or hemorrhaging. The medic should correct these problems before placing the subject on life support.

In the early versions of these units, a more complicated array (to force lung movement) or a direct neural patch is required. This neural patch can be connected surgically through the spinal cord or through an interface plug. Later units can handle a neural patch remotely through contact pads.

This technology is not as refined as infirmary grade equipment. It holds three power cells and runs for one minute per energy unit (375 minutes or 6 hours, 15 minutes). The patient will begin to degenerate after one hour (12 days) as well, receiving stat loss rolls every five minutes (25 hours) thereafter until placed in infirmary grade equipment.

The durations listed in the preceding paragraph are doubled every tech level after 17. The device also becomes more and more streamlined as tech levels progress.

Prosthetics

By tech level 17, it becomes possible to build cybernetic limbs. These limbs are superior in almost every way to natural limbs. By tech level 18, these limbs even feel normal.

However by tech level 18, these limbs are generally reduced in power to normal strength. Super strength limbs are dangerous to the user, tearing connective tissues and causing hemorrhaging.

Most limbs above this level are used because of their damage resistance. They act in most other ways exactly like a normal limb, though they are tireless.

Cybernetics are described more fully in *Tech Law: Robotics Manual*.

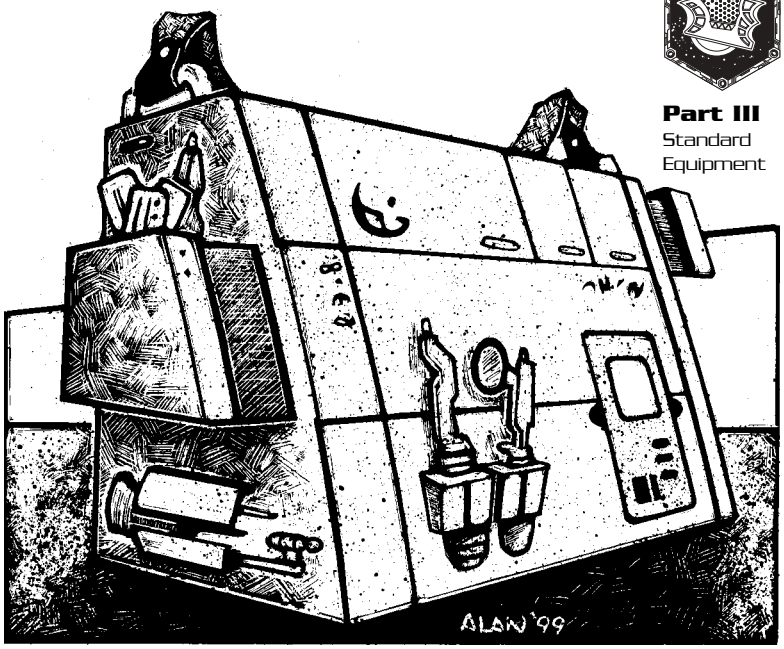
11.4 PRICE LIST

This chart gives the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the item is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The item's weight, in kilograms. Remember this is reduced to ten percent, except where noted otherwise, in subsequent tech levels.

Cost: The cost of the item.



MEDICAL EQUIPMENT TABLE EM-11.1

Item	Tech Level	Weight	Cost
Field Equipment:			
Arterial Sealer (P)	21	5	4k
Dermal Closer (P)	21	5	2k
Diagnostic Computer (P)	19	20	12k
Field Cast (P)	17	1	300
Field Splint (N)	17	2	200
First Aid Kit (N)	All	.5	20
Hypodermic Spray (P)	16	1	800
Laserscapel (Field) (P)	17	4	2.5k
Life Support Unit (M)	17	30	5k
Medispenser (M)	17	1	2k
Medscanner (P)	19	20	8.5k
Skeletal Knitter (P)	21	10	8k
Tissue Knitter (P)	21	5	3.5k
Tissue Regenerator (P)	21	8	4k
Infirmary Equipment:			
Autodoctor (N)	21	7,000	2 mil
Cryochamber (M)	17	4,500	200k
Laserscalpel (Infirmary) (P)	16	7	2k
NPR Gear (P)	22	10,000	10 mil
Scannerbed (P)	18	4,000	200k
Stasis Chamber (P)	17	5,000	250k
Surgical Arterial Sealer (P)	20	8	20k
Surgical Dermal Sealer (P)	20	8	12k
Surgical Tissue Knitter (P)	20	9	18k
Surgical Tissue Regenerator (P)	20	11	22k

12.0 :: PERSONAL GEAR

"Some assembly required."
— Twentieth Century Mercantile Barons

This group includes personal effects, as well as all the miscellaneous bits of gear that do not fit well into the other categories. Many of these devices are invaluable parts of a high-tech PC's life.

12.1 NORMAL GEAR

This section includes many common items that are useful in a wide variety of situations. Not everything that characters might acquire can be covered, so some of the more useful gear is listed here.

Anti-Glare Lenses (Tech Level 17)

These contact lenses are capable of darkening in bright sunlight. They are custom fitted to the user (already calculated into price). By the end of tech level 17, the response time for the darkening effect is almost instantaneous.

Antigravity Chair (Tech Level 25)

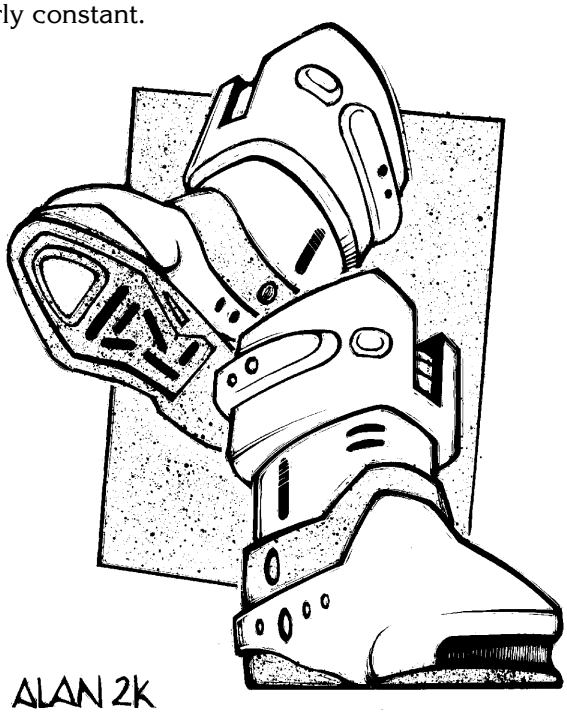
This large chair contains antigravity lifters. It can carry 250 kg and travel at 10 KPH. It keeps its occupant at a comfortable, steady G (adjustable).

Antigravity Platform (Tech Level 25)

This floating platform can carry up to 400 kg. It has no motive power but can be pushed like a cart.

Bug Detector (Tech Level 14)

This device is used to detect the telltale signs of an electronic surveillance device. It can detect bugs at up to one meter. As technology improves, so does the ability to hide bugs, so the one meter figure stays fairly constant.



Chronometer (Tech Level 10)

This is a timepiece. It is usually worn on the wrist or carried in a pocket. As the tech level increases, a chronometer tends to gain more and more features, such as timers, alarms, thermometers, etc.

Communicator (Tech Level 17)

These devices come in short range, medium range, and long range varieties. The base ranges are .25 km (100 km), 1 km, (400 km) and 10 km (4,000 km). Base weights are .25 (negligible), 1 (.001), and 10 (.01) kg. For each tech level increase, these communicators double in range and are halved in weight. These signals travel at the speed of light. Larger models will adjust the weight, price, and range by the same multiple. For instance, one that's twice as big and twice as expensive has twice the range.

Deceleration Pack (Gravchute) (Tech Level 25)

The antigravity equivalent of the parachute, the gravchute counters most of the effects of gravity, allowing the wearer to descend at a controllable rate. It allow up to 300 kg of mass to hover in an environment up to two Gs. It can be effectively used as a parachute for up to 750 kg in one G. Lower mass or gravity will allow the gravchute to be used as a flying vehicle.

Disguise Kit (Tech Level 9)

This kit includes beards and mustaches, and at later levels, latex and prosthetics. It is required for an unpenalized Disguise maneuver. With a holoprojector (tech level 18), it can superimpose one image over another, allowing the user to more easily re-create the features of a specific individual (no penalty), assuming that person is the same sex and approximate type.

Glowglobe (Tech Level 26)

This device has a miniature vacuum power generator. It is an eight-centimeter wide clear polymer globe. Twisting it 180° causes the globe to begin glowing brightly. The degree of brightness is controllable by the amount of the twist. This item is equipped with a tiny antigravity generator and an anchoring string. For every tech level after 26, the price of this item is divided by 10.

Hand Thruster (Tech Level 16)

This hand-held propellant device fires bursts of pressurized nitrogen. It contains enough propellant for 30 meters per second of -V for an average man. (This means that a man can accelerate to 30 meters per second, accelerate to 15 and decelerate to 0, or any other amount of accelerating and decelerating totaling 30.)

Implant Communicator (Tech Level 18)

The implant communicator works like a standard medium range communicator. It can transmit subvocalized speech and sends audio directly to the user's inner ears, so it can be used unobtrusively (-20 Awareness to notice). Quantum and tachyon communicators cannot be implanted in living tissue without some serious radiation shielding.

This is only included if more involved cybernetics rules are not used in the game. If they are, use the appropriate cyberware instead.

Magnetic Boots (Tech Level 16)

These boots have magnetic soles. They are used to secure a person to a ferric surface, and are very handy in zero gravity.

Personal Kit (Tech Level 3)

This kit is in a small case and attaches to the character's belt. This kit carries utensils, money, toiletries, etc.

Poison Sniffer (Tech Level 19)

This specialized scanner is designed to detect specific chemicals and biological agents harmful to a living creature. It has two methods of alerting the user, both active whenever it's on. First, an alarm is designed to get the user's attention, either through loud beeps or vibration. Second, a visual or audio display informs the user in clear, plain language exactly what poison is present and its effects.

This device passively scans the air at all times. To scan food or drink, the scanner must be placed within 14 cm of the object in question.

Note that this scanner is only as good as its database. A new poison will go undetected.

Quantum Communicator (Tech Level 23)

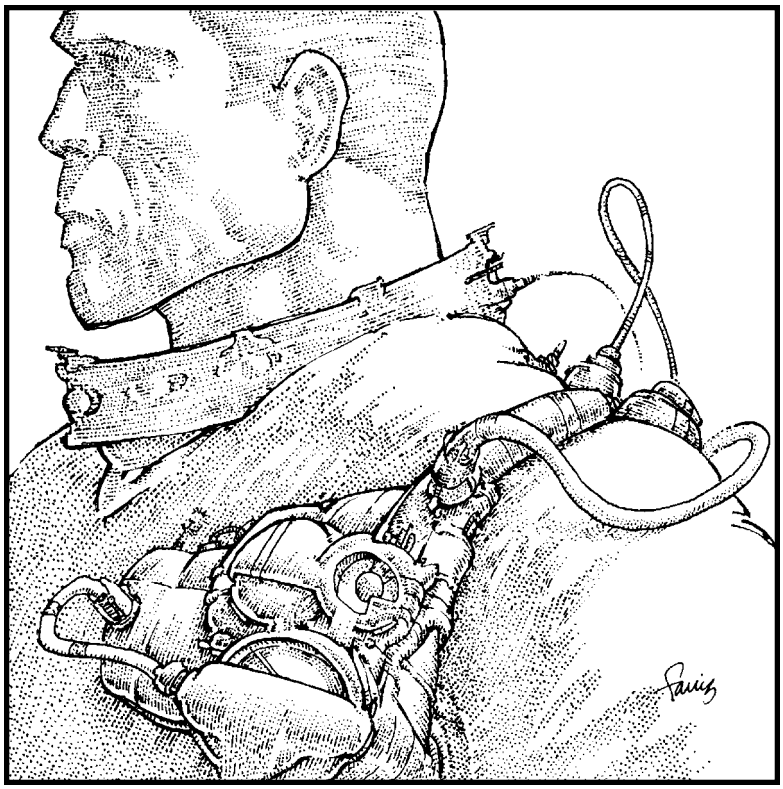
These devices come in short range, medium range, and long range varieties. The base ranges are .25 light year (1.5 ly), 1 ly (6 ly), and 10 ly (40 ly). Base weights are .25 (.04), 1 (.16), and 10 (1.6) kg. For each tech level increase, these communicators double in range and are halved in weight. These signals are instantaneous. Larger models will adjust the weight, price, and range by the same multiple. For instance, one that's twice as big and twice as expensive has twice the range (subject to GM approval). This is a relatively narrow beam.

Radiation Alarm (Tech Level 15)

This device sets off an alarm whenever the radiation level hits a certain point. The level can be set between 1/10 and 2 REM per hour.

Radiation Badge (Tech Level 15)

Until tech level 17, this is a simple film badge. It must be developed like a normal photograph to determine the dosage the wearer has been exposed to. By tech level 17, a personal dosimeter is developed, which can be read whenever the user desires.



Radiation Counter (Tech Level 15)

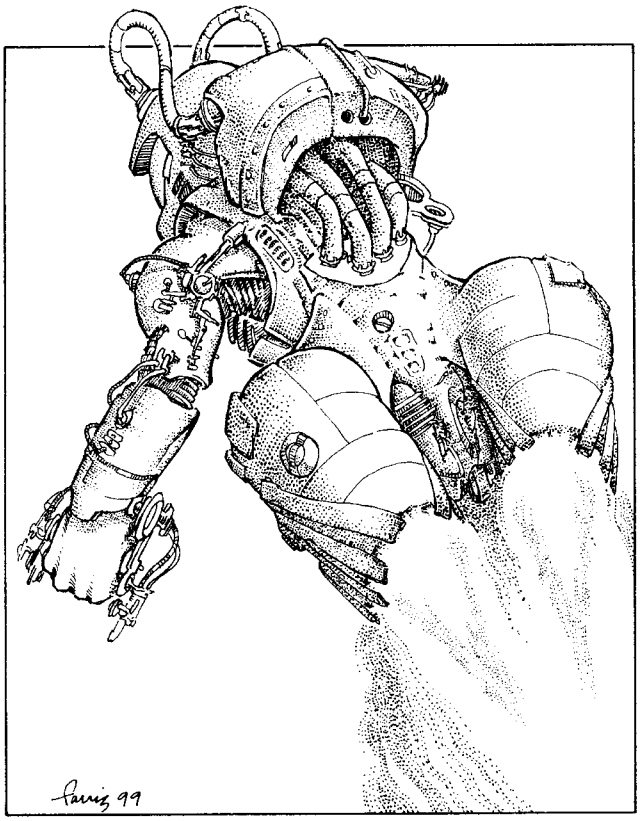
This device detects the level of radiation in its presence. The reading is given in REM per hour.

Signal Beacon (Tech Level 19)

This tiny disk is capable of generating a powerful beam of light, which can be seen for ten kilometers. A switch allows this to be used for binary signaling (Morse code, for instance).

Tachyon Communicator (Tech Level 20)

These devices come in short range, medium range, and long range varieties. The base ranges are .1 light year (30 ly), .4 ly (120 ly), and 4 ly (1,200 ly). Base weights are .25 (negligible), 1 (.02), and 10 (.2) kg. For each tech level increase, these communicators double in range and are halved in weight. The base speed of these signals is 100 days (2 days) per light year. Each tech level of increase halves the signal transit time.



Technical Scanner (Tech Level 19)

This scanner is a technician's best friend. It can scan for many things, including circuit patterns, power emanations, and stress flaws.

This scanner, naturally, can only work with devices and crafts for which it has detailed schematics. It can be plugged into a computer port to run diagnostics, though generally the computer can do this itself. It can also scan for approximately ten meters. The processing time is generally fairly quick, but it can take a very long time to perform a thorough scan on a large object.

This scanner has great success in its history of use. It averages a 99.99867% veracity rate.

In addition to other functions, this scanner can perform power emanation and physical analysis scans. These scans are handled exactly as if the scanner were a radscanner or a chemscanner.

Telepathic Communicator (Tech Level 27)

These helmets allow two users to link brainwave signals instantaneously over any distance. No way has ever been discovered to jam or intercept these signals other than a tech level 30 editing of reality itself. This communication ignores the language barrier, assuming the users are of the same species.

Telepathic Translator (Tech Level 27)

This small, portable computer is capable of reading the brain waves of one species and translating its speech into any language. It can be used on multiple subjects at once, translating a conversation back and forth for beings.

Thruster Pack (Tech Level 16)

This pack straps onto the back of a vac suit. It can accelerate the average man up to three meters per second per second. It has 300 meters/sec. of -V.

Telescopic Lenses (Tech Level 18)

These contact lenses are capable of magnifying distant images up to 1000 times. These are custom fitted to the user (already calculated into price). These have a rudimentary remote neural interface, just complex enough to receive zoom in/zoom out commands from the wearer.

Towel (Tech Level 2)

At higher tech levels, this will be made from terrycloth or a similar material. At lower tech levels this would be made of simple cotton or wool.

Translator (Tech Level 17)

This small, portable computer is capable of translating up to one hundred languages. These languages can be interchanged freely by changing software.

Trembler (Tech Level 16)

This device is hooked up to the windows or doors of a room. Once in place, it vibrates the structure slightly, enough to foil any attempts to eavesdrop using laser listening devices.

Web Belt (Tech Level 12)

This utility belt has many multi-purpose holes. Holsters, canteens, personal kits and many other devices can be hung from this belt.

12.2 PROFESSIONAL GEAR

This equipment is of a more specialized or semi-legal nature. For instance, a bypass kit is a necessary tool for any good locksmith, however a private citizen possessing one would be viewed with suspicion.

Bio-Disguise Kit (Tech Level 22)

This kit uses genetically engineered bio-organisms to create living skin and prosthetic grafts. This allows a person to imitate members of his own race with a +25 to his Disguise skill. It also makes it practical to imitate members of other species, assuming enough similarity exists in their physical builds.

Bug (Tech Level 17)

This is an extremely compact listening device. It is no bigger than the end of an eraser and has a transmission radius of one kilometer.

Bug Stomper (Tech Level 16)

This device produces electronic white noise. This neutralizes all bugs within one meter. Note that, to those monitoring the bugs, it is obvious that such a device is being used.

Bypass Kit
(Tech Level 17)

This is the electronics equivalent of the lock pick, fit for electronic locks. This is good for running bypasses on any simple electronic security. To bypass computer security would take a Computer Crime maneuver, but this could be used to bypass an individual peripheral of said security, a lock or camera for instance.

Contact Mike Set
(Tech Level 16)

This flat disk contains a directional mike. When placed against a wall it can hear whatever is happening on the other side. It transmits this to an ear speaker. The range is about five meters, but doubles every tech level after 16 (200 meters).

This is often used by safe crackers. It grants a +10 bonus to any attempt to crack a mechanical combination lock.

Electronic Handcuffs
(Tech Level 17)

These handcuffs have electronic locks and are opened with a laser key. They can be opened from up to three meters.

Flying Belt
(Tech Level 26)

This harness allows the wearer (up to 300 kg) to fly at up to 50 KPH for five hours of continuous use. It is often used by military assault troops.

Infrared Lenses
(Tech Level 18)

These contact lenses are capable of seeing and displaying infrared. They work exactly like infrared goggles. They are custom fitted to the user (already calculated into price). They have a rudimentary remote neural interface, just complex enough to receive on/off commands from the wearer.

Laser Listening Device
(Tech Level 16)

This device bounces a laser off a solid surface in the room where a conversation is taking place. A window is a prime example. The laser reads the vibrations of the object and translates them into sound.

Lock Picks
(Tech Level 4)

Lock picks are as old as the lock. These are mechanical lock picks, fit only for mechanical locks. Mechanical lock picks are typically as good as useless against most locks of more than one tech level higher.

Lo-Lite Lenses
(Tech Level 18)

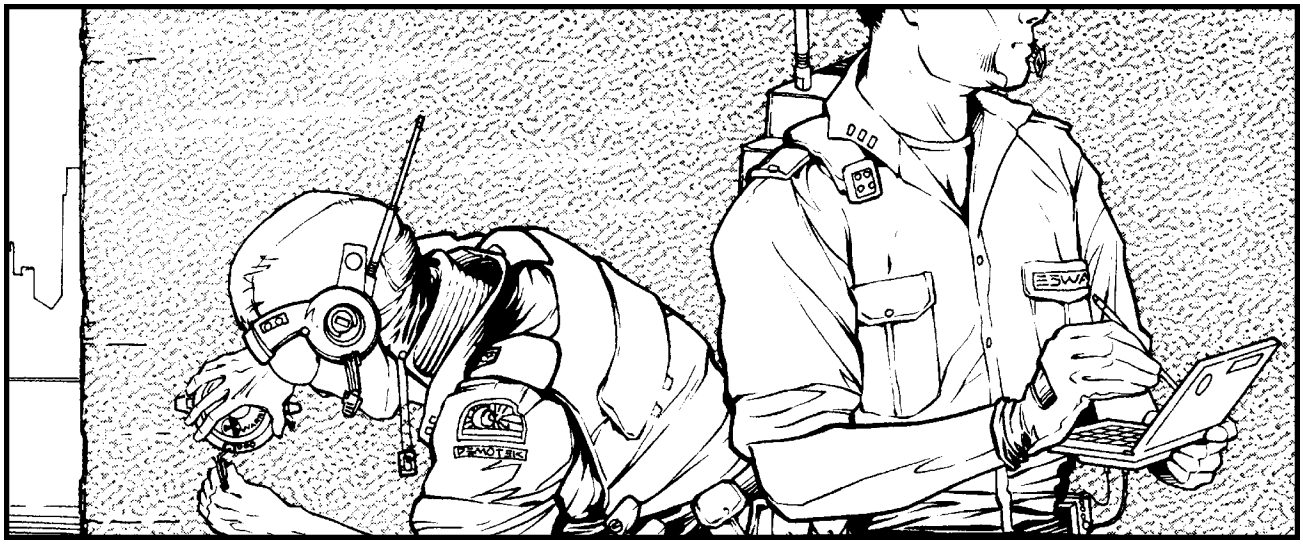
These contact lenses are capable of amplifying light. They work exactly like lo-lite goggles. These are custom fitted to the user (already calculated into price). These have a rudimentary remote neural interface, just complex enough to receive on/off commands from the wearer.

Molecutronic Scrambler
(Tech Level 20)

This device is the bane of androids and other sophisticated computers. This projects an intense quantum field (electromagnetics have no effect on molecutronics). The level of the scrambler (maximum 50) is the attack level and the defense level is the level of complexity of the computer (as assigned by the GM). This is then resolved on the Resistance Roll Table T-3.4 (*SM*, p. 70). (If the computer is a character, his level could be used instead.)

If a normal computer fails its resistance roll, then it is useless. If an android fails its RR, then all its mental stat potentials are reduced by the amount of the failure, permanently.

If the brain resists, then it is in full, working condition. If a scrambler fails, then it can never be used successfully against that computer.



Multipurpose Lenses (Tech Level 19)

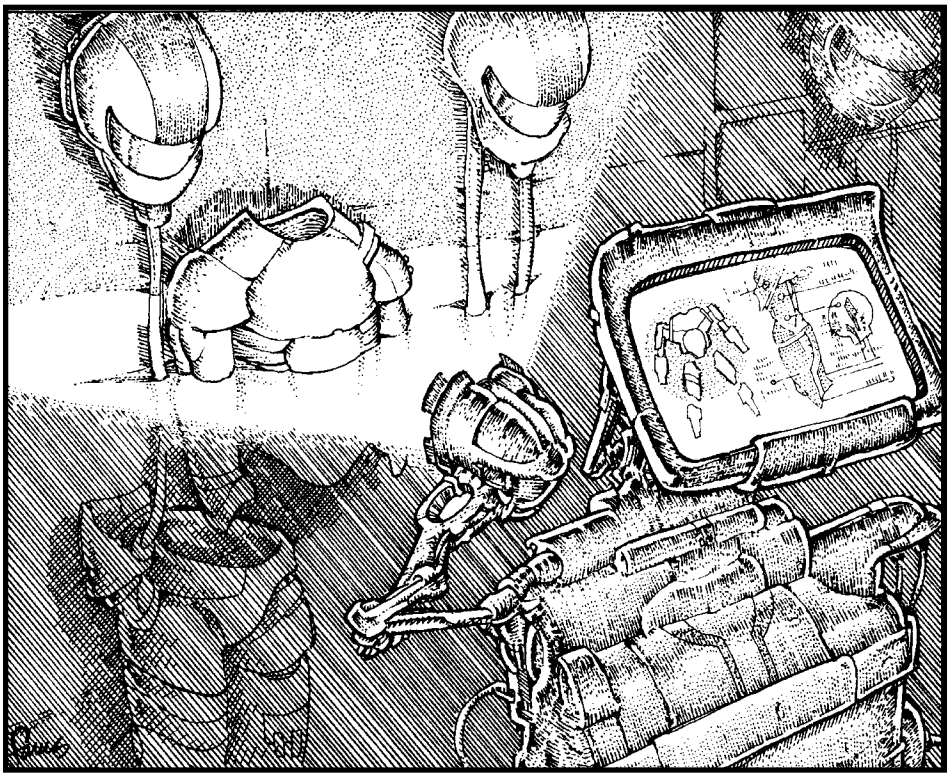
These contact lenses share all the benefits of infrared, lo-lite, anti-glare, and telescopic goggles. These are custom fitted to the user (already calculated into price). These have a rudimentary remote neural interface, just complex enough to receive on/off commands from the wearer for each mode.

Multiscanner (Tech Level 19)

This combines the functions of all three scanner types. It can perform lesser data analysis. It can link up with a more sophisticated system for full analysis.

Scanner, General (Tech Level 19)

There are three main types of scanners. The radscanner detects the type, source and intensity of any radiation source. The chemscanner detects minerals, metals and chemical compounds. The bioscanner is a highly specialized scanner which scans for complex molecules which denote the presence of life. These three scanners can perform three different types of scans.



• **Life Scan (Bioscanner):** This scanner can distinguish between plant and animal life at ten meters (800 meters). It can distinguish individual animal units at two meters. At half a meter (40 meters) it can distinguish between basic types of creatures (lizard, bird, etc.). More detailed analysis requires a medscanner.

• **Power Emanations (Radscanner):** This type of scan detects any radiation, be it electromagnetic or particle radiation. It is typically set to screen out background radiation, though it may be programmed not to do so. The range of this scan has a lot to do with the strength of the radiation source. This could pick up a communicator tight-beam at one meter (80 meters). A vacuum generator could be picked up at ten meters (800 meters), while nuclear power could be detected at one hundred meters (8 kilometers). Generally at 10% of that range, specifics can be made out, such as the nature of the transmission.

The GM should feel free to place penalties on these ranges due to background radiation. During a solar flare in orbit, gamma rays would be a lot harder to detect then on a planet's surface on a good day.

• **Physical Analysis (Chemscanner):** The first and most obvious function of this scanner is to analyze the properties of an item or substance. This scan can determine the physical makeup, chemical structure, internal structure, circuit patterns, stress flaws, etc. , of an object. Some very detailed data can be gathered for later analysis by computer.

The second and often more game applicable use is in the finding of a substance. Assuming that the scanner has the substance on file, it can locate it at a range of one gram per ten centimeters. That means that one gram of the material can be found ten centimeters (8 meters) away. This progression is reasonably linear. One kilogram of a substance can be detected at one hundred meters (8 kilometers).

The ranges for these scanners assume a tech level of 19. All the ranges double with each tech level above 19. Thus, a tech level 22 chemscanner could detect a kilogram of platinum at a range of eight hundred meters.

Security Scanner (Tech Level 17)

This scanner is used to read identity cards. These are standard issue to all law enforcement officials. The scanner itself is easily held in one hand and the card is inserted in one end. The person's information is displayed on the provided two-dimensional screen. There are up to three layers of data on any given person. Each scanner is encoded with the security levels it's permitted to access.

• **Tier One (Open Data):** This data is open public record. This is the type of information that an employer might require of its applicants. As such, they are possessed by all human resource departments. The data displayed includes name, sex, place of origin, current residence, current hair and eye color, date of birth, height and weight, profession and employer, any awards and citations, as well as any licenses. These scanners can be purchased freely.

• **Tier Two (Security Data):** This data is restricted to law enforcement officials and licensed security personnel. This includes arrest and conviction records, parole information, psychological and medical notes, and known aliases and monikers. In addition, on this tier certain flags or notes can be found. These can be placed as a part of psychological evaluations and list emotional problems and often give instructions for the handling of the person. The very presence of the flag denotes past problems with the law. If a citizen has a flag, they rarely know what they contain.

• **Tier Three (High Security Data):** This data is of a highly sensitive nature. This is most commonly placed there by an intelligence agency of some sort. It contains special data, affiliations with underground organizations, security clearances, etc. Underground agents will often have a "release code" planted on their identity cards, so that allied agencies will release them if they're taken into custody.

The most important thing to remember about tier three is that it's utterly invisible. This is important, as even possessing tier three data is suspicious. Only the agencies that place this data, or sister agencies which possess the codes, will even be able to see the data.

Thermite Lock Pick (Tech Level 17)

This is a small, thermite disk which is attached to the physical mechanism of a lock. It is then detonated. It will burn through any substance with a melting point lower than that of solid stone. (By tech level 20, even that is not an obstacle, though carbon-60 will still resist it.)

12.3 MILITARY-GRADE GEAR

This type of gear is generally reserved for military personnel. It is of a blatantly military nature, and is probably highly restricted in most societies.

Electronic Countermeasures Belt (Tech Level 20)

This belt can be set to give the wearer a false scan-signature. This will only fool simple scanners. Assume any scanners involved in a security system of level three or lower will be fooled.

Holobelt (Tech Level 19)

This device can project a holographic image around the wearer. This must be a set image, until tech level 20, when it can move with the wearer. It does not help against IR or bioscanners. In addition, this image glows in the dark.

Holo/EC Belt (Tech Level 20)

This combines the benefits of the holobelt with the benefits of the electronic countermeasures belt. This still has all the drawbacks of both items.

Sneak Suit (Tech Level 18)

This suit is capable of making the user much more difficult to spot. It suppresses his IR signature and shifts color to match its surroundings. It grants a +15 bonus to the character's DB, Stalking, and Hiding. It also permits Stalking and Hiding to be used against IR sensors.

This suit traps heat inside it as part of it's IR masking ability. The character spends double exhaustion points as long as they are "buttoned up."

Tactical Scanner (Tech Level 19)

This scanner is often used by military units. It is a simple scanner, capable of scanning for life, motion, or other possible threats. It has a fairly limited range at lower tech levels (two meters at tech level 19 on a bioscan), but as tech levels increase, this becomes a very useful tool (160 meters in the ISC). As it is so simple, it gives a +50 bonus to any Sensor Analysis maneuvers that might be required.

This scanner gives a perfect sphere of data, though many users restrict this to a plane or wedge. It is sophisticated enough to recognize a life form once scanned and can therefore be programmed to display friend/foe designations or other data on known life forms.

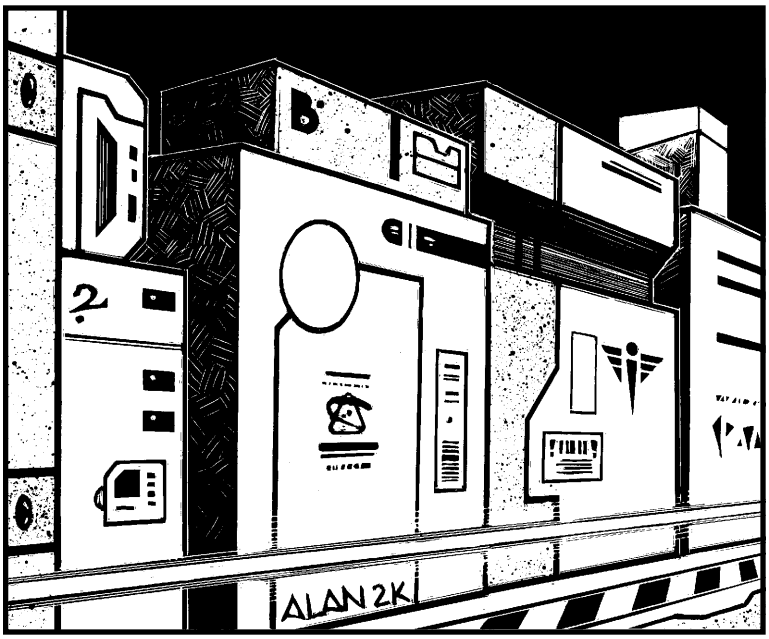
Tech level 19 and other low-tech versions often rely on infrared and motion alone. This grants a twenty five meter bonus to the scanning radius, but eliminates object recognition abilities.

This scanner ignores most barriers, such as bulkheads and walls. It is capable of a mapping function, or downloading maps which can then be overlaid on the data.

PERSONAL GEAR TABLE EM-12.1

Item	Tech Level	Weight	Cost
Anti-Glare Lenses (N)	17	–	100
Antigravity Chair (N)	25	1,000	300k
Antigravity Platform (N)	25	500	40k
Bio-Disguise Kit (P)	22	50	50k
Bug Detector (N)	16	.5	500
Bug (P)	17	.01	500
Bug Stomper (P)	16	1	1.2k
Bypass Kit (P)	17	2	1.5k
Chronometer (N)	10	.1	500
Communicator (N):*	17		
Short Range		Special	30
Medium Range		Special	120
Long Range		Special	1,200
Contact Mike Set (P)	16	.1	3k
Deceleration Pack (N)	25	10	25k
Disguise Kit (N)	9	5	450
Electronic Countermeasures Belt (M)	20	1.5	22k
Electronic Handcuffs (P)	17	2.5	400
Flying Belt (P)	26	20	35k
Glowglobe (N)	26	2.5	100k
Hand Thruster (N)	16	2	500
Holobelt (M)	19	20	11k
Holo/EC Belt (M)	20	25	40k
Implant Communicator (N)	17	–	10K
Master Unit (N)	17	25	10k
Infrared Lenses (P)	18	–	1.5k
Laser Listening Device (P)	16	6	12k
Lock Picks (P)	4	–	200
Lo-Lite Lenses (P)	18	–	600
Magnetic Boots (N)	16	5	1k
Molecutronic Scrambler (P)	20	.1/lvl	400/lvl
Multipurpose Lenses (P)	19	–	3k
Multiscanner (P)	19	20	8k
Personal Kit (N)	3	1	100
Poison Sniffer (N)	19	10	5k
Quantum Communicator (N)*	23		
Short Range		Special	10k
Medium Range		Special	40k
Long Range		Special	400k
Radiation Alarm (N)	15	1	1k
Radiation Badge (N)	15	–	1k
Radiation Counter (N)	15	5	5k
Scanner, General (P)	19	10	2k
Security Scanner (P)	17	5	1k
Signal Beacon (N)	19	1	100
Sneak Suit (M)	18	50	18.5k
Tachyon Communicator (N)*	20		
Short Range		Special	5k
Medium Range		Special	20k
Long Range		Special	200k
Tactical Scanner (M)	19	15	3k
Technical Scanner (N)	19	20	7k
Telepathic Communicator (N)	27	25	35k
Telepathic Translator (N)	27	1	20k
Telescopic Lenses (N)	18	–	500
Thermite Lock Pick (P)	17	5	5k
Thruster Pack (N)	16	25	20k
Towel (N)	2	.5	100
Translator (N)	17	1	12k
Trembler (N)	16	.1	1k
Web Belt (N)	12	1	50

* — These communicators drop in weight and increase in range each tech level. They do not become cheaper.



12.4 PRICE LIST

This chart gives the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the item is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The item's weight, in kilograms. Remember this is reduced to ten percent, except where noted otherwise, in subsequent tech levels.

Cost: The cost of the item.

13.0 ⁞⁞ POWER CELLS

"Batteries not included"
— Twentieth Century Packaging Cliché

Most technology is run by power cells. These are the high-tech batteries of the future. They are compact and lightweight. No tech levels are given for these cells, they are assumed to be of the tech level of the society from which they are purchased.

The amount of energy in a power cell is rated in energy units. These energy units are rated on separate scales, one for each type of cell (a weapon cell's energy units are about one hundred times more powerful than a utility cell; the step up to vehicle cells from weapon cells is about the same). For devices which don't give energy consumption rates, (or shots for weapons) assume that one energy unit is expended every minute.

After the glory days of the fossil fuels, power cells become very important. Because of this, research and development on power cells begins in earnest. By tech level 17, power cells begin to increase in storage capacity at a greatly increased rate. The progression is as follows:

POWER CELL CAPACITY TABLE EM-13.1

Tech Level	Energy Units
17	1
18	2
19	4
20	8
21	16
22	32
23	64
24	128
25	256
26	512
27	1,024
28	2,048
29	4,096

Note: *Power technology varies in the Privateers universe. ISC weapon cells contain 375 energy units. Imperial weapon cells contain 140 energy units.*

13.1 NORMAL GEAR

Most power cells are classified as normal gear. They are available at every corner shop and convenience store. *Spacemaster* power cells are very advanced. Though they do wear out in time, they are very durable and battery memory is unheard of.

Note that these cells begin to hold vast amounts of power, especially at the higher tech levels. They are, in theory, tamper proof, but a determined tinkerer can accidently electrocute himself. This does not mean this happens often. Great pains have been taken to make these items "child proof."

Micropower Generator (Tech Level 22)

This device uses vacuum power to generate limitless energy. Micropower generators begin to enter widespread use during tech level 22, but don't really take off until tech level 23.

As the ages progress, these generators become smaller and more efficient. The chart below lists the minimum weight of a micropower generator by tech level. In the ISC, this is .35 kg. In the Empire, it is 1.2 kg.

MICROPOWER GENERATOR WEIGHT TABLE EM-13.2

Tech Level	Weight
22	10
23	3
24	1.5
25	.75
26	.05
27	.005
28	.0005
29	.000005

The cost listed for a micropower generator assumes that the generator is the minimum size for it's tech level. If it is one category heavier, then the price is 10% normal. For every additional category difference, the price is reduced to 10%.

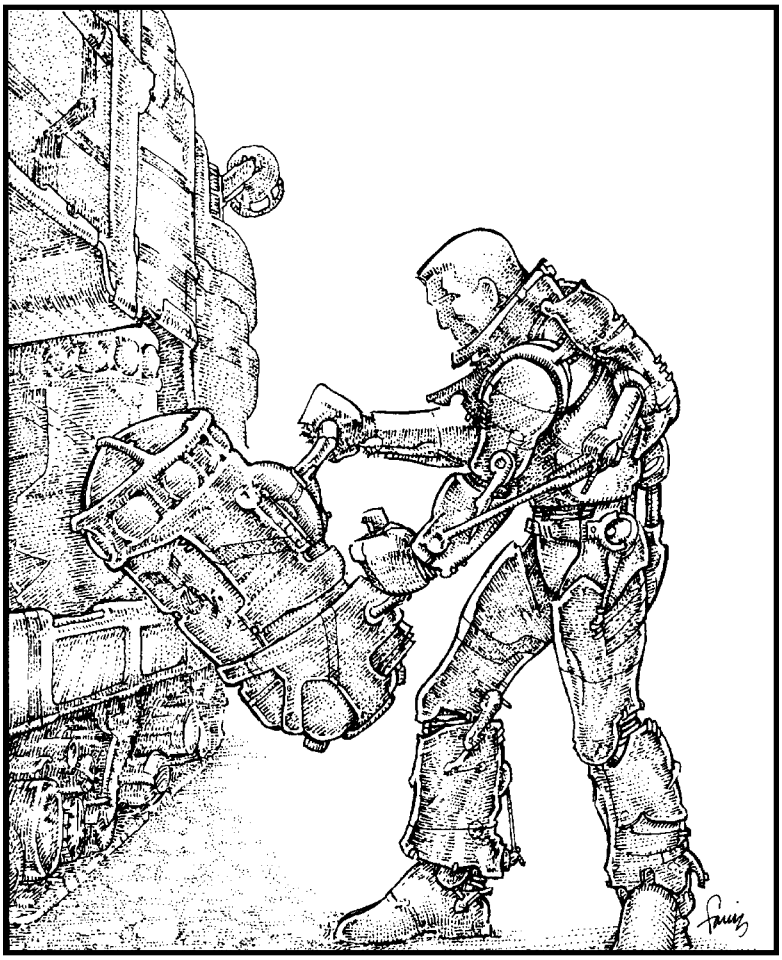
This assumes that the micropower generator need only produce a moderate, constant stream of power. Micropower generators that are built into weapons follow the pricing schemes listed in *Blaster Law*.

Utility Cell

These are the standard power cells used to operate equipment. All standard equipment, but not weapons, are run off these cells. They are thin disks, 1.5 cm wide.

Vehicle Cell

These are the cells used in vehicles. At the earlier tech level, these are used only to start the vehicle. The vehicle itself is probably run off of fossil fuels. At the higher tech levels, however, the vehicle runs completely off of these cells. These tend to be cubes, twenty centimeters on a side.



Weapon Cell

These power cells are used to run weapons. If the weapon is an energy weapon, then the weapon's stats will determine how many shots it can squeeze out of a power cell. If not, but the weapon still requires a cell (as with electrochemical propulsion), then these cells would take weeks, months, or even years to completely drain. Weapon cells are 8 cm x 2 cm x 1 cm.

Some hold out weapons require a much smaller power source. A power cap is one tenth the mass of a normal weapon cell and holds one tenth the power. They cost the same.

13.2 PROFESSIONAL GEAR

For the most part, professionals use the same power cells as amateurs. The one exception is the weapon pack, and it is listed below.

Weapon Pack

These large backpack-style cells are used to run weapons. These packs provide 100 times as much power as a cell. Tech level 22 micropower generators are often put in this style of casing.

13.3 MILITARY-GRADE GEAR

Only flamers and weapons that use standard cells are typically reserved for the military. Therefore, flamer cells are the only type of power source left for this category.

Flamer Cell

These cells contain the power and fuel necessary to power a flamer weapon. They are cylinders, 3 cm tall and 2 cm wide. The shots these grant depend on the weapon, but ten bursts is typical.

13.4 PRICE LIST

This chart gives the prices of the cells listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the cell is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The cell's weight, in kilograms. Except for micro-power generators, these are not reduced as the tech level increases.

Cost: The cost of the cell.

POWER CELL TABLE EM-13.3

Item	Weight	Cost
Flamer Cell	.05	5
Micro Power Generator	Varies	100,000
Utility Cell	.01	5
Vehicle Cell	1	100
Weapon Cell	.1	18
Weapon Pack	10	1,800

14.0 :: SURVIVAL EQUIPMENT

"Nature abhors an atmosphere.
Check your suit seals"
— Seen above an airlock door.

All survival and outdoor gear is covered by this category. This includes tents, environment suits, rations, and orienteering gear.

14.1 NORMAL GEAR

This gear is a must for the amateur survivalist. It is readily available in most any survival shop.

Air Mattress (Tech Level 14)

This mattress is inflatable. It comes complete with a built in pillow and collapses to a 5 cm cube.

Air Tanks (Tech Level 13)

These contain air for other breathing devices, such as a breath mask. At tech levels 13 through 15, a one-hour air supply weighs 20 kg. At tech level 16, the same weighs 15 kg. At tech level 17, a two-hour air supply weighs 5 kg. At the same tech level, a 24-hour tank weighs 40 kg.

All Weather Bag (Tech Level 16)

This sleeping bag is good for temperatures from just below freezing to desert heat. It is lightweight and can fold to the size of a paperback novel. An optional heating unit can be purchased which would allow the user to survive sub-zero temperatures.

Anti-Glare Goggles (Tech Level 16)

These goggles are polarized to darken when exposed to sunlight, and therefore protect the wearer's eyes against intense glare. By the end of tech level 17, these can darken almost instantly, protecting the eyes from all but the most powerful and sudden bursts of light. They look and feel like a pair of sun glasses.

Breath Mask (Tech Level 16)

This small, portable mask allows a character to breath normally. It covers the wearers entire face (the human eyes require exposure to oxygen). This can only be used in harmless atmospheres, as the wearer is mostly exposed. It requires air tanks or a filter.

These masks are often used in situations where the transmission of sound is difficult do to environmental considerations. They are therefore equipped with a communicator.

Combat Knife (Tech Level 3)

A long knife with a serrated top. This is standard issue in many military organizations.

Compressor (Tech Level 13)

This is capable of compressing air. It is used to fill air tanks.

Coolpack (Tech Level 18)

This portable beverage cooler attaches to the top of a six-pack of beverages. It operates for ten hours on a single energy unit.

Concentrated Rations (Tech Level 16)

These tubes of gelatin-like material are almost completely tasteless and not in the least bit filling, but they do provide a full day's nutrition.

Desert Suit (Tech Level 20)

This suit not only helps protect against intense temperature extremes, but it processes all fluids released, be they through respiration, perspiration or excrement. The fluids may then be reconsumed. Most of this process may be powered solely by the movements of the wearer, however a power cell is necessary to operate the suit's built-in refrigeration system.

Emergency Bubble (Tech Level 17)

This device is usually worn on the belt. It inflates in seconds, and can be sealed to provide protection from a vacuum. This will hold 15 minutes of air.

Environment Tent (Tech Level 16)

These tents can provide protection from a vacuum. These can also handle any prssure up to five atmospheres. They are available in up to 8-man sizes.

Filter Attachment
(Tech Level 13)

This filters out impurities. It is attached to a respirator or breath mask.

Filtration Canteen
(Tech Level 15)

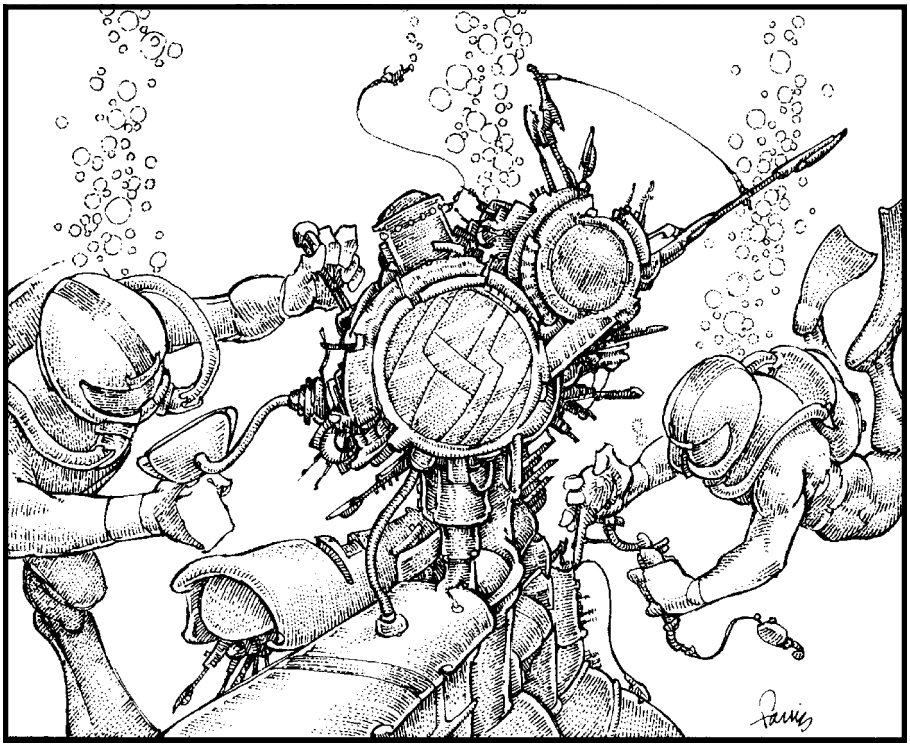
Water can be poured into this canteen with impurities. The canteen is built in with a filtration system which will filter out any reasonable impurities. Many liquid poisons will not be stopped by this filter. One filter is worth about one hundred quarts.

Foodpack
(Tech Level 16)

This vacuum sealed food pack is a more enjoyable meal than concentrated rations. It fits into a 6 cm cube.

Gill Pack
(Tech Level 17)

A combination filtering and electrolysis system. It supplies breathable air for one hour per energy unit in water. It is not useful in other liquids.



Holomapper
(Tech Level 19)

This device uses scanners and holoprojectors to map the area within 100 meters of the carrier. This is combined with an inertial compass, so as to constantly and accurately track the a carrier at all times.

This can be loaded with pregenerated maps. In that case it works as a hyperaccurate inertial compass.

Just one of the memory crystals for this device will store about 1,000,000 square kilometers. The map itself is 2 cm x 10 cm x 10 cm. It can be viewed at nearly infinite magnification. The map can also be projected, given that the lighting isn't too intense, into a three-meter cube.

Inertial Compass
(Tech Level 18)

This belt-attached device will measure a person's location as they travel from an initial set point. This device must be calibrated to the world in question. This takes one hour and a computer programmed with the proper data. It is accurate to one meter.

Instameal
(Tech Level 17)

These are packaged much like foodpacks. They have built in chemical heaters, however.

Life Support System
(Tech Level 17)

This small unit (about a half a meter on a side) is capable of providing hot or cold breathable air. They are often attached to an environment tent. It operates for one hour on a power cell, and can hold eight cells.

Magnetic Compass
(Tech Level 11)

This small, hand-held device always points toward magnetic north. Magnetic north may vary from planet to planet.

Micro Oven
(Tech Level 17)

This is a 20 cm x 20 cm x 30 cm microwave oven. It is suitable for field use. It will operate for ten hours on an energy unit.

Rebreather
(Tech Level 16)

This is a more efficient version of the scrubber. It extends the life of the wearer's air tank by a factor of ten. Requires a power cell, which will operate for one day on an energy unit.

Respirator
(Tech Level 18)

This mask concentrates the oxygen in a reduced atmosphere. It requires a power cell. It operates for one day per energy unit. These all include a short range communicator.

Scrubber
(Tech Level 15)

These devices scrub out carbon dioxide and reprocess oxygen, doubling the life of existing air tanks. They operate for one day per energy unit.

Survival Knife
(Tech Level 11)

This is much like a combat knife. The handle, however is hollow. The end unscrews and inside is standard survival equipment (fishing line, needles, a wire saw, etc.). The end often is implanted with a compass.

Synthcord
(Tech Level 17)

This centimeter-thick cord will support 500 kg. Every tech level, this weight limit doubles (150 tons). This comes in lengths of fifty meters.

Telescopic Goggles
(Tech Level 17)

These goggles allow the wearer to "zoom in" on distant objects. The early versions of these use manual controls, but the commands are simple enough to allow remote neural interface by the end of the age. These have a magnification power of 1000 times. They look and feel like a pair of sun glasses.

Tent
(Tech Level 3)

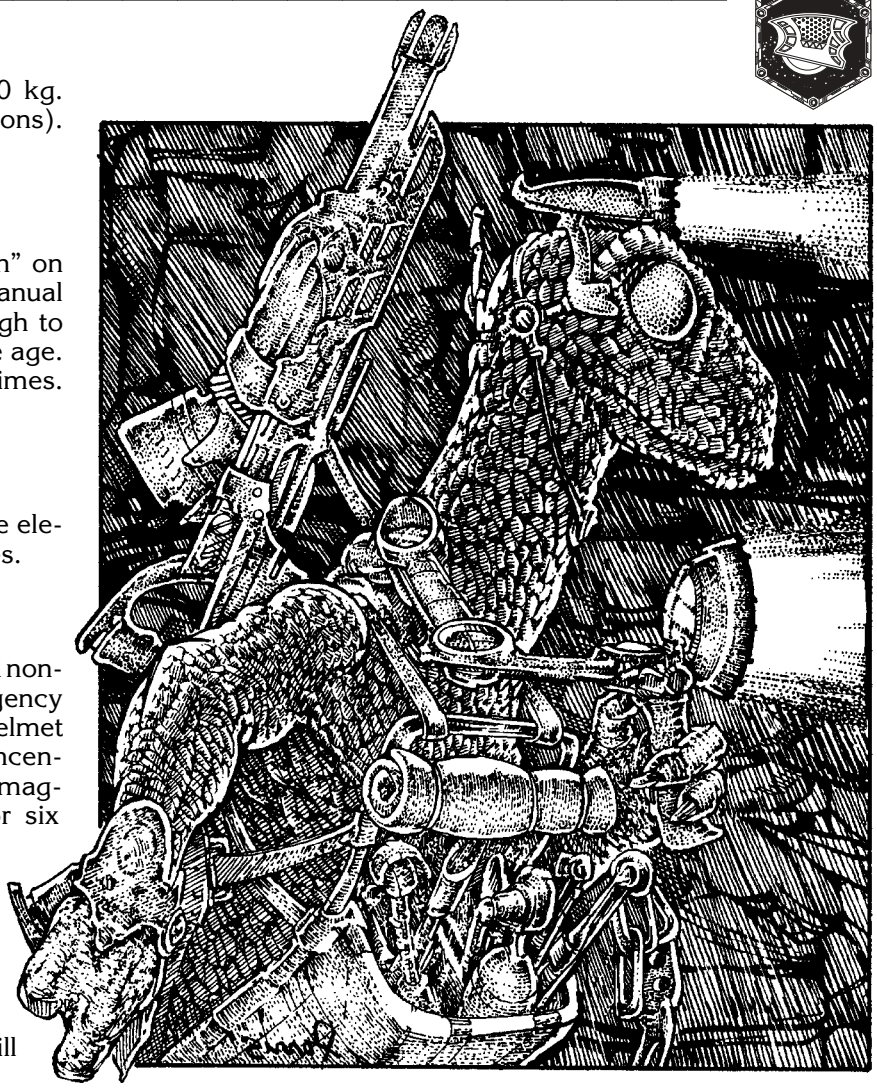
This tent provides simple protection from the elements. Tents are available in up to 8-man sizes.

Vac Suit
(Tech Level 15)

This suit will protect against hard vacuum and non-corrosive atmospheres. It comes with emergency patches. After tech level 16, it comes with a helmet light, waste processing system, water and concentrated food system, short range communicator, magnetized boots, and computer. It functions for six hours on an energy unit.

Vapor Canteen
(Tech Level 18)

This canteen can draw moisture from the surrounding air. The rate depends on humidity. Assume about five hours for 50% humidity. This operates off a standard power cell. It will function for two days on an energy unit.



Wet Suit
(Tech Level 13)

This suit is meant to insulate a diver when under water. It is used with a breath mask and air tanks or gill pack. It comes with flippers.

14.2 PROFESSIONAL GEAR

This gear is of a more restricted nature. Typically only specialized professionals can find ready access to it.

Armored Vac Suit
(Tech Level 17)

Like a vac suit in every way, except that it's armored. It can stand a corrosive atmosphere. Through tech level 18, this has an AT of IV. Come tech level 19, this becomes AT VII.

Exoskeleton
(Tech Level 17)

This device is worn externally. It uses a series of waldos to increase the wearer's effective strength. It therefore makes it possible for the wearer to operate under very high level of gravity.

Infrared Goggles
(Tech Level 16)

These goggles perceive infrared. They eliminate all night penalties, but impose a -5 penalty to all actions due to a slight distortion. If the temperature is over 20 degrees Celsius, then these can see normally even in total darkness. If not, then they can only see objects which produce heat. They look and feel like a pair of sun glasses.

Lo-Lite Goggles
(Tech Level 16)

These goggles intensify any light that falls on their lenses. This halves any penalties for darkness. After tech level 16, there is no danger of staring at a bright light through these. However, these goggles can be burned out by a laser until tech level 18. They look and feel like a pair of sun glasses.

Multipurpose Goggles
(Tech Level 17)

These goggles combine the effects of anti-glare, infrared, lo-lite and telescopic goggles. They are cumbersome when first produced, but by tech level 18 can be as compact as a set of sunglasses.

NBC Suit
(Tech Level 16)

NBC stands for Nuclear Bacteriological Chemical suit. This will protect the owner from bacteriological and chemical hazards, but it gives no protection against radiation. This is hooked up to a filter attachment or air tanks to supply clean, breathable air.

Note that this uses a simple, charcoal filter. Getting it wet renders it useless. It would be bad to relieve one's self in this suit.

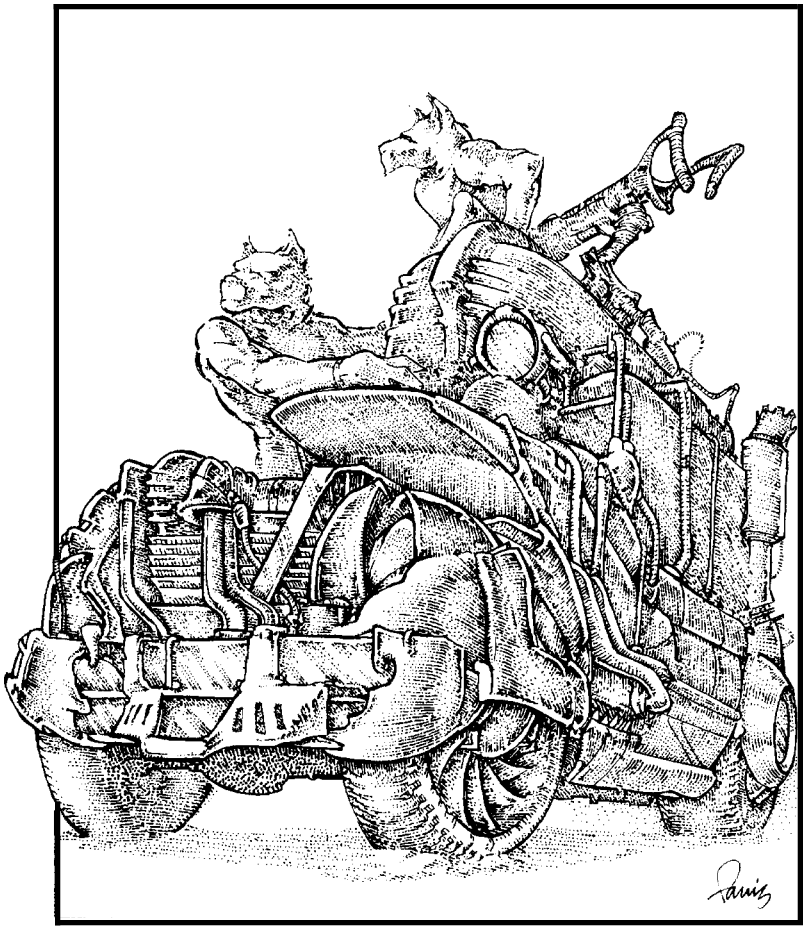
At later tech levels, these suits become portable, operating off a power cell. Also, the "moisture problem" is overcome with more advanced filtration systems.

14.3 MILITARY-GRADE GEAR

This gear is generally only accessable by military personnel. To most other citizens, it is very difficult to find.

Exoskeletal Armored Vac Suit
(Tech Level 17)

This vac suit combines the effects of the exoskeleton and armored vac suit. It is therefore capable of keeping its occupant alive under the most extreme of circumstances.



14.4 PRICE LIST

This chart gives the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the item is classified as (N)ormal, (P)rofessional, or (M)ilitary.

Weight: The item's weight, in kilograms. Remember this is reduced to ten percent, except where noted otherwise, in subsequent tech levels.

Cost: The cost of the item.

SURVIVAL GEAR TABLE EM-14.1

Item	Tech Level	Weight	Cost
Air Mattress (N)	14	2	60
Air Tanks (N)	13	Varies	200
All Weather Bag (N)	16	1	50
Anti-Glare Goggles (N)	16	–	50
Armored Vac Suit (P)	17	Varies	Varies
Breath Mask (N)	16	.5	50
Combat Knife (N)	3	.5	60
Compressor (N)	13	2	100
Coolpack (N)	18	2	50
Concentrated Rations* (N)	16	.05	2
Desert Suit (N)	20	100	7k
Emergency Bubble (N)	17	2.5	800
Environment Tent (N)	16	8	900
Exoskeletal Armored Vac Suit (M)	17	+50	+10k
Exoskeleton (P)	17	50	10k
Filter Attachment (N)	13	.5	1k
Filtration Canteen (N)	15	1.5	500
Foodpack* (N)	16	.08	5
Gill Pack (N)	17	5	500
Holomapper (N)	19	6	600
Inertial Compass (N)	18	.5	250
Infrared Goggles (P)	16	1.5	200
Instameal* (N)	17	.5	10
Life Support System (N)	17	10	500
Lo-Lite Goggles (P)	16	1.5	80
Magnetic Compass (N)	11	1	10
Micro Oven (N)	17	5	300
Multipurpose Goggles (P)	17	1.5	400
NBC Suit (P)	16	5	6k
Rebreather (N)	16	.5	200
Respirator (N)	18	1.5	300
Scrubber (N)	15	.5	200
Survival Knife (N)	11	.5	100
Synthcord* (N)	17	1	50
Telescopic Goggles (N)	17	1.5	65
Tent (N)	3	30	200
Vac Suit (N)	15	50	10k
Vapor Canteen (N)	18	10	4.5k
Wet Suit (N)	13	10	5k

* These items don't go down in price and weight the tech level after introduction, they just taste better.

15.0 :: TOOLS

"Always use the proper tool. If the proper tool isn't available, try a hammer."
— Anonymous

This encompasses all tools that might be used by the players. Since there are thousands of possible tools out there, most tools are sold in kits.

15.1 NORMAL GEAR

These tools can be found in most hardware stores. They are common in garages and workshops throughout known space.

Basic Tool Kit (Tech Level 15)

This kit contains all the tools necessary for the generic tinkerer. It has all the tools necessary for engineering, mechanical, and electronic engineering. In short, this kit contains everything necessary for emergency repairs.

Fire Extinguisher Canister (Tech Level 17)

This canister of fire retardant foam is small and portable. It can smother five square meters.

Flashlight (Tech Level 13)

This hand-held lamp produces a narrow beam. It operates off a power cell, for about two weeks per energy unit.

Heavy Torch (Tech Level 17)

This is like the laser torch. It is much heavier, however, able to cut through three centimeters of alloyed steel.

Infra-Plate (Tech Level 18)

This plate adheres to any surface. Operating like a simple scanner, this displays a three dimensional image of whatever is on the other side of the surface to which it's attached.

Laser Torch (Tech Level 17)

This cutting and welding torch uses coherent light. It is small and handheld. It can cut a lot.

Light Rod (Tech Level 26)

This is the tech level 26 version of the flashlight. It uses a micro-vacuum generator to run indefinitely. It can produce either a beacon of light or a narrow beam, or anything in between. For every tech level after 26, divide the cost by ten.

Mini Tool Kit (Tech Level 11)

These tools kits, or perhaps tool belts, are more mobile than a full kit. These kits are tailored for used with a certain skill, and a -10 is incurred when using one for any other purpose.

Piton Gun (Tech Level 16)

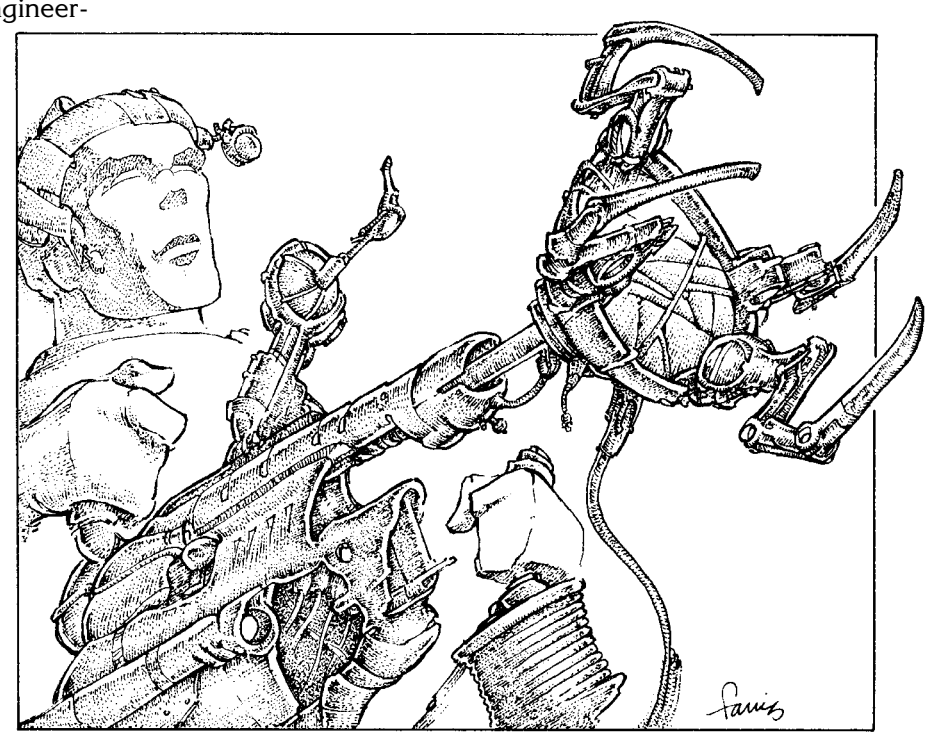
This gun uses compressed air to fire pitons. It can fire them into solid granite.

15.2 PROFESSIONAL GEAR

This gear is not typically found among the tools of a typical handyman. It is not so rare however, to be restricted to military personnel. This gear typically has no restriction placed upon its sale or distribution, it is simply uncommon.

Grapnel Gun (Tech Level 17)

This gun uses compressed air to fire a grappling hook up to fifty meters. The motorized winch can lift up to 200 kg. This usually contains fifty meters of synthcord.

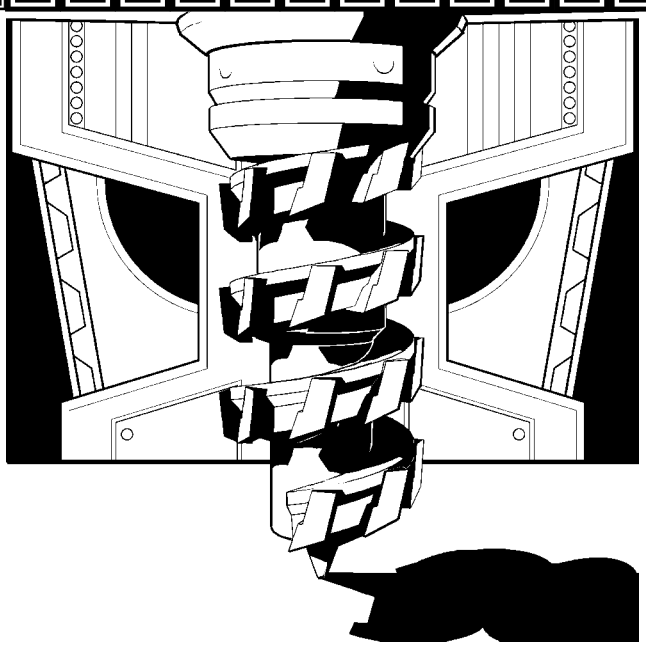


Portable Machine Shop (Tech Level 17)

Popular on starships and space stations, this is the grand expansion of the basic tool kit. All the more elaborate tools are found in this shop, including metallurgy and electronics gear. Not only are basic repairs possible, but spare parts and even circuit boards can be manufactured or cut.

Spacecraft Tool Kit (Tech Level 15)

This tool kit contains all of the equipment necessary to diagnose and repair damage to a spacecraft. Spacecraft technology is pretty specific to tech level, and therefore these kits tend to change radically with each age.



15.3 MILITARY-GRADE GEAR

These tools are only used in the servicing of specialized military equipment. They are therefore unheard of outside of military circles.

AFV Tool Kit (Tech Level 13)

This tool kit contains all the tools necessary to diagnose and repair an armored fighting vehicle. It is relatively tech level specific, as the technology behind armored fighting vehicles changes radically every age.

Starfighter Tool Kit (Tech Level 20)

A starfighter is a complicated and highly sophisticated craft. This kit contains everything needed to diagnose and repair one. Therefore, this kit is huge.

Starfighter technology is ever changing. These kits change radically from one age to the next.

15.4 PRICE LIST

This chart gives the prices of the items listed in this section. Below is a list of the necessary definitions.

Item: These are the specific items to be purchased. After each name is a one letter code, in parenthesis, to show whether the item is classified as (N)ormal, (P)rofessional, or (M)ilitary.

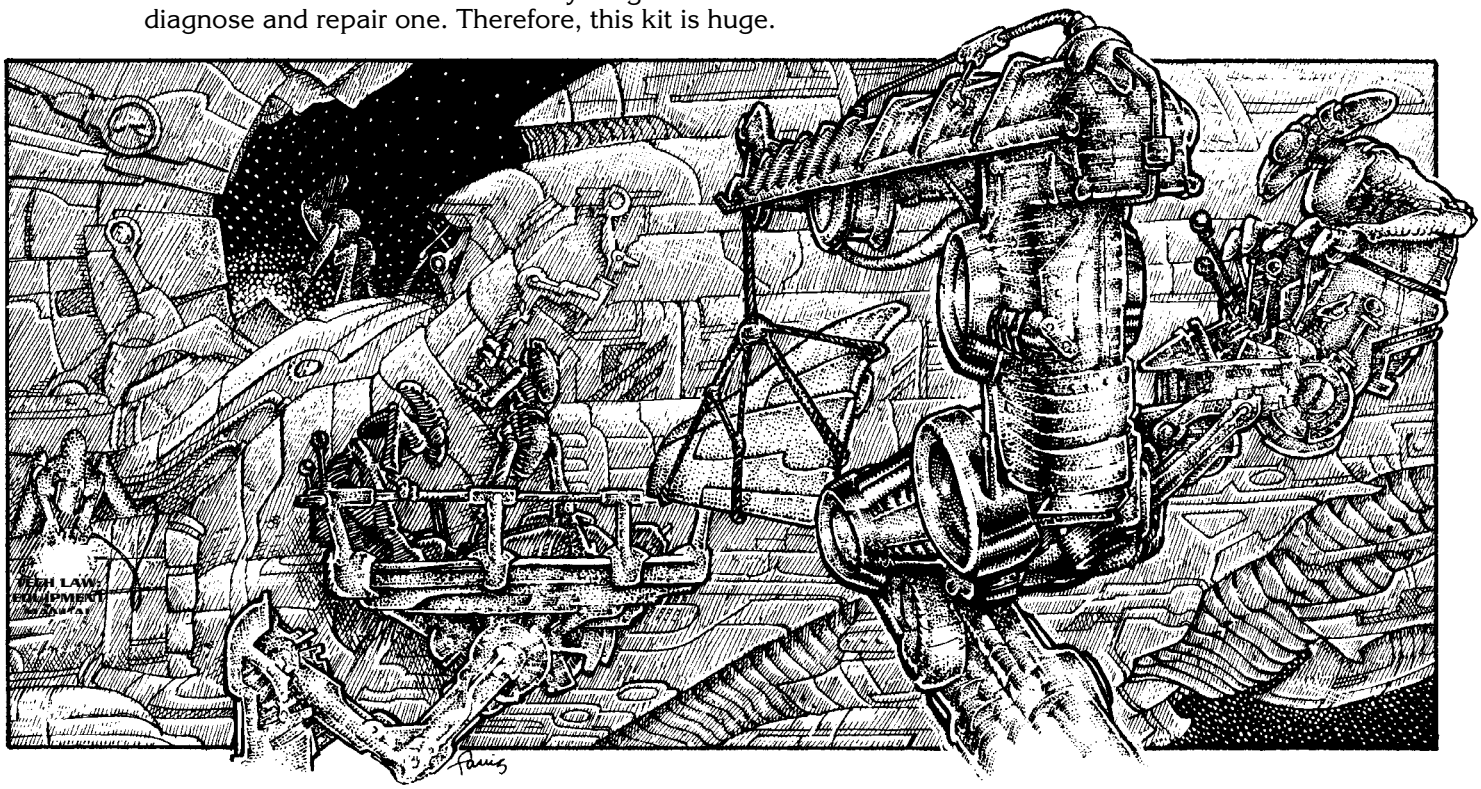
Weight: The item's weight, in kilograms. Remember this is reduced to ten percent, except where noted otherwise, in subsequent tech levels.

Cost: The cost of the item.

TOOLS TABLE EM-15.1

Item	Tech Level	Weight	Cost
AFV Tool Kit* (M)	13	8	1.5k
Basic Tool Kit* (N)	15	5	800
Fire Extinguisher* (N)	17	1	50
Flashlight (N)	13	.5	50
Grapnel Gun (P)	17	1	200
Heavy Torch (N)	17	10	2.5k
Infra-Plate (N)	18	1	2k
Laser Torch (N)	17	5	1.5k
Light Rod (N)	23	.25	100k
Mini Tool Kit (N)	11	3	400
Piton Gun (N)	16	2	500
Portable Machine Shop (P)	17	10,000	100K
Spacecraft Tool Kit* (P)	15	8	2K
Starfighter Tool Kit* (M)	20	16	5K

* — These items do not drop in size and price by tech level.



PART IV
APPLIED TECHNOLOGY

"An educated man should know everything about something and something about everything."
— C.V. Wedgewood

It isn't enough to have gadgets and technological marvels in your game. Technology is more than just a collection of toys. Technology must be maintained and developed. It must be used and applied.

Many of the problems of society are solved through the application of technology, but technology doesn't apply itself. Technology needs skilled scientists, technicians and technophiles to put it into effect.

This part contains the rules necessary to use and develop technology. It also contains rules for repairing and maintaining technology

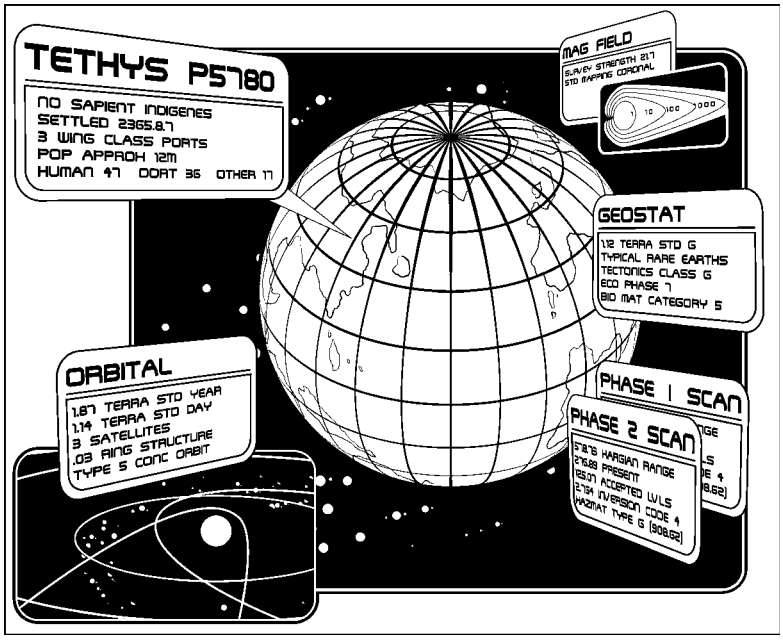
INTERLUDE FOUR

The freighter swam through a maze of electromagnetic and quantum signals. Quay bent over his console, studying the esoteric world of electronic countermeasures.

The light of atomic fire flashed through the ship's canopy, casting strange shadows across the console. Another ship down. Another friend.

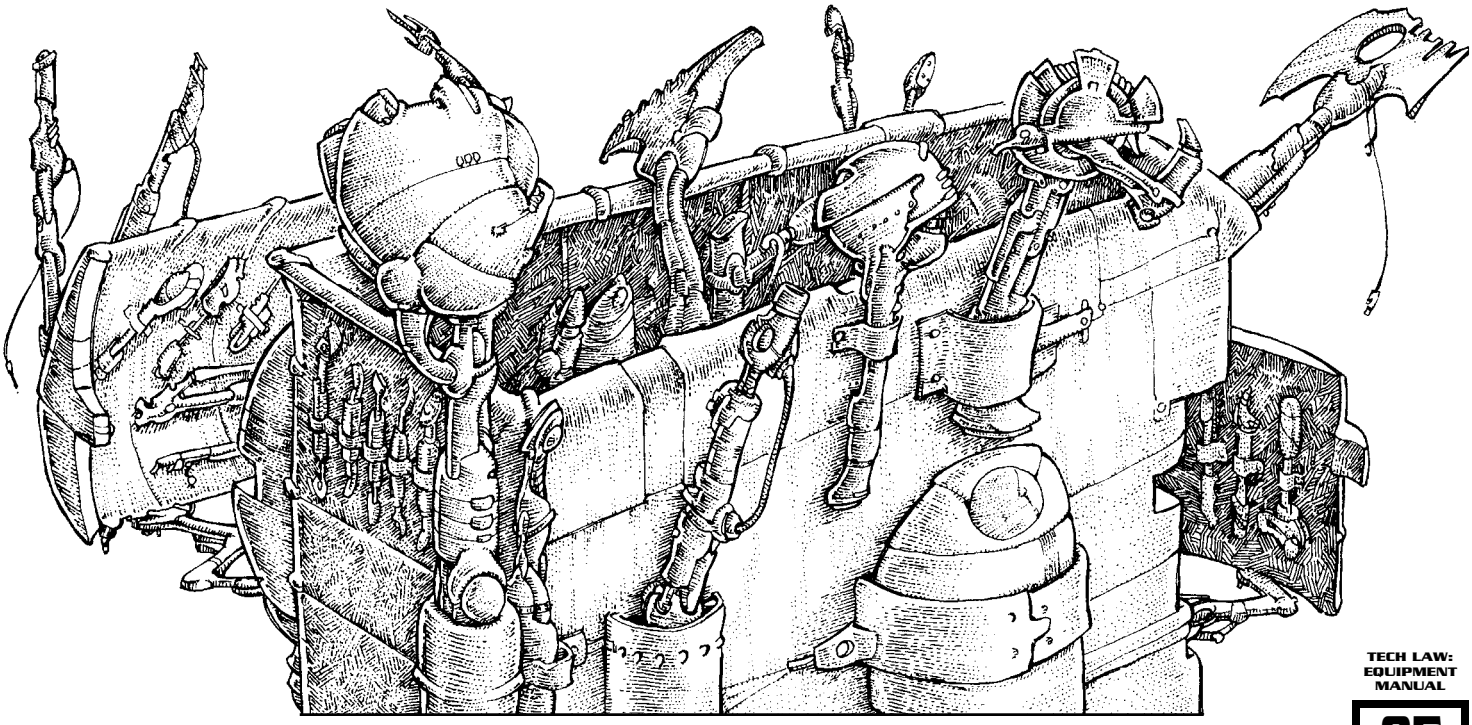
The battle had been raging for over ten minutes now. The captain was flying the ship like his life depended on it, and it probably did, but the real task fell on Quay.

An alarm went off as one of the enemy fighters, spotting the freighter, started to lock on with its targeting sensors. Quay's fingers danced across the console, breaking the lock.



The fighter shifted its sensor frequency, and Quay moved to counter. The fighter shifted its tactics again, and again Quay countered.

In the background, Quay heard someone say something, but he was too far gone to notice. He was in his element now, dancing a dance on spatial, electromagnetic, and quantum levels. It was a complicated game, more subtle than chess, more involved than Go. It was the ultimate game of cat and mouse, and the one area where Quay shined above all.

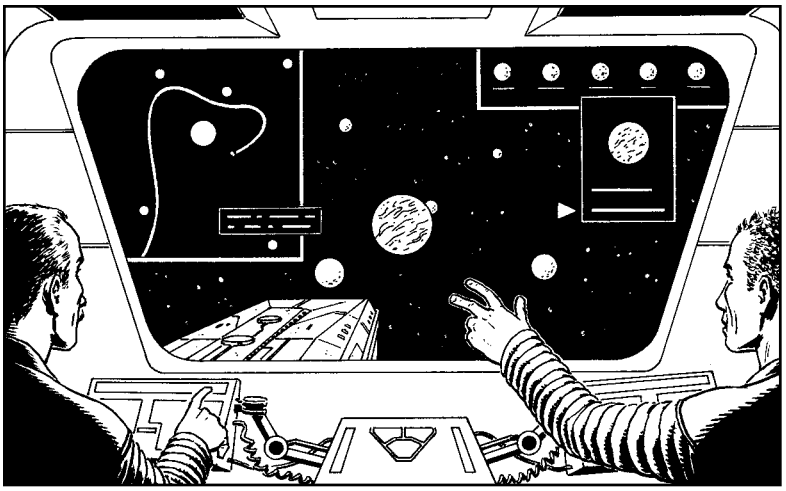


16.0 :: USING EQUIPMENT

"Handle with care."
— Unknown

Many activities in a SF game involve the use of high-tech equipment. Most of them are covered by the appropriate skill, like firing a gun with the appropriate Weapon • 1H Firearms skill.

Some skills require more expanded coverage. For instance, using scanners is a very broad topic. Other topics are covered here as well, including electronic warfare, breakage, and repair.



16.1 MAN-PORTABLE SCANNERS

This section deals solely with the use of personal scanners. A tactical scanner scans in a 360° arc. Any other type of scanner scans in a 10° arc.

A character may perform a sensor sweep, playing its scanning area over a full 360° arc. This takes a full minute, and the character performing the scan can only note general data. More specific information can be looked for, at a -30 penalty.

A character can make a quick sweep, with a penalty proportional to amount of time saved. For instance, performing a 45 second sweep (0.75 minutes) incurs a -25 penalty (25% of -100). Performing a 15 second sweep (0.25 minutes), incurs a -75 penalty (75% of -100).

To perform a scan, the character simply makes a Sensor Analysis (Technical/Trade • General) static maneuver. Add any modifiers for range or difficulty of the scan.

16.2 SECURITY

Many gaming groups persist in various and sundry illicit activities. Therefore some treatment of security is in order, to aid in the handling of such activities.

Security

Certain areas have security levels. These are discussed in Section 5.4, p. 29. This penalty is applied to any attempts to commit illegal acts within that area.

Note that this penalty only applies to activities which do not have a more appropriate penalty. For instance, hiding in a high security level would be penalized by the security level, because of cameras, motion sensors, etc. Picking a lock, on the other hand, would be penalized by the quality of the lock, not by the security level.

Electronic Locks

Electronic locks are unlike mechanical lock in that a thief will have a great deal of trouble picking one without knowledge of the lock itself. If a character has no knowledge of the lock's construction, then a -100 penalty is applied to any bypass attempt. This penalty can be reduced in several ways:

1) They can perform a scan using a repair scanner. This will give the thief the appropriate circuit diagrams to run a bypass. Subtract 100 from the result of the scan attempt, and apply that as a positive modifier to the bypass attempt.
2) The thief can attempt an appropriate Lore • Technical skill to recall the circuit diagram. Subtract 100 from the result of the Lore attempt, and apply that as a positive modifier to the bypass attempt.
3) Naturally, the character could carry a database containing common electronic lock circuit diagrams. This would serve as well, assuming the lock he was trying to disarm was covered by the database. If he has the appropriate diagram on file, negate the penalty entirely. The GM may rule that the character has a similiar diagram that partially negates the penalty.

Note that the penalty for lack of knowledge cannot become a bonus. That is, a scan result of 215 would reduce the penalty to -0, not +15. If a character receives proper data on the lock, then he can run a bypass. This requires a Security Bypass static maneuver (Subterfuge • Mechanical). The only modifiers are situational (running a bypass in a hurricane) and the lock's complexity (Routine, Light, Absurd, etc.).

If the character is guessing at the lock's construction, then a -100 penalty is applied to any bypass attempts. This can be reduced, as described above, by partial information on the lock.

All this assumes the character possesses a proper bypass kit. If the character attempts to improvise, then the GM should provide an appropriate penalty. This could be anything from -10 for good electronics tools to -100 for a length of wire and a butter knife.

Mechanical Contrivances

This covers everything from mechanical locks which require keys, to tumbler locks, to good old-fashioned booby traps. These are very rare in most science fiction games. If they are encountered, then the appropriate skills will be required. Security Bypass may not be used.

16.3 BREAKAGE

Occasionally, a piece of equipment will take a hard blow. When this happens, breakage may occur. The GM can use the rules here to help determine the results.

Falling

When a character takes a fall and the GM determines that a piece of equipment might be damaged, then the item makes an equipment mishandling check. Roll on the Equipment Mishandling Table.

Standard equipment receives a +50 bonus. Fragile equipment, such as scanners, receive a +0 bonus. A -5 penalty is applied for every meter dropped.

Criticals

Sometimes an item is damaged by a critical, either a critical to the item's owner or a critical to the item itself. In these cases, the GM should roll on the Equipment Mishandling Table. In addition, a penalty is applied to the item, to represent the power of the blow. Items not of a delicate nature receive a +50 bonus.

A ..... -10
B ..... -20
C ..... -30
D ..... -40
E ..... -50

Physical Blows

Sometimes an item takes a blow from a general event, such as a strike or other accident, that is not covered by the rules above. In these cases the GM may wish to make a straight roll on the Equipment Mishandling Table, adding +50 if the item is not delicate.

EQUIPMENT MISHANDLING TABLE EM-16.1

-29 & lower
Adding injury to insult, the device delivers one last "A" Electricy critical (or another critical type, as the GM chooses) and then passes beyond the veil . . .

(-28) – (-21)
You're not going to repair this one. With an almost musical tinkling sound, the item shatters into a million, glittering pieces. Pretty.

-20
The item seems perfectly fine, then quietly bursts into flame.

(-19) – 5
The item works fine, as long as you allow it to ground out through you. You may not wear rubber soles while using this item. You are -10 to all activities while using it because of a general "oogy" feeling you get from being a low voltage conductor.

6 – 20
Well . . . it works. -50 to all usage checks.

21 – 50
All but one function is broken. That function causes the device to emit an ultrasonic howl which attracts all dogs within two city blocks.

51 – 79
Half the time it works. One quarter of the time it doesn't. One quarter of the time it works, but the results are all subtly flawed. Hope this isn't an ammunition press.

UM 66
It works beautifully. Unfortunately, it emits a low buzzing sound whenever used. This sound caries remarkably well, and can be heard for up to 50 meters.

80
The device works fine as long as you squeeze it firmly between both hands. This causes a -30 to -60 penalty, as the GM sees fit.

81 – 99
It works okay, but gives a -30 to all checks, due to slightly imprecise output.

UM 100
Not even a scratch. In fact, it doesn't have that weird vibration anymore.

100 – 109
When you first turn this device on, it locks up and emits a loud, annoying beep until you hit the F8 key. After that, it functions normally.

110
It functions normally, but every time you turn it on from now on, roll percentile dice. On a roll of 01, it commits ritual suicide.

111 – 119
Fully functional, but all operations are now at -10 until recalibrated.

120 & above
After a good technician's slap, it begins working perfectly. You've got the knack, baby.

17.0 :: CONSTRUCTION AND DESIGN

"It is said that a man's life can be measured by the dreams he fulfills."
— Mr. Roarke, Fantasy Island

Technology does not exist in a vacuum. It must be constructed. It is possible that characters will go through their entire lives without building anything, but there will always be those characters who love to create, and a GM must be ready for this when it arises.

The heart of science fiction is technology, and that technology must come from somewhere. The science fiction world belongs to the engineer. It is his vision which molds the future.

17.1 USING THE CONSTRUCTION/ DESIGN TABLE

Building a device involves two major steps: design and construction. Design involves all the initial design and experimentation stages. Construction involves the building of the actual prototype.

After the GM assigns a difficulty, the engineer must make design and construction checks on the Construction/Design Table EM-17.2. During a design check, the first number represents the percentage of the design that is completed. During a construction check, this number represents the chance that the device functions properly. The second number is the amount of man-hours it takes to build the device.

Failure

When constructing a device, it is possible that the character will fail. It is possible to make a second attempt, but each successive attempt moves the difficulty one column to the right. The percentage chance of success is cumulative.

17.1.1 ASSIGNING A DIFFICULTY

In most situations, the difficulty for designing and the difficulty for constructing an item are the same, but it is not inconceivable that these two numbers could be different. If so, then the GM must make any judgement calls necessary.

The GM must, of course, decide on what all difficulties should be. Below are some guidelines for the GM to follow.

Routine: This difficulty is for designing simple, everyday devices, such as a piece of furniture. It is also the difficulty for assembling simple, modular devices, such as those which might be purchased by a consumer. Some assembly required.

Easy: Simple electrical devices and more complicated machines are Easy. Construction generally involves assembling prefabricated parts. Putting together a household appliance such as a toaster is an Easy maneuver.

Moderate: This is for very complicated, yet purely mechanical machines and any simple electronic devices. Construction tasks will generally involve machining or soldering parts, or the use of sophisticated tools. Building a bypass kit or a remote control is a Moderate maneuver.

Hard: These tasks often involve circuits, machined parts with low error tolerances, or drug design. This is the lowest level at which an original design can be created. A pocket calculator or robotic interface is a Hard maneuver.

Complex: These tasks would involve cloning, replicant creation, or simple microorganism work. Construction generally requires an elaborate lab and even many of the materials must be manufactured. This is the lowest level for simple molecutronics. Mad scientists begin their careers with Complex projects.

Very Complex: This is for normal molecutronics, untested genetic manipulation, and totally new devices. These constructions require specialized labs for each level of construction.

Absurd: This is for the most sophisticated devices. Sapient molecutronics, new starship designs, and devices involving experimental fields of research are all Absurd maneuvers. Without proper facilities, easier projects can become Absurd maneuvers.

17.1.2 DESIGN MANEUVER

Once the GM and the player have thoroughly discussed the device, and the GM has assigned a difficulty, a design maneuver must be made. The player makes an appropriate Engineering maneuver and compares it with the appropriate column on the Construction/Design Table.

If the result is greater than or equal to 100%, then the research is finished. If not, then the result is the percentage of the task that is completed. Subsequent rolls are made and their results are summed until a total of 100% is achieved.

Some objects require different design checks involving different skills. In these cases, a separate set of checks must be made with each skill until the object is completely designed. The component which required the most checks is used for determining the amount of time taken.

DESIGN PERIOD TABLE EM-17.1

Difficulty	Period
Routine	Five Minutes
Easy	One Hour
Moderate	Six Hours
Hard	One Day
Complex	One Week
Very Complex	One Month
Absurd	One Year

Each design takes time. The amount of time depends on the amount of checks the character must make and the difficulty of the task. The Design Period Table shows the time that each design maneuver takes.

17.1.3 CONSTRUCTION MANEUVER

Once the device has been designed, a working prototype must be constructed to determine whether or not the design is viable.

The character makes an appropriate Engineering maneuver. If more than one skill is appropriate, a maneuver must be made for each skill. The lowest result is compared to the Construction/DesignTable.

The result determined by the chart will produce two numbers. The first is the chance that the item works. The second is the amount of man-hours the construction took.

If the result is a failure (in the case of composite items involving many different checks, the GM should consider any chance under 100% as an automatic failure), then a second roll may be made, but the difficulty is increased by one. The man-hours are spent, and the percentage is added to the chance of the device working.

All time results are given in man-hours. This can be divided up among multiple engineers.

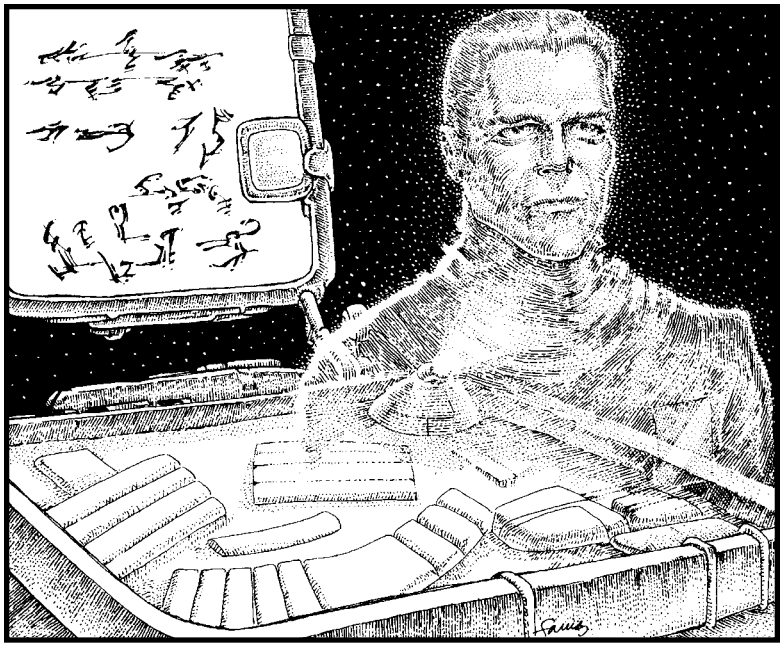
Quirks

Alpha designs rarely run perfectly. In fact, initial designs are usually plagued with bugs.

When the design is created with a single design maneuver which resulted in more than 100%, the design has no quirks. Otherwise, the design has a number of quirks equal to number of design rolls made.

It is up to the GM to assign these quirks. As a general rule, each quirk assigned should be about twice as bad as the one before that.

Example: *Rick's character is an engineer. He is designing a gravbike. The GM assigns it a Very Complex difficulty. He makes three rolls before he finally achieves a total of 100%. The gravbike will have three quirks. The first one, the GM decides that the fuse on the horn will blow if ever the horn, the turn signal, and the high beam lights are used at the same time. For the second quirk, the GM decides that the bike vibrates in an annoying fashion whenever braking. The third quirk is that the gravbike also vibrates whenever it exceeds 90% maximum speed, imparting -10 penalty while traveling at these speeds.*



Forced Redesign

Often the quirks overwhelm a design, and the design becomes useless. This is often after the third or forth quirk. When a designer goes back to the drawing board, they make a new set of design maneuvers and construction maneuvers.

This generally takes place in phases. First, the designer makes a new set of design maneuvers. The number of quirks in this design are one less than the number determined by the amount of design roles. These quirks are not necessarily the same quirks as those that plagued the first design.

To determine what the new quirks are, first compare the current number to the original number. If the current design has less quirks, the engineer can determine which quirks are dropped first, as these are the problems upon which he concentrated during the redesign.

Roll a d100 for each remaining quirk. If the result is 01-25, then the quirk is replaced by a new quirk, of lesser severity. If the result is 26-75, then the quirk remains. If the result is 76-100, then the quirk is replaced by one of increased severity. It is up to the GM to determine the effects of each of the quirks.

The engineer must then build the thing. This consists of taking the original prototype and altering it to meet the new specifications. This requires only 10% of the required time and materials.

This process can be repeated multiple times. Every successive redesign reduces the number of quirks by one, until an acceptable prototype is created.

CONSTRUCTION / DESIGN TABLE EM-17.2				
ROLL	**Routine**	**Easy**	**Moderate**	**Hard**
-201	Moderate malfunction. Engineer takes an 'A' Electricy critical.	Severe malfunction. Engineer takes a 'B' Electricy critical.	Severe malfunction. Engineer takes a 'C' Electricy critical.	Severe malfunction. Engineer takes a 'D' Electricy critical.
(-200) – (-151)	Light equipment malfunction.	Moderate equipment malfunction.	Moderate equipment malfunction.	Moderate equipment malfunction.
(-150) – (-101)	Routine equipment malfunction.	Routine equipment malfunction.	Routine malfunction to equipment.	Routine equipment malfunction.
(-100) – (-51)	5%. 5 minutes.	5%. 40 minutes.	Upgrade to HARD. Waste one hour.	Upgrade to COMPLEX. Waste 100 hours.
(-50) – (-26)	10%. 12 rounds.	10%. 40 minutes.	5%. 4 hours.	5%. 80 hours.
(-25) – 0	20%. 6 rounds.	10%. 30 minutes.	10%. 2 hours.	10%. 60 hours.
01 - 20	40%. 6 rounds.	30%. 30 minutes.	20%. 1 hour.	20%. 50 hours.
21 – 40	60%. 6 rounds.	50%. 30 minutes.	30%. 50 minutes.	25%. 40 hours.
41 – 55	80%. 6 rounds.	70%. 20 minutes.	40%. 50 minutes.	30%. 40 hours.
56 – 65	90%. 6 rounds.	95%. 20 minutes.	50%. 40 minutes	35%. 30 hours.
66 – 75	95%. 6 rounds.	95%. 10 minutes.	60%. 40 minutes.	40%. 30 hours.
76 – 85	99%. 6 rounds.	99%. 10 minutes.	70%. 35 minutes.	45%. 30 hours.
86 – 95	100%. 6 rounds.	99%. 5 minutes.	70%. 30 minutes.	50%. 30 hours.
96 – 105	100%. 6 rounds.	100%. 12 rounds.	95%. 20 minutes.	60%. 30 hours.
106 – 115	110%. 5 rounds.	100%. 6 rounds.	98%. 20 minutes.	65%. 25 hours.
116 – 125	120%. 4 rounds.	120%. 6 rounds.	99%. 20 minutes.	70%. 25 hours.
126 – 135	120%. 4 rounds.	120%. 5 rounds.	100%. 20 minutes.	80%. 25 hours.
136 – 145	130%. 3 rounds.	130%. 5 rounds.	100%. 20 minutes.	90%. 25 hours.
146 – 155	130%. 3 rounds.	130%. 5 rounds.	110%. 15 minutes.	95%. 25 hours.
156 – 165	140%. 2 rounds.	140%. 5 rounds.	110%. 10 minutes.	100%. 20 hours.
166 – 185	150%. 1 round.	140%. 4 rounds.	120%. 10 minutes.	100%. 16 hours.
186 – 225	150%. 1 round.	150%. 4 rounds.	120%. 9 minutes.	110%. 12 hours.
226 – 275	150%. 1 round.	150%. 3 rounds.	130%. 8 minutes.	110%. 8 hours.
276+	150%. 1 round.	150%. 2 rounds.	130%. 7 minutes.	120%. 4 hours.

CONSTRUCTION / DESIGN TABLE EM-17.2 (Continued)

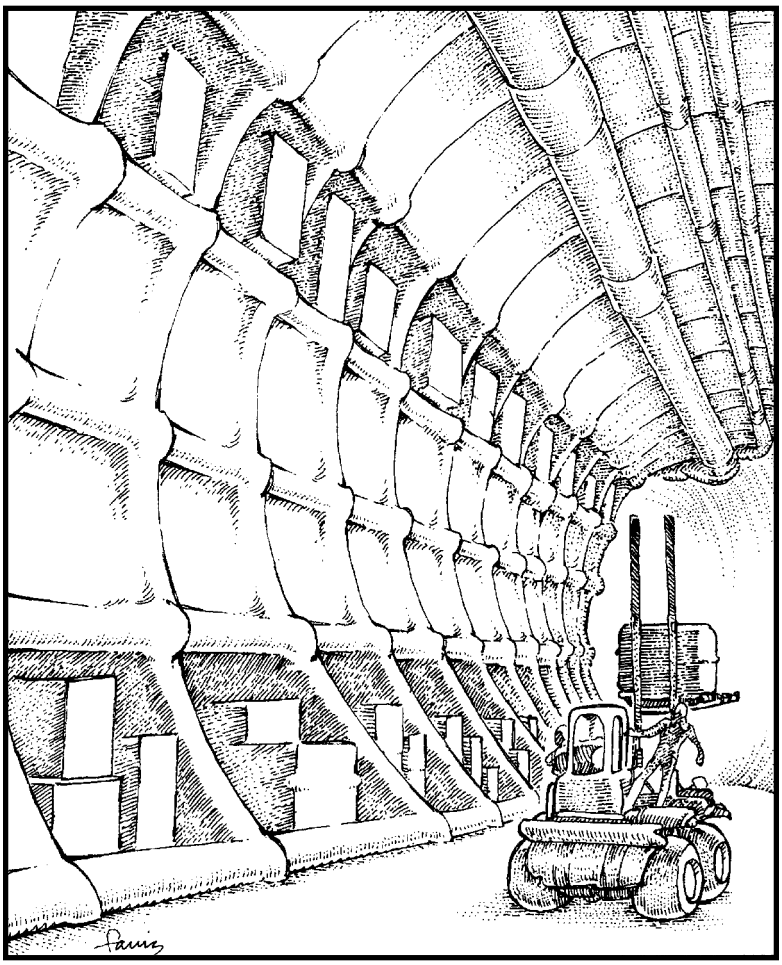
Complex	Very Complex	Absurd	Roll
Very Severe malfunction. Engineer takes an 'E' Electricy critical.	Take an 'E' Electricy and an 'A' Krush critical. 3,750 hours wasted. 100% of materials destroyed.	Physically impossible. Take an 'E' Electricy and a 'B' Krush critical for spite.	-201
Severe equipment malfunction.	2,500 hours wasted. 100% of all materials destroyed.	Physically impossible.	(-200) – (-151)
50 hours wasted. 50% of materials (not tools) destroyed.	No progress. 1,250 hours wasted. 100% of materials destroyed.	All materials destroyed. 10,000 hours wasted. Tough break.	(-150) – (-101)
10 hours lost. 20% of materials destroyed due to error.	Problem occurs, wasting 1,000 hours. 50% of materials destroyed.	8,000 hours wasted. 100% of all materials destroyed.	(-100) – (-51)
Upgrade to VERY COMPLEX. 350 hours wasted. 10% of materials destroyed.	750 hours wasted. 20% of materials destroyed.	5,000 hours wasted. 50% of all materials destroyed.	(-50) – (-26)
10%. 350 hours.	Upgrade to ABSURD. 500 hours wasted. 10% of materials destroyed.	2,000 hours wasted. 20% of all materials destroyed.	(-25) – 0
15%. 350 hours.	10%. 2,125 hours.	1,000 hours wasted. 10% of all materials destroyed.	01 - 20
15%. 300 hours.	15%. 2,075 hours.	5%. 20,000 hours.	21 – 40
20%. 300 hours.	20%. 2,000 hours.	5%. 15,000 hours.	41 – 55
25%. 250 hours.	30%. 2,000 hours.	5%. 10,000 hours.	56 – 65
25%. 250 hours.	30%. 1,950 hours.	6%. 10,000 hours.	66 – 75
30%. 250 hours.	35%. 1,875 hours.	7%. 10,000 hours.	76 – 85
40%. 250 hours.	35%. 1,800 hours.	8%. 10,000 hours.	86 – 95
40%. 200 hours.	35%. 1,750 hours.	9%. 10,000 hours.	96 – 105
40%. 200 hours.	40%. 1,725 hours.	10%. 8,750 hours.	106 – 115
45%. 200 hours.	40%. 1,600 hours.	10%. 8,500 hours.	116 – 125
50%. 200 hours.	45%. 1,500 hours.	10%. 7,250 hours.	126 – 135
50%. 125 hours.	50%. 1,425 hours.	10%. 7,000 hours.	136 – 145
50%. 110 hours.	50%. 1,325 hours.	10%. 6,750 hours.	146 – 155
60%. 100 hours.	55%. 1,275 hours.	10%. 6,500 hours.	156 – 165
60%. 100 hours.	60%. 1,250 hours.	10%. 6,250 hours.	166 – 185
65%. 80 hours.	60%. 1,225 hours.	10%. 6,000 hours.	186 – 225
70%. 60 hours.	65%. 1,200 hours.	10%. 5,750 hours.	226 – 275
75%. 40 hours.	70%. 1,175 hours.	10%. 5,500 hours.	276+

17.1.4 EFFECTS OF RESEARCH AND DEVELOPMENT

Most R&D departments use computer modeling to weed out quirks before hand. This adds a bonus to the design check of +5 per tech level above 16.

The R&D team creates a design, then before building a prototype, they build a computer model. They then redesign the device and computer model it again, repeating the process until they feel they have a viable design. Since the computer aides the design process as well as the modeling, this takes no extra time.

This of course requires a more extended team, involving a mainframe, computer programmers, and various experts to achieve.



17.1.4 COST

The basic costs of designing a device are the salaries of the technicians, raw materials, supplies, and work space. As a rough estimate, assume that the combination of these expenses cause each prototype to cost 100 times the price of a final, finished product. e.g., The final cost to design and produce a prototype for a new type of flashlight is 50 x 100 = 5000 credits.

The final cost for all development tends to be a sum of the total costs to design and build all of the prototypes. Extended delays may increase costs as the salaries of the technicians begin to accumulate.

17.2 MACHINES

Machines are the easy devices to build. Generally, all that is really needed is a machine shop. Most electrical needs are met by a machine shop, but electronics might require special needs, such as circuit etchers, computers, and electronic diagnostic devices. Generally speaking, any but the simplest machines requires some sort of workshop.

17.3 WEAPONS/SMALL DEVICES

These devices generally require little in the way of work space, even the complicated ones. Typically, their size reduces the amount of space they will need, and the primary restraint is in the various different types of equipment necessary to build the device.

17.4 LARGER CONSTRUCTS

Larger constructs take even more space. This includes vehicles, starfighters, factories, and the like. Many of these are less complicated than androids, but their sheer size demands a lot of room.

Most large constructs intended for space cannot even be built within atmosphere, as there would be no way to lift it out of the gravity well.

With items like this, the GM must use his or her best judgement. At the very least, these would take a factory sized installation. At worst, it would take an entire orbital dry dock facility.

17.5 ORGANISMS

There are many different types of organisms that must be discussed. From the discovery of animal husbandry, humanity has harvested and designed organisms to suit its needs. The three main types are covered below.

Microorganisms

These serve many uses. Some are used as biological weapons. Some are used for medicinal purposes. Some grant some symbiotic benefit.

Microorganisms take comparatively little space to create. Most of the machinery involved will fit in a large room. Many microorganism labs exist in a civilized society. Some are used as weapons development facilities. Some are used for the medical industry. Both have all sorts of safety features, in case a bug mutates.

Most microorganisms are less complicated than many other biological undertakings. Consider them moderate for most construction tasks.

Cloning

Cloning facilities tend to be much more scaled down than other facilities. This is mainly because no R&D is being done there. Clones are merely copies. No real genetic design is needed to make a clone.

Alternant Replicant

These are much like clones. The difference is that the replicant's genetic signature is completely engineered. Because of this, replicant R&D facilities are very large, even though much of the work is done in computer simulation. These facilities are still often the size of small universities.

18.0 :: MALFUNCTION AND REPAIR

"Captain, I canna guarantee she'll hold together!"
— A Miracle Worker

Entropy increases. It's not just an annoying fact of life, it's a fundamental law of the universe. Even with the invention of zero fault technology, things break down. The only difference is that when technology becomes advanced enough, it is possible to predict when something will break down, and give it an operational life span.

What does this mean in a SF game?

It means that things will break. They'll be shot to hell. They'll be incinerated, folded, stapled, perforated, scratched, prodded, probed, used as a weapon and dropped from very high places. As a general rule, player characters are harder on their equipment than any other people in the universe.

It's as fundamental as the law of entropy.

18.1 WHEN MALFUNCTIONS OCCUR

Malfunctions can occur for a variety of reasons. The main ones are listed below.

A Poor Maneuver/Use Roll

Often during play, a maneuver or usage roll will occur that indicates a piece of equipment malfunctions. This is generally because of a fumble or extremely low roll.

During Normal Use

This situation is most common in the case of vehicles. Vehicles don't generally receive results which indicate a simple malfunction. Therefore, vehicles should have a chance of breaking down through their normal usage. This depends upon the type of vehicle.

18.2 WEAPON MALFUNCTIONS

Occasionally a character, be they a PC or an NPC, will experience a weapon malfunction. This occurs whenever a breakage check or fumble indicates a problem.

Weapons are much more high-tech in most SF games than in the modern era. This makes them more complicated and thus more susceptible to break down. As an alternative to the breakage rules indicated in the *Weapons Law* books, the following rules can be used.

Whenever a weapon malfunctions, roll to determine the severity of the malfunction:

Roll	Severity	Modifier
1-5	Routine	-35
6	Light	-20
7	Moderate	+0
8	Severe	+30
9	Very Severe	+50
10	Extremely Severe	+70

Next, roll on the Weapon Malfunction Table EM-18.2, adding the modifier and comparing the result to the column appropriate for the weapon. Apply the appropriate results.

18.3 REPAIRS

So you broke it. How do you fix it?

David Brin's *Startide Rising* was a book about a group of earthlings stranded on a world, trying to repair their ship, while entire nations warred overhead for the right to capture them.

Repair work can be more than integral to the story. It can be the story.

The first thing that must be determined is how bad the damage or malfunction is. Sometimes, as with the vehicle and weapon rules listed above, the severity is neatly determined while generating the malfunction. Other times, the GM must use common sense. One way or the other, a severity must be determined.

Once the severity has been determined, the technician can begin making repairs. He makes a static maneuver, adding his appropriate technical skill. The result is compared to the Malfunction/Repair Table EM-18.3 to determine the result.

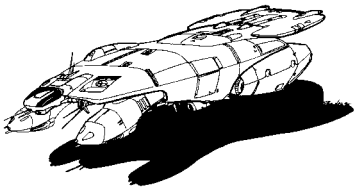
There will be times when other characters wish to help. It is up to the GM to decide how many people can effectively work on a repair task. Those the GM determines can help may add their appropriate skill and category ranks to the head technician's static maneuver roll, as a straight bonus. All technicians involved must have access to tools appropriate to the task (often they can share).

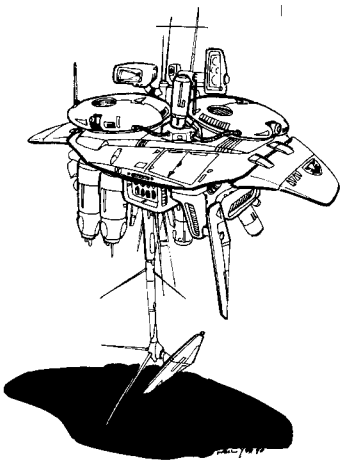
There are two types of problems an item can have, damage and malfunctions. Damage is inflicted externally, whether by fire, flood, or fumble. A malfunction is an internal problem, caused by natural wear and tear. Maneuvers on the Malfunction/Repair Table often produce slightly different results depending on whether the device was damaged or merely malfunctioned. That is why the distinction is necessary.

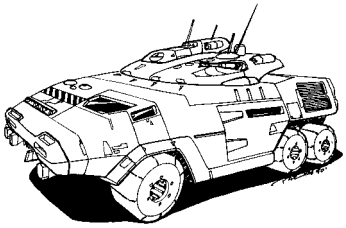
If the maneuver results in a Cost In Parts (CIP), then the indicated percentage of the item's original value must be paid for repair materials.

This seems simple enough for small items, but in a vehicle, it is difficult to judge what the individual cost of a system is. Therefore the Vehicle Malfunction Table EM-18.1 gives an area for each section. This is the cost of that vehicle system as indicated by a percentage of a vehicle's total value. This is then compared to the CIP percentage for the total cost.

Example: *Mike's Nighthawk blows its computer on the way to a very important battle (leaving Mike to run one of the bad guys during the ensuing battle). It is determined that this is a Very Severe malfunction in the main processing core. Afterwards, Gizmo's character decides to fix the fighter. His static maneuver results in 128, indicating 5 hours of repair time and a 10% CIP. The area of the computer is 10% of the ship's 47 million credit cost, or 4.7 million credits. The CIP (cost in parts) is therefore 470,000 credits. This is why only governments own fighter craft.*







VEHICLE MALFUNCTION TABLE EM-18.1

1st Roll	AREA	2nd Roll	SYSTEM
1-2	MECHANICAL (5%)	1	Environment: Lose atmosphere in 1-10 hours.
		2	Environment: Lose heating and cooling in 1-10 hours.
		3-5	Bulkhead/Airlock/Hanger frozen or malfunctioning.
		6	Landing gear inoperative.
		7-8	Internal Lighting out. Emergency lighting on.
		9	Running/Landing Lights out.
		10	Other System or GM choice.
3-5	ELECTRONIC (15%)	1	Helm Control (Main/Auxiliary).
		2	Navigation Control (Main/Auxiliary).
		3	Other Console.
		4	Other Console.
		5	Communications.
		6	Electronic Warfare.
		7-8	Sensors.
		9	Medical.
		10	Other System or GM choice.
6-7	COMPUTER (10%)	1	Deflector Shield Control.
		2-3	Sensor Analysis (now at -100).
		4	Computer Aided Astrogation.
		5-6	Memory Banks (Course plots/Archives).
		7	Autopilot.
		8	Sentient Functions/Diagnostics (Higher Brain Functions).
		9	Main Processing Core (All of the above are out).
		10	Other System or GM Choice.
8-9	POWER SYSTEMS (60%)	1	Sublight Drives.
		2	FTL Drives.
		3	Main Reactor/Axillary Reactor.
		4	Inertial Dampers.
		5-6	Deflector Shields.
		7	Artificial Gravity.
		8	Tractor Beams.
		9	Control Surfaces/Maneuver Drives.
		10	Other System or GM choice.
10	WEAPONS (10%)	1-2	Central Control.
		3	Central HUD.
		4	Tracking Control (Computer).
		5	Other System or GM choice.
		6	Weapon System.
		7	Weapon System.
		8	Weapon System.
		9	Weapon System.
		10	Weapon System.

Make a 3rd Roll Separately for Severity:

3rd Roll	Severity
1-5	Routine (50% chance of a Moderate malfunction for each hour of use or each time it is stressed.)
6	Light (System at 75% normal capability.)
7	Moderate (System a 50% of normal capability. If multiple systems exist, one system has failed.)
8	Severe (System Inoperative until repaired or upgraded.)
9	Very Severe (System Inoperative until repaired or upgraded.)
10	Extremely Severe (Inoperative until repaired or upgraded. May be irreplaceable without spacedock.)

WEAPON MALFUNCTION TABLE EM-18.2

Energy Weapons	Projectile Weapons And Firearms	Support Wp., Grenades, Demolitions	Powered Melee Weapons	ROLL
Weapon cooling. Lose d5 rounds.	Safety on. Alertness, Situational Awareness (Combat) or Weapon Technology maneuver to figure out what's wrong.	Sights are off. -20 until sighted in.	Temporary power drain. Weapon "blinks" this round.	**Less than 1**
In-line fuse blows. Final shot at -10.	Misfire. Better sit this one out.	Weak blast. Criticals reduced 1 severity.	Minor power hiccup. Attack at -20.	**01 – 30**
Weapon grounds. Energy cell and internal wiring damaged.	Sights are off. -15 until sighted in.	Firing glitch. -20.	Weapon loses focus. -40 to all attacks.	**31 – 50**
Focusing array off. Weapon at -25.	Weapon jammed hard. Routine Weapon Technology maneuver to fix.	Detonator problem. Explosion occurs d20 seconds late.	Regulator flaw. Weapon at -30 until fixed.	**51 – 65**
Weapon blows. 50 hits. Hand useless until regeneration therapy.	Slide blows off weapon. 20 hits. Your eyes are flash burned and will take d10 days before vision returns.	Explodes in launcher. +50 point blank attack. You're deaf for d10 days.	Weapon flashes, fusing itself to your hand. 30 hits.	**UM 66**
Fire control stuck. (50% chance it's stuck on.) If on, take one attack at +50.	Weapon jams and is damaged. Reliability halved.	Safety is stuck on.	Power surge grants a +10 to this attack. Then the weapon goes dead.	**66 – 75**
Surge damages focal array. Last shot at +15.	Rifling flaw causes -50 penalty.	Hang fire. Round detonates in d10 rounds.	Major power malfunction. -50 to all attacks. I think it's grounding out.	**76 – 90**
Burst of sparks. Reliability now divided by three.	Gun overheats. If this is an autoloader, it must cool for d10 rounds.	That round never did arm.	Your hand twitches as the weapon grounds through you. It still works, but its reliability just dropped to one third.	**91 – 100**
Power surge. You take a +20 attack. No quickness bonus to your DB.	Ejector malfunction. 10% chance each round jams (unless caseless, where the chance drops to 5%).	Missile explodes a d20 meters from you.	Major surge. This attack is at +30, then the power dies.	**101 – 120**
Discharges in your face. How does a +40 attack sound (no Qu DB)?	Pin malfunction. 50% of all shots misfire.	Fire in the hole! Take a point blank +50 attack.	As above, but take a 'C' Electricy critical for spite.	**121 – 150**
Weapon explodes. If you survive the +100 attack (no Qu DB), it's time to go shopping.	Blowback. You are blind for a d10 rounds. There's a 10% chance it's permanent.	What was that timer set for? Take a +100 point blank attack, and next time, be more careful.	As above, but the critical is an 'E'.	**151 & above**

MALFUNCTION/REPAIR TABLE EM-18.3

ROLL	Routine (1-5)	Light (6)	Moderate (7)
-201	Malfunction: becomes damaged, severity becomes Very Severe. Damage: severity becomes Extremely Severe. That was pathetic.	Malfunction: becomes damaged, severity is Very Severe. Damage: severity becomes Extremely Severe. What were you thinking?	You damage the system and upgrade the severity to Extremely Severe. Is it supposed to spark like that?
(-200) – (-151)	Sad job. Severity is increased to Very Severe after one round.	Severity increases to Very Severe after one round.	Severity increases to Very Severe after one round.
(-150) – (-101)	Severity increases to Severe after 4 rounds.	Severity increases to Severe after 5 rounds.	Severity increases to Extremely Severe after 1 min.
(-100) – (-51)	Severity becomes Moderate after 4 rounds.	Severity becomes Moderate after 6 rounds.	Severity becomes Very Severe after 2 minutes.
(-50) – (-26)	Severity becomes Light after 3 rounds.	20 minutes with 5% CIP. Otherwise, 30 minutes.	Severity becomes Severe after 1 minute.
(-25) – 0	You fumble with the device for 5 minutes before it begins working again.	10 minutes to repair unit. It operates at -25 with a Routine malfunction.	40 minutes to repair with 10% CIP. You cause a random malfunction.
01 – 20	3 minutes to repair.	8 minutes to repair.	Malfunction: repaired with no cost. Damage: 30 minutes to repair with 10% CIP.
21 – 40	2 minutes to repair.	5 minutes to repair. A Routine malfunction remains.	20 minutes to repair with 10% CIP.
41 – 55	1 minute to repair.	5 minutes to repair.	15 minutes to repair with 5% CIP. 25 minutes otherwise.
56 – 65	5 rounds to repair.	5 minutes to repair.	13 minutes to repair with 5% CIP. 25 minutes otherwise.
66 – 75	5 rounds to repair.	5 minutes to repair.	12 minutes to repair.
76 – 85	4 rounds to repair.	4 minutes to repair.	10 minutes to repair.
86 – 95	4 rounds to repair.	4 minutes to repair.	9 minutes to repair.
96 – 105	3 rounds to repair.	3 minutes to repair.	8 minutes to repair.
106 – 115	3 rounds to repair.	2 minutes to repair.	Malfunction: 6 min. to repair. Damage: 7 min. to repair.
116 – 125	2 rounds to repair.	2 minutes to repair.	You isolate 3 Routine malfunctions to repair unit. Start next round.
126 – 135	2 rounds to repair.	6 rounds to repair.	5 minutes to repair.
136 – 145	You may use equipment next round.	4 rounds to repair.	Unit at -25% in 3 minutes. Unit repaired in 5 minutes.
146 – 155	Unit ready next round.	3 rounds to repair.	Unit at -50% in 6 rounds. Unit repaired in 5 minutes.
156 – 165	Unit ready. You have half the round to act.	2 rounds to repair.	3 minutes to repair.
166 – 185	Quick adjustment. You have the full round to act.	1 round to repair.	2 minutes to repair.
186 – 225	THUMP. Wow. It worked.	Piece of cake. You have 1/2 the round to act.	6 rounds to repair.
226 – 275	There's nothing wrong with this.	You flip a breaker. You have the whole round to act.	3 rounds to repair.
276+	What problem?	Maybe it would work better if it was turned on.	1 round. You've got the knack.

MALFUNCTION/REPAIR TABLE EM-18.3 (Continued)

Severe (8)	Very Severe (9)	Extremely Severe (10)	ROLL
Maybe next time you shouldn't have used a hammer, huh? The system is a total loss.	Well that didn't work very well. The system is a total loss. Take an "A" crit of the GM's choosing, just for fun.	The system is destroyed, and in a fit of spite, it takes the whole ship with it. 100% crew casualties.	-201
You damaged it. It's now an Extremely Severe problem.	You blow the entire system. Smooth job.	System is destroyed, explosively if possible. 100% crew casualties.	(-200) – (-151)
Severity increases to Very Severe. Waste 10% CIP.	System is a write off after 2 hours of tinkering.	System destroyed, spectacularly. 1-100% of repair crew becomes casualties.	(-150) – (-101)
Severity becomes Very Severe after 6 minutes.	Severity becomes Extremely Severe after 1 hour.	2 members of the repair crew take a "D" critical.	(-100) – (-51)
3 hr. to repair with 10% CIP.	72 hr. to repair with 50% CIP.	1 member of the repair crew receives an appropriate "C" crit.	(-50) – (-26)
2 hr. to repair with 10% CIP.	48 hr. to repair with 50% CIP.	System receives second random malfunction.	(-25) – 0
Malfunction: 60 min. to repair with 10% CIP. Damage: 90 min. to repair with 10% CIP.	36 hr. to repair unit to 50% effectiveness. 48 hr. to fully repair. 50% CIP.	Repair may not be attempted until 2 Severe procedures are completed.	01 – 20
1 hour to repair with 10% CIP.	24 hr. to repair with 25% CIP.	200 hr. to repair with 50% CIP.	21 – 40
Malfunction: 1 hr., no cost. Damage: 1hr., costs 10% CIP.	24 hr. to repair with 25% CIP.	120 hr. to repair with 50% CIP.	41 – 55
13 minutes to repair with 5% CIP. 25 minutes otherwise.	Malfunction: 24 hr., no cost. Damage: 24 hr., 25% CIP. Smooth work.	110 hr. to repair to 50% effectiveness. 120 hr. to repair to full effectiveness.	56 – 65
Malfunction: 50 min., no cost. Damage: 50 min., 10% CIP.	Malfunction: 18 hr., no cost. Damage: 18 hr., 25% CIP.	110 hr. to repair with 50% CIP.	66 – 75
Malfunction: repair with two Light procedures. Damage: 45 min., 10% CIP.	15 hr. to repair with 10% CIP.	100 hr. to repair with 50% CIP.	76 – 85
40 minutes to repair with 5% CIP.	15 hr. to repair with 10% CIP.	Malfunction: 90 hr., 25% CIP. Damage: 90 hr., 50% CIP.	86 – 95
40 minutes to repair.	Malfunction: 13 hr., no cost. Damage: 13 hr., 25% CIP. Who's the miracle worker?	Repair reduced to 2 Severe procedures.	96 – 105
30 minutes to repair with 5% CIP. 40 minutes to repair otherwise.	10 hr. to repair to 50% capacity. 11 more hr. to repair fully. 10% CIP.	80 hr. to repair with 50% CIP.	106 – 115
30 minutes to repair.	8 hr. to repair. 10% CIP.	Malfunction: 70 hr., 25% CIP. Damage: 70 hr., 50% CIP.	116 – 125
25 minutes to repair.	5 hr. to repair. 10% CIP.	Malfunction: 60 hr., 25% CIP. Damage: 70 hr., 25% CIP.	126 – 135
20 minutes to repair.	Malfunction: downgrade to Severe. Damage: 5 hr. to repair with 10% CIP.	60 hr. to repair to 50% effectiveness. 70 more hr. to repair fully. 25% CIP.	136 – 145
Malfunction: repair with 3 Routine procedures. Damage: 20 min. to repair.	4 hr. to repair. 10% CIP.	50 hr. to repair with 25% CIP.	146 – 155
Downgrade severity to Moderate after 5 minutes.	3 hr. to repair. 10% CIP.	Repair reduced to 2 Moderate procedures.	156 – 165
10 minutes to repair.	Only 2 Light procedures will correct the problem.	40 hr. to repair with 25% CIP.	166 – 185
5 minutes to repair.	2 hr. to repair.	2 Moderate procedures will fix the problem.	186 – 225
4 minutes to repair.	1 hour to repair.	30 hr. and its done.	226 – 275
This is only a Routine problem.	2 Routine procedures and it will work.	2 Light procedures would fix this.	276+

Purgamentum init, exit purgamentum!
— Unknown Roman Abacus User

Appendix A-1 provides some optional equipment and weapon rules. Appendices A-2 and A-3 provide new critical tables and attack tables to use with equipment described in this product.

A-1.0 :: OPTIONAL RULES

This section contains optional rules a GM may wish to consider for use. Some of these rules make the game more complicated; others are simply different.

A-1.1 USING ARMS LAW AND WEAPON LAW

Arms Law and *Weapon Law* offer a wide range of armor and weapon possibilities. *Arms Law* contains 29 weapons, 13 natural attacks, and 20 primitive and natural armor types. *Weapon Law* contains 49 weapons, 20 primitive armor types, and 4 types of modern armor. In contrast, *Spacemaster* introduces 6 futuristic armor types, and includes only 7 natural armor types.

What if someone wants to use a rapier against an opponent in full combat armor? How do you resolve a blaster attack against someone in archaic plate mail?

This section presents some optional rules designed to integrate all of these books.

ARMOR CONVERSION CHART 1

Spacemaster Armor Type	Weapon Law Firearms	Arms Law 1	Arms Law 2
Armored Cloth:			
Flak Vest (I)	I	3	9(+10)¥
Extended Flak Vest (II)	II	4	10(+10)¥
Reinforced Flak Vest (III)	III	13	11(+10)¥
Reinforced Flak Armor (IV)	IV	16	12(+10)¥
Kinetic Armor:			
Vest (V)	I*	17	17(+10)§
Jacket (VI)	III*	18	18(+10)§
Body Armor (VII)	IV*	20	19(+10)§
Combat Armor:			
Torso (VIII)	17†	17	17(+50)§
Torso and Greaves (IX)	18†	18	18(+50)§
Full Combat Armor (X)	20†	20	20(+50)§

* If critical hits an armored location, it is ignored.

† If critical hits an armored location, and round is not armor piercing, it is ignored.

¥ Slash criticals that hit an armored location are resolved as Krush (if large) or Ballistic Impact (if small).

§ Slash and Puncture criticals that hit an armored location are resolved as Krush (if large) or ignored (if small).

ARMOR CONVERSION CHART 2

Arms Law Armor Type	Spacemaster Equivalent*
Robes (2)	1(-10)
Leather Jerkin (6)	4
Leather Coat (7)	4
Leather Breastplate (9)	I
L. B.plate & Greaves (10)	II
Chain Shirt (13)	III(-10)
Chain Shirt & Greaves (14)	IV(-10)
Full Chain (15)	VI(-10)
Chain Hauberk (16)	VII(-15)
Metal Breastplate (17)	V(-10)
M. B.plate & Greaves (18)	VI(-10)
Half Plate (19)	VII(-10)
Full Plate (20)	VII(-20)

* Use the indicated SM armor type for energy or firearm attacks against archaic armor. Numbers in parenthesis indicate a penalty to the defender's DB.

Using Weapon Law

Firearms can still be used against newer armors, even though the invention of kinetic armor rendered them nearly obsolete. Kinetic armor is far more effective against firearms than combat armor, which was designed to protect against energy weapons.

For firearm attacks against *Spacemaster* armor types, consult the Armor Conversion Chart 1. Look up the armor worn by the defender in the column on the left. For more details, see *Blaster Law*.

Using Arms Law

Ballistic cloth is very efficient at distributing force and resisting tears. It is therefore difficult for any attack other than a thrust to penetrate, and a thrust has got to be with a pretty sharp weapon. Kinetic armor, designed to resist high-velocity impacts, is less effective against primitive attacks. Combat armor, on the other hand, is nearly impervious to primitive and natural weaponry.

Two options are given below for handling melee attacks against modern armors.

Option 1: This option is, perhaps, less realistic, but it is less complex and easier to implement. Use the center column in the Armor Conversion Chart 1 to determine the primitive armor equivalent of *Spacemaster* armor types.

Option 2: This option sacrifices playability for realism. Use the third column to determine the primitive armor equivalent of *Spacemaster* armor types. A number in parenthesis indicates a bonus to the defender's DB due to the quality of the armor.

Using Spacemaster

If you want to use energy weapons against the archaic armor types found in *Arms Law* and *Weapons Law*, consult the Armor Conversion Chart 2. This system is rough, but it will do in a pinch. A more detailed conversion can be found in *Blaster Law*.

A-1.2 MELEE WEAPON QUALITY

Weapon quality varies as the tech level increases. Advances in metallurgy and design enable smiths to build weapons of high quality, but as new technology changes the face of combat, the need for high quality melee weapons decreases. For high-tech versions of primitive weapons (monoswords, crossbows and compound bows for instance) any bonuses due to modern design and materials are already calculated into the attack tables.

Primitive weapons can benefit from modern metallurgy. The shoddiest steel used by a modern smith would be considered high steel in a primitive culture. Most modern swords would be the equivalent of white or black alloy. However, modern swords are not designed as weapons of combat. Most weapons built today are show pieces, replicas, or glorified accessories. Very few people rely on swords and axes for their daily defense. Thus, most modern swords are considered to be of low quality.

Generally, you could assume that the benefits from advanced metallurgy balance with the penalties of shoddy craftsmanship. If so, then all primitive weapons can use their regular attack charts without modification. Of course, some modern cultures might still use primitive weapons and their design techniques might be of excellent quality. If you wish, you can account for advances in metallurgy by giving primitive weapons a bonus (+10 to +30) due to the materials in their composition. For example, a modern mace with a core of depleted uranium might be able to deal devastating blows. Such a weapon might gain a +20 bonus and deliver twice the normal concussion damage.

A-1.3 PURCHASING GEAR FROM OTHER PRODUCTS

It won't escape an attentive reader that there are attack charts and armor types in other books that are not detailed herein. How much does chainmail cost? How much is a broadsword? What about a 20th century cell phone?

These items are beyond the scope of this work, but not beyond other ICE products. If you wish to purchase equipment from *RMFRP* or *…and a 10-Foot Pole*, all it takes is a simple conversion.

If the listed item is priced in dollars, merely convert it straight to credits. If it is priced in gold pieces, assume that one gold piece equals 100 credits.

The charts included in this book were intended to flesh out the common gear a character might encounter in a SF setting. For more primitive equipment, one can extrapolate from other source books such as *…and a 10-Foot Pole*.

A-1.4 NEW COMBAT TABLES

Many of the attack tables in *Spacemaster: Privateers* are expanded in this work. For instance, the melee weapon tables were expanded, adding many of the more common melee weapons that a player might encounter, even in a SF game (for instance, broadswords have their own table in this book).

A-2.0 :: CRITCAL TABLES

There are 5 new critical tables in this book. Other critical tables mentioned in this book include Ballistic Armor Piercing, Ballistic Hollowpoint, Burst, and Scorch. These tables can be found in *Blaster Law*.

Critical Strike Table	Page #
Powered Armor Critcal Strike Table EM-A-2.1	100
Radiation Critical Strike Table EM-A-2.2	101
Raking Critical Strike Table EM-A-2.3	102
Shrapnel Critical Strike Table EM-A-2.4	103
Tiny Critical Strike Table EM-A-2.5	104

A-3.0 :: ATTACK TABLES

There are 16 new attack tables in the *EqM:*

Attack Table	Page #
Battleaxe Attack Table EM-A-3.1	105
Broadsword Attack Table EM-A-3.2	106
Club/Jo Stick Attack Table EM-A-3.3	107
Combat Knife Attack Table EM-A-3.4	108
Compound Bow Attack Table EM-A-3.5	109
Crossbow Attack Table EM-A-3.6	110
Flamer Attack Table EM-A-3.7	111
Grenade Attack Table EM-A-3.8	112
Hammer/Mace Attack Table EM-A-3.9	113
Monosword Attack Table EM-A-3.10	114
Monowhip Attack Table EM-A-3.11	115
Needler Attack Table EM-A-3.12	116
Nuclear Grenade Attack table EM-A-3.13	117
Rapier Attack Table EM-A-3.14	118
Staff/Bo Stick Attack Table EM-A-3.15	119
Two-Handed Sword Attack Table EM-A-3.16	120

POWERED ARMOR CRITICAL STRIKE TABLE EM-A-3.1

	A	B	C	D	E
01-05	You dust its hand. +0H	A blemish! You left a blemish. Damn you! +0H	Blast catches foe in the hand. Malfunctions run up and down his arm. +1H – (-10)	Attack to foe's hand. Any weapons on that arm are at -15. +2H – (-10)	Attack catches foe in the hand. It looked like that stung. +3H – (-10)
06-10	You scrape the paint off his forearm. +0H	Attack hits foe's forearm. Know a good body shop? +2H	Attack hits foe in forearm. Built in weapons in that arm are at -25 +2H – (-10)	Attack catches foe in the fore-arm. It could have been worse. +4H – (-10)	Attack catches foe in the lower arm. +5H – (-10)
11-15	You made a dent in his upper arm. Could have been better. +0H	Attack leaves iron filings filling the air. He felt that one. +2H	Attack catches foe in the upper arm. Waldos are sluggish. +4H – (-10)	Attack damages armor's upper arm. +3H – (-10)	Blast catches foe in the upper arm. +8H – (-5)
16-20	Attack leaves a nasty scar on the armor's upper arm. +0H	All the lights flicker, and foe hears a buzzing sound. Foe loses initiative for three rounds while he checks diagnostics. +2H – (-5)	Attack catches foe's upper arm. The suit is sluggish now. +4H – (-10)	Foe takes one in the upper arm. +4H – (-10)	Attack catches foe in the upper arm. Now weapons in that arm will not fire until repaired. +8H – (-15)
21-30	Blast to shoulder transfers some energy into foe. +1H	Blast hits shoulder. Waldos become a bit sluggish. +1H – (-5)	Attack catches foe in shoulder. Barrier shield drops to half strength. +5H – (-10)	Shoulder hit damages waldos. +5H – (-10)	Shoulder hit knocks out comm and drops shields to one quarter power. +5H – (-15)
31-40	Armor catches most of it, but a little gets through to foe's clavicle. +1H	Shoulder hit causes Comm problems. All Comm actions are at -50. +4H – (-5)	Shoulder hit cuts power to all weapons in one area. +10H – (-10)	Shoulder hit damages shield generator. Shield at half power. +5H – (-15)	Shoulder hit knocks out power to all weapons in one section. +5H – (-15)
41-50	You scratch up foe's thigh armor pretty badly. +1H	Attack hits foe's thigh. He twitches. +4H – (-5)	Attack catches foe in thigh. Could have been worse. +6H – (-10)	Attack catches armor in mid-thigh. +8H – (-15)	Attack catches foe in the thigh. +10H – (-15)
51-55	You hit foe in lower leg. A little of the energy transfers through. +1H	Attack catches foe in lower leg. +1H – (-5)	Attack catches foe in the calf. The damage is bad, but not irreparable. +4H – (-10)	Attack catches armor in the calf. Energy surge damages foe. +10H – (-5)	Attack catches armor in the calf. Sparks fly. +11H – (-15)
56-60	You shot him in the foot. Impressive. +1H	You shot him in the foot. That takes skill. +4H – (-5)	Hey, you shot him in the foot, slick. +5H – (-5)	Attack to foot damages all sorts of secondary systems. +10H – (-10)	You shot him in the foot. He yelps and jumps into the air. +12H – (-15)
61-65	Attack catches foe on the region of the hip and waist. +2H	Comm system takes damage as fuses short. Foe can send but not recieve. +4H – (-5)	Blast to waist drops shield to one quarter power. +8H – (-15)	Attack to waist damages both hips. Foe is having a great deal of trouble moving. +12H – (-70)	Attack to waist causes a small electrical fire. Foe takes an 'A' electrical and 'B' heat crit. +20H – (-15)
66	Attack hits foe in the posterior. Foe takes an 'A' electrical critical as systems short. +8H – (-10)	Attack sends wild electrical shocks throughout the armor. Foe passes out for 3d10 hours. +10H – (-25) – (+25)	Flames and current fill the suit. Foe takes an 'E' electical and an 'A' heat critical, then devotes the next round to fire control. +20H – (+25)	Foe takes an 'E' electical and 'B' heat critical every round until a Very Hard damage control (electronics) maneuver is made. +20H – (-70)	Major electical fire. Foe takes an 'E' and an 'A' electrical and a 'B' heat crit. The heat crits continue until the foe evacuates the suit and drops and rolls (a Medium maneuver). The suit is totalled. +30H – (-75)
67-70	Blast catches foe in knee. That stung a bit. +1H	Attack to foe's knee causes system wide calibration problems. +4H – (-30)	Attack damages foe's knee. He is less than happy. +7H – (-15)	Damage to foe's knee. +12H – (-15)	Attack to knees causes occupants to take an 'A' electrical critical. +18H – (-20)
71-75	Shot catches foe in the gut. Good thing he's been doing sit-ups. +1H	Gut shot drops any energy shield to half effectiveness. +2H – (-10)	Gut shot damages foe's shield. It will operate for three more rounds. +4H – (-15)	Attack knocks out foe's shield generator. +5H – (-15)	Attack to suit's gut leaves a hole too big to autoseal. Foe is exposed to the environment. +8H – (-20)
76-80	Attack catches foe in torso. The computer slips in its timing a bit. +3H – (-5)	Computer damage causes calibration problems. +4H – (-10)	Attack catches foe in the torso. Systems flicker on and off. +8H – (-15)	Sparks fly. Foe takes an 'A' electrical critical. Shields out. +10H – (-15)	Attack causes foe to take a 'C' electrical critical. +12H – (-20)
81-85	Attack catches foe in the torso. It's responding sluggishly. +3H – (-5)	Any shields are knocked out for ten rounds. +4H – (-10)	The suit handled that pretty well. You're impressed. +6H – (-15)	Attack catches foe in the torso. There is extensive damage. +8H – (-25)	Attack leaves shoulder joints non-functional. +15H – (-75)
86-90	If it wasn't for the armor, that probably would've punctured a lung. The suit is a bit damaged. +3H – (-5)	All systems twitchy. +8H – (-10)	Communications knocked out. Maybe if you shout really loud... +8H – (-15)	It takes 2 rounds for autoseals to work. Foe takes any effects from environment. There is one minute of life support left. +10H – (-20)	Energy fills foe's armor. He takes a 'B' electrical critical every round. +15H – (-90)
91-95	Attack hits armor in the side of the head, cracking the visor. Foe loses initiative next round trying to decide if his environment was compromised. +2H – (-5)	Shield knocked out. System wide problems become prevalent. +3H – (-10)	Suit loses integrity for 1 round, until autoseals compensate. Take any appropriate crits for exposure. Life support will last for 5 rounds. +6H – (-15)	An odd rattle sounds. Penalty increases by -10 per round until it hits -100. The the suit shuts down. +12H – (-10)	Suit grinds to a sudden halt. Hope he's not claustrophobic. (+20)
96-99	Attack hits where the jaw meets the neck. Foe gasps at the energy transfer. +4H – (-5)	Ration tubes explode in foe's face. He is blind for two rounds. +6H – (-15)	Attack to side of foe's head blows several major systems. Suit will power down after 1 minute. +6H – (-15)	Suit shuts down. Life support quits. Foe has one minute of air left. +3H – (-20)	Helmet is wrecked. Foe is exposed and unconscious for two hours. +8H – (-150)
100	Attack hits foe in helmet, shorting out the HUD. A cascade failure causes all electrical systems to go dead. Anyone got jumper cables? +5H – (-110) – (+20)	All systems shut down. Current flickers over armor. Foe takes 'B' electrical criticals for five rounds. He can't even blow the hatch until then. (+20)	Suit decides that foe would make a pretty good ground. He takes a 'C' electrical crit every round until the suit is powered down or abandoned. (-120) – (+20)	Massive attack knocks power plant offline. If power plant is capable of overload, everyone has 5 minutes to get to minimum safe distance. (+20)	Armor is coming apart. Armor takes an 'E' electrical critical every round until shut down. (+25)

Key: ßπ =must parry ß rounds; ß∏=no parry for ß rounds; ß∑=stunned for ß rounds; ßƒ =bleed ß hits per round; (-ß)=foe has -ß penalty; (+ß)=attacker gets +ß next round.

RADIATION CRITICAL STRIKE TABLE EM-A-3.2

	A	B	C	D	E
01-05	What radiation? +0H	They're only sub-atomic particles. +0H	Nothing worse than a flight to Denver. +0H	He looks a little peeked. +0H	Luckiest man alive. +0H
06-10	A warm breeze. +0H	Zip. +0H	You must have a genetic resistance. +0H	This damage won't heal without anti-rad treatments. +3H	It must have been those cool sunglasses. +5H
11-15	The experts say it's nothing to worry about. +0H	Target has very little to worry about. +0H	Insignificant damage. +0H	Skin damage requires anti-rad treatments to heal +4H	Target's mustache falls out. +8H
16-20	That probably took a week off his life. +0H	Ah…you've had x-rays that were worse. +0H	Foe has a mild headache. (-1)	Mild irradiation. Foe won't feel himself again without anti-rad treatments. +0H – (-10)	Sickness persists until anti-rad treatments. +0H – (-10)
21-30	Has he been using a tanning bed? +0H	His little rad-badge is turning all black. +0H	Damage is permanent until foe receives anti-rad treatments. +4H	Foe will get cancer in the next 5 years. +0H	Horrible sores form, requiring anti-rad treatments. +10H – ♠ – (-60)
31-40	Microbes on target's skin have a tough time of it. +0H	Foe is nauseous for 6 hours. +2H – (-5)	Mild radiation sickness. Hair falls out in three days. +0H – (-30)	Target's vision is messed up. Damage and vision persist until ant-rad treament. +5H – (-30)	Severe damage. Foe weakened and ill unti anti-rad treatment. +0H – 6✸ – (-70)
41-50	A few cells have their DNA shattered. They die before they mutate. +0H	12 hours of nausea. 50% chance of tumor within five years. +0H – (-10)	Target has 10% chance of fainting each minute. Then he is out for 1-10 hours, and sick for 5 days. +0H – (-20)	Organ damage. One of foe's organs will fail within d10 hours. +0H	Radiation sickens foe and drops MPs by 1d10. Anti-rad treatments are required. +15H – (-50)
51-55	In one hour target will feel queasy, it will last for four hours. +0H – (-10)	24 hours of intense nausea. +0H – (-15)	Mild radiation sickness. Hair falls out, sores develop in 1-5 days. 50% chance of cancer within a year. +0H – (-30)	Sickness weakens foe. This persists until anti-rad treatment. +0H – (-40)	Foe nearly unconcious until anti-rad treatments are administered. +17H
56-60	Target will feel unwell for about a week. +0H – (-10)	36 hours of nausea, lose d10 MPs for the duration. +0H – (-20)	Foe will develop cancer by year end. +0H	Damage and brief nausea are intense. Damage cannot be healed without anti-rad treatments. +20H – 6✸	Foe's skin cracked and blackened. Guess what sort of treatment he needs… +10H – 4♠ – (-80)
61-65	Foe starts vomiting after 6 hours, for about 3 hours. +0H – (-10)	48 hours of nausea. Intense headache lasts d10 hours. +0H – (-20)	Nice headache, got any aspirin? Lose 1-10 MPs. +0H – (-15)	Psychic powers may not be used for one day. Sickness lasts until anti-rad treatments are administered. +0H – (-20)	Damaged skin and optic nerve leaves foe bleeding and blind. Normal treatments will not heal this damage. +15H – 6♠ – (-50)
66	Foe will never produce offspring. His reproductive organs are very sterile. +0H – (+25)	Terrible cancer develops. Foe dies after two months. (+25)	Cancer causes death after one month. Sad. (+25)	Target will die in one hour due to massive organ damage. (+25)	Cellular and neural damage are extensive. Foe slips into a coma and will die in d10 minutes. +40H – (+25)
67-70	Minor loss of hand-eye coordination for the next 2 days. +0H – (-15)	Nausea and loss of hand-eye coordination for 72 hours. +0H – (-25)	Target's hand-eye coordination goes to hell. Condition persists until treated. +0H – (-30)	Target dazed. Sickness persists until anti-rad treatments. +0H – (-20)	Foe suffers all effects of radiation sickness. +0H – (-90)
71-75	Foe looks a bit green. He suffers a 12 hour bout of nausea after one hour. +0H – (-15)	Intense nausea for 4 days. Foe has trouble concentrating. +0H – (-25)	Sores appear until treated. +0H - (-30)	Radiation sickness. Hair, nails, and teeth fall out. Sores form within one day. Target loses d10 MP, and will die within d10 days. +10H – (-40)	Foe bed ridden until specially treated. The prognosis is bad. +30H – (-100)
76-80	Foe is nauseous for 12 hours. Minor skin cancer will develop within one year. +0H – (-15)	Nausea lasts 5 days. The dehydration and malnutrition are an issue. +4H – (-25)	Lingering radiation sickness. +0H – (-35)	Foe will get malignant tumor within 6 months. Sickness persists until restored. +0H – (-40)	Severe radiation sickness. Target will die within 24 hours unless treated. +12H – (-50) – (+25)
81-85	Nausea for 24 hours. There is a 50% chance of cancer within 5 years. +0H – (-20)	Six days of nausea. They might want to put him on an IV diet. +7H – (-25)	Damage won't heal without anti-rad treatments. +7H – (-30)	Damage to optic nerve leaves foe blind. All effects persist until anti-rad treatments are administered. +15H	After 10 minutes, foe is struck by severe nausea. This lasts for d10 days, then he dies. +0H – (-60)
86-90	Nausea for 36 hours. +0H – (-25)	Seven days of intense nausea, followed by complete hair loss. +0H – (-30)	Damage causes a random organ to cease functioning in d10 days. This can be treated normally. +0H	Cracked flesh and sores resist healing by all but anti-rad treatments. +17H – 3♠ – (-30)	Target blinded and sent into a coma. He will die within 24 hours. (+20)
91-95	Nausea for 48 hours. Damaged skin will flake off in two weeks. +4H – (-30)	Foe's skin cracks. The nausea lasts 8 days. His hair falls out to boot. He could use an IV. +0H – ♠ – (-30)	Foe's vision is no longer quite right. +0H – (-40)	Foe blinded. He will die within one day unless treated. 10✸ – (-60) – (+20)	Horrible damage kills foe after 24 hours of intense nausea. +19H – (-70) – (+25)
96-99	Nausea for 72 hours. Damaged skin will flake off in two weeks. +5H – (-35)	Foe loses vision for d10 hours. Nausea lasts for 9 days. His hair falls out. He is not a happy camper. +0H – (-35)	Heavy radiation sickness persists until anti-radiation treatment is administered. +0H – (-40)	Neural damage. Foe slips into a coma and dies in d10 hours. (+20)	A variety of organs fail. Foe drops and dies in d10 rounds. No psychic abilities may be used without drastic neural procedures. (+20)
100	Extreme nausea for 96 hours. Damaged skin will flake off in two weeks. +10H – (-40) – (+20)	Foe will develop terminal cancer and die within 6 months. Nausea lasts 10 days and hair falls out. +0H – (-35) – (+20)	Heavy radiation sickness. Hair and teeth fall out. Foe dies of cancer after one month. +0H – (-45) – (+20)	Neural tissue ceases functioning. Foe dies in 6 rounds. (+20)	Massive neural failure. Foe slips into a coma and dies after 6 rounds. (+25)

Key: ßπ =must parry ß rounds; ß∏=no parry for ß rounds; ß∑=stunned for ß rounds; ßƒ =bleed ß hits per round; (-ß)=foe has -ß penalty; (+ß)=attacker gets +ß next round.

RAKING CRITICAL STRIKE TABLE EM-A-3.3

	A	B	C	D	E
01-05	Hit to foe's hand. If foe is holding something, it should check for breakage at -10. +3H – 2⤫	Slicing hit to foe's hand. If foe is carrying anything, it must make a breakage check at -20. +4H – 2⤫ – (-10)	Biting strike to foe's hand. If he is holding anything, it must check for breakage at -30. +8H – 4✸ – (-20)	Hit mangles hand pretty thoroughly. Anything foe is holding is destroyed. +15H – 5✸⊗ – (-50)	Foe's hand is sliced in two. Anything in foe's hand is destroyed. +15H – 7✸⊗ – ♠ – (-50)
06-10	Foe's arm is torn. You gain initiative next round. +7H – 3⤫	Cut goes almost the whole way through the forearm. If foe is holding an item, it must check for breakage at -10. +8H – 3✸ – (-15)	Tearing strike though muscles and tendons in forearms. Foe drops whatever he is holding. +10H – 4✸ – ♠ – (-25)	Attack lops off foe's lower arm and hand. Foe passes out for ten rounds. +15H – 7✸⊗ – 7♠ – (-50)	Attack lops off foe's hand just above his wrist. Feel free to make a Darth Vader joke. +15H – 8✸⊗ – 7♠ – (-50)
11-15	Nick to foe's biceps, causing minor muscle damage. +7H – 3⤫ – (-5)	Deep bicep cut, causing major muscle damage. +15H – 4✸ – 2⊗ – ♠ – (-20)	Attack slices deep into foe's elbow, tearing up bones and tendons. +10H – 4✸ – (-20)	Foe's arm is sliced lengthwise. +25H – 7✸⊗ – 6♠ – (-40)	Foe's arm is sliced off at the biceps. +30H – 6✸⊗ – 7♠ – (-60)
16-20	Weak upper arm strike causes minor muscle damage. +7H – 2✸ – (-10)	Triceps are torn up, causing major muscle damage. +12H – 3✸⊗ – (-25)	Deep cut into arm just above the elbow. The arm is useless. +12H – 4✸ – 2⊗ – (-20)	Foe's arm is chopped off. Cool. +30H – 6✸⊗ – 7♠ – (-60)	You very efficiently remove foe's arm, several inches above the elbow.. +30H – 6✸⊗ –7♠ – (-60)
21-30	Glancing hit to foe's shoulder. Minor muscle damage. +8H – 3✸ – (-10)	Slice to foe's shoulder messes up muscles and tendons. +16H – 4✸⊗ – (-15)	Slice through muscles in foe's shoulder, catching an artery to boot. +18H – 5✸⊗ – 3♠ – (-25)	Foe's arm is lopped off at the shoulder. +25H – 10♠ – (-50)	Hit turns arm, shoulder, and foe into three seperate pieces. Arm and shoulder fall to ground +30H – 7✸⊗ – 11♠ – (-60)
31-40	Take out a piece of foe's clavicle. That should have done more. +7H – 2✸ – (-10)	Foe's collar bone is chopped up. Nice carving job. +12H – 3✸ – (-15)	Foe is less than pleased by cut down into collarbone. +20H – 3✸⊗ – (-25)	A section of the shoulder joint is removed, leaving arm hanging uselessly. +30H – 6✸⊗ – ♠ – (-40)	Foe watches as you lop off arm, shoulder, and a chunk of his side. +30H – 7✸⊗ – 11♠ – (-60)
41-50	Strike just brushes foe's thigh. Oops. +6H – 2✸ – (-10)	Deep cut to foe's thigh. Ouchy. +8H – 3✸ – (-25)	Slicing hit through muscles and tendons in foe's thigh. +16H – 3✸⊗ – (-25)	Foe's leg falls to the ground, severed at the thigh. +40H – 4✸⊗ – 3♠ – (-40)	Foe's leg is severed at the thigh. +40H – 4✸⊗ – 6♠ – (-60)
51-55	Glancing hit to foe's calf. The burns are nothing very serious. +8H – 2✸ – (-10)	Slice through foe's calf almost drops him. +15H – 3✸ – (-15)	Attack slices right through the calf, severing bones along the way. +25H – 4✸⊗ – (-25)	Slice clean through foe's knee. Foe falls over, looking at the stump. +35H – 6✸⊗ – 9♠ – (-75)	You cut off foe's leg at the knee. +40H – 7✸⊗ – 10♠ – (-75)
56-60	Beam neatly removes all of the toes from foe's foot. +7H – 2✸ – (-10)	Strike slices toes off foot, then bounces around slicing up bones. His expression is priceless. +25H – 4✸ – (-20)	Cut through foe's ankle slices muscles, tendon, and bone. Foot flaps like a torn rag. +24H – 4✸⊗ – (-30)	Strike scythes right through foe's ankle. The foot bounces a couple of feet away. +35H – 6✸⊗ – ♠ – (-50)	Foe is stunned when you slice off his foot. +40H – 7✸⊗ – 3♠ – (-60)
61-65	Cut to foe's hip cracks the bone. +10H – 2✸ – (-5)	Deep cut to foe's hip. Foe manages to keep his feet, but every step is agony. +25H – 4✸⊗ – (-20)	Hip hit slices pelvic girdle. Foe's stance no longer has the integrity it once did. +30H – 5✸⊗ – ♠ – (-25)	Slice up foe's hip removes all integrity from the joint. +34H – 7✸⊗ – 2♠ – (-50)	Attack slices down through the hip. Foe's leg falls to the ground. +40H – 7✸⊗ – 6♠ – (-60)
66	Foe yelps as hit slices off some posterior. +30H – (-25)	Strike to foe's head. Miraculously, he merely slips into a three day coma. +60H – (-60) – (+25)	Deep slice into foe's face. Muscle spasms cause him to fly backward to a spot where he will die in ten rounds. +15H – 8✸⊗ – (-45) – (+25)	Slice opens up foe's abdomen. Intestines begin spilling out. Foe is vainly trying to push everything back in. (+25)	Slice through groin is lost in the mess made by taking off both of his legs as well. Foe is oh so dead. (+25)
67-70	Strike glances off kneecap, cracking it badly. +7H ✸ – (-10)	Deep cut into foe's knee folds it the wrong way. He collapses. +20H – 3✸ – (-20)	Hit to the knee nearly severs the leg. In the future, that knee will predict the weather. +25H – 5✸⊗ – ♠ – (-30)	Strange, foe's leg is missing below the knee… +35H – 6✸⊗ – 7♠ – (-50)	You slice foe's knee in two. Leg falls, dead, to the ground. +40H – 8✸⊗ – 8♠ – (-60)
71-75	Strike almost cuts deep into foe's stomach. It only leaves a straight scar. +7H – 2✸ – (-10)	Strikes slices up foe's abdomen, wreaking havoc with muscles and organs. Foe collapses. +12H – 3✸ – 3♠ – (-20)	Slice through lower abdomen leaves blood everywhere. +12H – 4✸⊗ – 6♠ – (-20)	Slice through foe's kidney leaves a mark. +35H – 6✸⊗ – 9♠ – (-40)	Deep cut into foe's side slices through intestines, kidneys, and spine. He'll need medical aid, and quickly. +40H – 8✸⊗ – 10♠ – (-60)
76-80	Hit slides down foe's side, messing up several ribs. +12H – 3✸ – (-10)	Attack slices up ribs, muscles, and tendons. +20H – 4✸⊗ – (-20)	Hit to foe's side cuts through ribs and into his lung. +35H – 4✸⊗ – 6♠ – (-20)	This is what they call disemboweling. +35H – 6✸⊗ – 14♠ – (-40)	Foe is nearly cut in two. Intestines scatter everywhere. +40H – 8✸⤫ – 15♠ – (-40)
81-85	Deep hit into abdomen, causing significant organ damage. That had to hurt. +15H – 3✸ – 2♠ – (-20)	Hit to upper abdomen tears through muscles and organs. Foe is messed up. +14H – 3✸⊗ – 3♠ – (-20)	His gut opens like an over-ripe grapefruit. Is he actually still standing? +25H – 6✸⊗ – 8♠ – (-30)	Beam slices through gut, severing spine. Foe is paralyzed. Got a wheelchair? +35H – 5♠	Beam slices foe into two halves, top and bottom. (+20)
86-90	A clean slice through bones, muscles, and tendons without hitting a single organ. What are the odds? +15H – 3✸ – ⤫ – (-15)	The strike slides into chest and through lung. Is there a doctor in the house? +25H – 4✸⊗ – 3♠ – (-20)	Sternum catches most of the hit, but foe's heart is damaged and his sternum is shattered. Someone's looking out for this guy. +25H – 4✸⊗ – 7♠ – (-30)	Beam slices foe's heart in two. Very sad. (+20)	Beam slices foe in two at chest level. (+20)
91-95	Sliding strike across foe's scalp. Make a bad cowboys and indians joke. +8H – 3✸ – (-5)	Beam wreaks havoc with foe's face. Foe is now blind and deaf on that side of his head. +15H – 4✸⊗ – 3♠ – (-20)	Attack cracks the skull. Foe slips into a coma for three months and loses three levels worth of experience. +40H – 9♠	Slice chops off foe's head. At eye level. (+20)	Slice to the head goes right through the brain. So sad. (+20)
96-99	Hit to foe's jaw makes a mess. He's mute, -10 to appearance, -5 to potential appearance. +11H – 3✸⊗ – (-15)	Slice into foe's voice box mutes foe. Very surgical. +20H – 4✸⊗ – 3♠ – (-25)	Slice through most of foe's neck. His head seems to be sticking to his body more from habit than physics. +25H – 5⤫⊗ – 11♠ – (-20)	Slice right through foe's neck knocks the head clear. (+20)	Head is cleanly removed by beam. It bounces twice. (+20)
100	Foe's face is sliced off, and his brain falls out. (+20)	Strike dissects foe's head like a frog. All of its contents fall out. (+20)	Strike into foe's head fells him. He'll wake up in a year or two. (+20)	Foe's head is sliced into five pieces. (+25)	Foe's head is sliced and diced. (+25)

Key: ßπ =must parry ß rounds; ß∏=no parry for ß rounds; ß∑=stunned for ß rounds; ßƒ =bleed ß hits per round; (-ß)=foe has -ß penalty; (+ß)=attacker gets +ß next round.

SHRAPNEL CRITICAL STRIKE TABLE EM-A-3.4

	A	B	C	D	E
01-05	Foe's hand is hit! If he is holding an item, it must immediately check for breakage. +3H	Foe's hand is hit! If he is holding an item, it must immediately check for breakage with a -10 penalty. +3H – 2⚔	Foe's hand is hit! If he is holding an item, it must immediately check for breakage with a -20 penalty. +4H – 2⚔ (-10)	Foe's hand is hit! If he is holding an item, it must immediately check for breakage with a -30 penalty. +8H – 4✸ – 3♦ – (-20)	Foe's hand is hit! If he is holding an item, it automatically breaks. +15H – 5✸⊗ – (-50)
06-10	Forearm strike burns! You gain the initiative next round. +5H	Strike to foe's lower arm starts to bleed. His grip may slip! You gain the initiative next round. +7H – 3⚔ – 2♦	Forearm wound tears muscle and tendons. If foe is holding an item,it must check for breakage with a -20 penalty. +8H – 3✸ – 3♦ – (-15)	Forearm shot tears muscles and tendons. Foe drops any held items and they check for breakage. +10H – 4✸ – 4♦ – (-25)	Incredible blast to foe's arm completely rips off his hand and lower arm! Foe faints and is out for 10 rounds. +15H – 7✸⊗ – 8♦ – (-50)
11-15	Lots of hot air over foe's arm. +3H – ⚔	Deep scratches on foe's biceps cause minor muscle damage. +7H – 3⚔ – (-5)	Serious gash on upper arm causes major muscle damage. +15H – 4✸ – 2⊗ – 4♦ – (-20)	Foe's elbow takes the brunt of the blast. Broken bone and torn tendons are the price. His arm is useless. +10H – 4✸ – 2♦ – (-20)	Only dangling flesh is left on foe's arm. It is completely useless. + 25H – 7✸⊗ – 4♦ – (-40)
16-20	An incredible shot leaves only minor scratches. +4H – 2⚔	Upper arm strike leaves foe with minor muscle damage. +7H – 2✸ – (-10)	Foe's triceps take the blast. He will need a doctor for that major muscle damage. +12H – 3✸⊗ – 3♦ – (-25)	Right on the elbow! Blast breaks bone and tears tendons. Arm useless. +12H – 4✸ – 2⊗ — 3♦ – (-20)	Boned foe's arm just like a chicken. Arm is useless. + 30H – 6✸⊗ – 5♦ – (-60)
21-30	Shrapnel grazes foe's shoulder. That will leave a mark. +5H – 2⚔	Shoulder hit. Minor muscle damage. The strips on his uniform are ripped off. +8H – 3✸ (-10)	Shrapnel goes through foe's shoulder, tearing muscle and tendons. He will feel that one for a while. +16H – 4✸⊗ – 2♦ – (-15)	Shrapnel tears muscles tendons on its way through foe's shoulder. Nicks a major artery. +18H – 5✸⊗ – 6♦ – (-25)	Foe really didn't need that arm anyway. Foe is unconscious for six hours. +25H – 10♦ – (-50)
31-40	Shrapnel grazes foe's shoulder, spinning him around. +5H – 2⚔	Shrapnel glances off clavicle. Foe looks surprised to still have a head. +7H – 2✸ – (-10)	Shrapnel breaks collar bone. He will never wear a tie again! +12H – 3✸ – (-15)	Shrapnel lodges in the foe's shoulder. Surgeon will have to chip away a little bone to get this one out. +20H – 3✸⊗ – (-25)	Shrapnel breaks clavicle and destroys shoulder joint. His arm will hang limp until healed. +30H – 6✸⊗ – 3♦ – (-40)
41-50	Graze foe's thigh. Now those nice pants are ripped. +3H – ⚔	Thigh wound tears muscle and leaves foe with a minor limp. +6 H – 2✸ – (-10)	Shrapnel lodged in thigh. Running very painful. -25 to Moving Maneuvers until Shrapnel is removed. +8H – 3✸ – 3♦ – (-15)	Shrapnel tears muscle and tendons in the thigh. Foe is knocked backward 5 feet from the blast. +16H – 3✸⊗ – (-25)	foe's leg severed at the thigh. Foe falls. Hope he has a belt handy. +40H – 4✸⊗ – 4♦ – (-40)
51-55	Shrapnel grazes foe's calf and causes him to stagger. +4H – ⚔	Several wide cuts on foe's calf, but none are deep. Unfortunately, the muscles have minor damage. +8H – 2✸ – 2♦ – (-10)	Shrapnel goes clean through the back of foe's lower leg. He is knocked over and now has muscle and tendon damage. +15H – 3✸ – 3♦ – (-15)	Shrapnel strikes calf. Broken bones have ripped through the flesh of the leg. +25H – 4✸⊗ – 3♦ – (-25)	Foe blown back 15'. When he rises, he realizes that he now has a ragged stump below his knee (and he can't stand up). +35H – 6✸⊗ – 10♦ – (-75)
56-60	Blast near foe's feet causes him to dance. +4H – ⚔	Lucky shot on foe's foot takes off all of his toes! Now his shoe won't fit. +7H – 2✸ – (-10)	Solid blast to foe's foot. The sound of breaking bone is very clear. The Several toes have been lost. +25H – 4✸ – (-25)	Ouch! Right on the ankle. Bones break and tendons torn. Foe falls and will have trouble standing. +24H – 4✸⊗ – (-30)	Foot bone ain't connected to the leg bone no mo'. Blast rips the foot off at the ankle. +35H – 6✸⊗ – 4♦ – (-50)
61-65	Close shot at foe's hip. Maybe it is time to start that diet. +7H – 2⚔	Blast strikes solidly on foe's hip. Luckily his bones are strong and it is only a minor fracture. +10H – 2✸ – (-5)	Shrapnel goes deep into foe's hip (lodging againt the bone). Walking proves massively painful. +25H – 4⊗ – (-20)	Strong blast to foe's hip fractures his pelvis. He now has a funny walk. +30H – 5✸⊗ – 4♦ – (-25)	Blast completely shatters foe's hip. Foe is thrown back 15'. +34H – 7✸⊗ – 5♦ -(-50)
66	Shrapnel imbedded in foe's buttocks. He will need a special pillow just to sit down. +20H – (-15)	Blast to foe's head! Amazingly, foe's head is mostly intact. He will just be in a coma for three days. +20H – (-40) – (+25)	Foe forget to duck. He takes shrapnel in the eyes. Foe spins head over heels backwards and will die in 10 rounds if not tended to by a doctor. +10H – 5✸⊗ – (-30) – (+25)	Abdomenal blast knocks foe through the nearest wall. Major internal damage to all kinds of organs. Hope a doctor is on hand. +50H – 8✸⊗ – 15♦ – (-75)	Surprise shot to foe's groin. Foe no longer needs his "little black book". You are stunned for 3 rounds in sympathy. He collapses and won't get up until tomorrow. +50H – 15✸⊗ – 15♦ – (-75)
67-70	Foe's knee is peppered with shrapnel. Amazingly, no permanent damage. +3H – ⚔	Knee strike fractures bone. Very impressive. +7H – ✸ – (-10)	Great shot to foe's leg causes him to drop. +20H – 3✸ – 3♦ – (-20)	Blast to foe's leg shatters his knee cap. He will have a bad limp until the major tendon damage is healed. +25H – 5✸⊗ – 4♦ – (-30)	Blast annihilates foe's leg below the knee. Wow! +35H – 6✸⊗ – 8♦ – (-50)
71-75	Blast in the gut throws foe backwards 10'. +5H – ⚔	Shot in the stomach does minor muscle damage. But the scar looks like a turnip… +7H – 2✸ – (-10)	Abdomenal hit causes muscle and organ damage. Foe flies off his feet. +12H – 3✸ – 5♦ – (-20)	Lower abdominal shot causes much internal damage to internal organs. +12H – 4✸⊗ – 7♦ – (-20)	Blast rips out foe's kidney. Who needs a surgeon. +35H – 6✸⊗ – 10♦ – (-40)
76-80	Blast in foe's side leaves a mass of flesh dangling. Surprising, it only leaves a small scar. +8H – 3⚔ – ♦ – (-10)	Shrapnel finds a home in foe's side, breaking a few ribs in the process. +12H – 3✸ – (-10)	Solid shot to foe's ribs is followed by the sound of breaking bone. There is also major muscle and tendon damage. +20H – 4✸⊗ – (-20)	Shrapnel breaks ribs and lodges inside foe. The bleeding just won't seem to stop! Get a medic. +35H – 4✸⊗ – 7♦ – (-20)	Gut shot rips out several organs. Find a donor, quickly. +35H – 6✸⊗ – 15♦ – (-40)
81-85	Impressive shot right in the abdomen knocks foe backwards. +10H – 3✸ – 2⊗- 2♦ – (-10)	Blast rips into foe's gut and causes major damage to everything it finds there. +15H – 4✸ – 5♦ – (-20)	Upper abdominal hit damages internal organs and muscles. +14H – 3✸⊗ – 6♦ – (-20)	Blast in the gut leaves a gaping hole. Amazing, foe is still standing! +25H – 6✸⊗ – 9♦ – (-30)	Shrapnel passes clean through foe's abdomen and lodges in his spine. Foe is paralyzed until it is removed, and then still suffers a -30 penalty to all maneuvers. +35 H – 6♦
86-90	Chest strike rips all of foe's buttons off his shirt. +12H – 3✸ – 3♦ – (-10)	Blast in the chest breaks ribs and tears muscles and tendons. Get a new shirt. +15H – 3✸ – ⊗ – 3♦ – (-15)	Foe is wheezing as blast perforates a lung. +25H – 4✸⊗ – 6♦ – (-25)	Shrapnel lodges near foe's heart. Sternum is shattered. +25H – 4✸⊗ – 8♦ – (-30)	Blast through foe's chest and destroy his heart. Foe flies 20' and everyone is stunned for two rounds. (+20)
91-95	Blast to foe's head rips off one ear. Foe hears at -30. +8H – 3✸⊗ – 2♦ – (-10)	Shrapnel strikes foe's head. Luckily he has a mighty skull and only loses his hair. +8H – 3✸ – ♦ – (-5)	Shrapnel to side of foe's head. He can no longer hear or see from that side of the head. +15H – 4✸⊗ – 6♦ – (-20)	Blast cracks foe's skull. He is in a coma for 3 weeks then awakens with amnesia (and a headache). +40H – 10♦	Blast tears off the top of foe's head. Death is instantaneous. (+20)
96-99	Shrapnel peppers foe's jaw and leaves several holes. Foe has trouble talking because of damage to the tongue. +12H – 4✸⊗ – (-15)	Blast shatters foe's jaw. He cannot talk until healed. He suffers a -10 to his temporary Appearance and -5 to his potential Appearance. +11H – 3✸⊗ – 3♦ – (-15)	Blast rips through foe's throat. He is now a mute. +20H – 4✸⊗ – 6♦ – (-25)	Shrapnel destroys foe's neck (and wind pipe). He will probably die before he suffocates. +25H – 5✸⊗ – 12♦ – (-20)	Foe is left with nothing on top of his neck. Anyone got a mop? (+20)
100	Shrapnel passes through the ear and into the brain. Foe is very dead. (+20)	Foe's face is ripped off; right before he dies from shrapnel in the brain. (+20)	Foe's head is opened from the blast. He is quite dead. You have half a round left to act. (+20)	Strong blast to foe's head cracks his skull. He is in coma for next two years. (+20)	Don't loose your head! Ooops. Too late… (+25)

Key: ßπ =must parry ß rounds; ß∏=no parry for ß rounds; ß∑=stunned for ß rounds; ßƒ =bleed ß hits per round; (-ß)=foe has -ß penalty; (+ß)=attacker gets +ß next round.

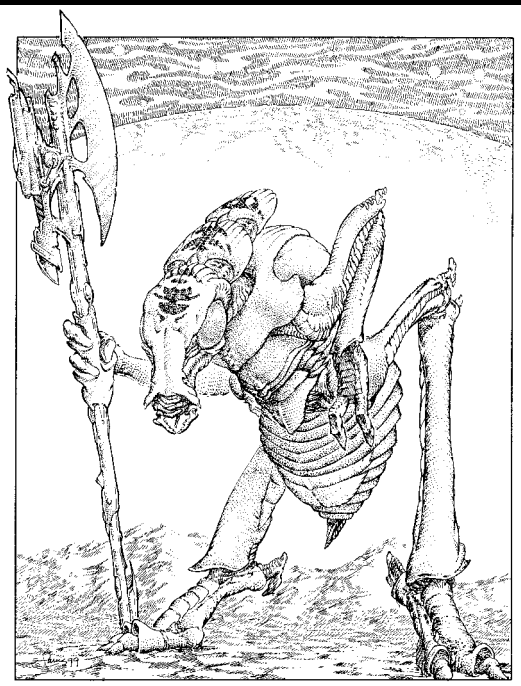
TINY CRITICAL STRIKE TABLE EM-A-3.5

	A	B	C	D	E
01-05	Dubious strike. +0H	You throw up some dust. +0H	You're not very good, are you? +0H	Get it right next time! +0H	You did very poorly. +1H
06-10	Zip. Less than effective. +0H	You leap. Foe moves. You land. It had good form. +0H	Look over there! Baby eagles! +0H	Your slash tears off a piece of fur or cloth. +1H	Strike is not solid or well placed. +2H
11-15	Feeble. +0H	You almost got a real grip. +0H	You really tear up foe's garments. Try his skin next time. +1H	Slash to neck, pulls off any necklaces foe is wearing. +1H	Entangle your claws in foe's clothes. You struggle to pull free. +2H
16-20	Victory to the oppressed! +1H	Your lunge for foe's throat was blocked by his arm. +1H	Glance off foe and grip the air. He steps out of your strike. +1H	Solid chest strike yields a bruise. +2H	Light cutting strike. It has a little effect, but you taste blood. +2H – ♦
21-35	Jolly deadly attack. +1H	You get in close, but foe kicks you clear before your strike turns deadly. +2H	Strike catches foe in waist. His equipment blocks some damage. +2H	The recoil from a missed strike lands against foe's back. It is a mild scratch. +3H	Scratch foe in calf. It turns into a bleeder and you are very pleased. +2H – ♦
36-45	Cruel blow for nature. +2H	Attempt to disembowel falls short. Foe guards his stomach well. +3H	Light grip. Foe breaks free, damaging himself. You are pleased. +2H – ♦	Strike to foe's lower leg. If foe has no leg armor, you cause him pain. w/o leg greaves: +5H – ♦	Solid shot to leg. Foe watches you break the skin on his thigh. +3H – ♦
46-50	Poor follow through. You lose a claw. Your attack is dubious. +4H – 2(-5)	Slash to foe's side does no cut deep. He turns to avoid the worst. +3H	Solid strike to side does not break the skin. Foe turns to face you better. +4H	Unexpected puncture in foe's side. You are pleased. Foe grips his side. +3H – ♦	You bring a powerful blow around against foe's back. He leaps back away. +5H – ✕ – ♦
51-55	Leaping chest strike yields some measurable damage. +3H	Good little gash, produces an effective wound. +3H – ♦	Mild strike to chest catches in a soft spot. You are surprised at its effect. +4H – 2♦	Slash foe's stomach. If foe's has no metal armor, you tear him open badly. w/o abdomen armor: +5H – 3♦	Grip to foe's shield arm garments. Foe is unable to use his shield arm for 1 round. +6H – 1♦
56-60	Light wound to thigh. Garments are torn. Promises are made. +1H – ♦	Scratch foe's skin, but you do not break the skin. +6H	Your original strike misses, but foe's thigh is available as a consolation. +4H – ✸ – 2♦	Your strike catches the back of foe's thigh. Foe is unbalanced for a moment. +6H – ✸ – 2♦	You rip open foe's thigh. The look on his face tells you victory is near. +7H – ✸ – 3♦
61-65	Mild forearm wound. You are doing very well, keep it up. +2H – 2♦	Raking forearm strike leaves a nasty scar. It bites deep enough to bleed. +3H – 2♦	Foe blocks you with his arm and you tear it up as payment. The damage is substantial, before foe breaks free. +3H – 2✕ – 2♦	Grip to foe's forearm. Foe flails his arm around trying to shake you off. You let go and move to a better position. +5H – 2✕ – 2♦ – (+10)	Slash across foe's chest and upper arm. Strike causes a bruise and then opens up a gaping wound on foe's shield arm. +6H – 2✸ – 3♦
66	You find a nice vulnerable spot to rip open. Foe leaps back from your cluches. He unbalances himself to escape your assault. +4h – 2✸⊗ – 2♦	Your strike grips foe's calf. He pulls away from you violently. His actions further damage the wound. You do your best, before he breaks free. +5H – 2✸ – (-20)	Violent move assaults foe's arm, wrist and shoulder. Foe is shaken by the vicious strike. He drops his weapon and leaps back 10 feet. You stay with your quarry looking for an advantage. +4H – ✸ – (+10)	Astounding head strike. If foe has no helm, you make a bloody mess of foe's scalp. To further your advantage you push foe's head sideways. with helm: +4H w/o helm: +7H – 6⊗	Bizarre strike to eyes destroys 1 eye and leaves the other blind for 2 days. Foe is down and helpless for an hour. He will need assistance to even stand. His appearance is modified by -20. +15H – 24✸ – (-95)
67-70	Slash to foe's shoulder. It's not deadly, but it is a start. +3H – ✕ –♦	Claw scratches acrossed a piece of metal. That screeching sound! +4H – ✸ – ♦	Pull foe off balance with a grasp to his shoulder. He steps away and stumbles. +5H – ✸ – 2♦ – 1(-20)	Graceful slash to foe's shoulder sweeps blood onto foe's face. Foe is unsteady. +6H – ✸⊗ – 2♦	Inspired shoulder strike sends foe reeling. You tear tendons and cause pain. +7H – 2✸⊗ – (-20)
71-75	You attempt to assault foe's lower leg. You have the initiative. with leg armor: +4H w/o leg armor: +1H – 2♦	Assault foe's shin. If foe has no armor, you tear his shin up. Foe struggles to throw you off. with leg armor: +6H w/o leg armor: +3H – 2✕ – 2♦	You slash into a muscle on foe's calf. You have the initiative next round. 2✸ – 2♦ – (-20)	Lower leg strike. If foe has no leg armor, heavy bruise. Foe stumbles back to avoid you. with leg armor: +3H – ✸ w/o leg armor: 2✸ – ⊗	Vicious leg wound bleeds hard. Foe's attempt to stop the bleeding gets it all over his hands. +5H – 3✸ – 4♦
76-80	Weak, but precise strike to foe's arm. Foe shakes you off, but you do some damage anyway. +3H – ✸ – ♦	Strong, but imprecise arm strike. The wound is of moderate size. You are proud to have created it. +5H – 2♦ – (-15)	You take a shot at foe's forearm. It lands well. A muscle and tendon are slashed. He holds on to his weapon. +5H – 2✸ – 2♦ – (-25)	Grab foe's arm. Foe struggles violently to make you let go. You rend his arm without mercy. He gets free and stumbles back. You win this round. +5H – 3✸ – 2♦ – (-25)	Sly arm strike gives foe a troublesome wound. What looks like a tiny wound is producing much blood. Foe does not fall down, but he stumbles much. 2✸⊗ – 3♦
81-85	Strike at foe's face. He panics and stumbles back 5 feet. You fall clear and prepare for another strike. +4H – ✸ –2♦	Flying face strike. with facial armor: +3H – ✕ w/o facial armor: 3✸ – 3♦	Head strike. Foe's helm is knocked off. If foe has no helm, he has a vicious cut to his scalp. with helmet: +3H – ✸ w/o helmet: +2H – ✸ – 3♦ – (-40)	Acrobatic face strike. If foe has no facial armor he will get some, when his nose heals. with facial armor: +5H w/o facial armor: 3✸ – 3♦ – (-40)	Slash between foe's fingers. If foe has a metal gauntlet on, he is fine. +8H – 9✸ –3♦
86-90	Sudden well placed blow makes you feel you are mighty in battle. Your foe is convinced. +6H – 2✸	Slash foe's neck. He thinks you just killed him. The wound is not mortal. Foe stumbles away fearful of death. +5H – 3✸ – 2♦	Shoulder strike unbalances foe and spins him around. He is frantic to turn around and face you. You move the other direction to prolong the effect. +6H – 2✸⊗	Strong grip to foe's weapon arm. He tries to throw you clear, but cannot. He finally drops his weapon . You lose your grip on him at the same time. +5H – ✸	Rend open foe's lower back with a quick double slash. Both wounds are deep and nasty. Blood pours out all over you and foe, making the combat seem brutal. +4H – 3✸ – ⊗ – 3♦ – (-40)
91-95	Leaping head stike. If foe has no helm, face and left ear is slashed. +3H – 2✸ – (-30)	Foe blocks your attack with his arm so you slash it in place of your original target. Foe realizes his mistake. +5H – 3✸⊗ – 2♦	Strike lands near neck and cheek. Foe is disoriented and recoils from your onslaught. +3H – 2✸⊗ – 2♦ – (-20)	Clean strike, you cleave the thumb on foe's weapon arm. His arm is less than useful. Foe drops his weapon. 2✸⊗ – (-50)	Dazzling leap knocks foe down. Foe hits on his back. Foe is disarmed and unconscious. +9H
96-99	Insulting strike to foe's nose. If foe has no nose guard, his nose is shredded. Foe reels from your onslaught. 9✸ – 3♦	Strike to foe's forehead. Foe is blinded, until the bleeding is stopped. Foe is off guard trying to stop the bleeding. Now is your chance. 3✸⊗ – 3♦ – (-40)	Epic slash to foe's Achilles tendon. Foe falls down. He is almost helpless. His attempts to crawl away fail. You have him now. +5H – 6✸⊗ – (-75)	Strike foe in face. If foe has a visored helm, he is blinded and helpless for a week while the swelling lasts. If foe does not have a visored helm, he loses 1 eye and is blind in the other. (-100)	Head strike is deadly. Slash open foe's head and send him down. He hits hard. The shock of your strike and the concussion of the fall is too much for him to handle. He dies in 9 rounds. —
100	Strike at foe's eyes. Without a visored helm, foe loses one of his eyes. +15H – 3✸⊗ – (-75)	Foe leaps back to avoid a slash to the throat, too late. He falls down. You expose some muscle and make a mess. 6✸⊗ – 3♦ – (-50)	Severe head strike. If foe has a helm he is unconscious for 1-10 days. Without a helm, foe is dead. +25H – ♦	Strike to foe's eyes. Foe is blinded permanently. Foe is at your mercy. +10H – 6✸⊗ – 2♦ – (-95)	Unbelievable strike to foe's neck. Vein and artery severed. Foe dies after 6 rounds of inactivity. 20♦

Key: ßπ =must parry ß rounds; ß∏=no parry for ß rounds; ß∑=stunned for ß rounds; ßʃ =bleed ß hits per round; (-ß)=foe has -ß penalty; (+ß)=attacker gets +ß next round.

Battleaxe Attack Table A-EM-2.1

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	34E	36E	34E	42E	38E	41E	46E	8A	10B	12C	18D	20D	23E	31E	32E	35E	36E	**148-150**
145-147	33E	35E	33E	41E	36E	39E	44E	8	10B	12C	18D	20D	23E	30E	31E	34E	35E	**145-147**
142-144	32E	33E	32E	39E	35E	37E	42E	8	10A	11B	17C	19D	22E	29E	29E	32E	33E	**142-144**
139-141	31E	32E	31E	38E	33E	35E	40E	8	9	10A	16C	18D	21E	28E	28E	31E	32E	**139-141**
136-138	29D	30E	30E	36E	31D	33D	38D	7	8	9A	16C	17C	20D	26D	26D	29D	30E	**136-138**
133-135	28D	29D	29D	35E	29D	31D	36D	7	8	8	15B	16C	19D	25D	24D	27D	29D	**133-135**
130-132	27D	27D	28D	33D	27D	29D	33D	6	7	7	14B	15C	18D	24D	23D	26D	27D	**130-132**
127-129	26D	26D	27D	32D	25D	27D	31D	6	6	6	13A	15B	17C	22C	21D	24D	25D	**127-129**
124-126	24D	24D	25D	30D	23C	25C	29D	6	6	5	13A	14B	16C	21C	20C	23D	24D	**124-126**
121-123	23C	23C	24D	28D	21C	23C	27C	5	5	4	12A	13B	15C	20C	18C	21C	22C	**121-123**
118-120	22C	21C	23C	27D	19C	21C	25C	5	5	3	11	12A	14C	18C	16C	19C	21C	**118-120**
115-117	21C	20C	22C	25C	17C	19C	23C	4	4	2	10	11A	13B	17B	15C	18C	19C	**115-117**
112-114	19C	18C	21C	24C	16B	17B	20C	4	3	1	9	10A	11B	16B	13B	16C	17C	**112-114**
109-111	18B	16C	20C	22C	14B	15B	18B	3	3	–	9	9A	10B	14B	12B	14B	16C	**109-111**
106-108	17B	15B	18B	21C	12B	13B	16B	3	2	–	8	9	9A	13A	10B	13B	14B	**106-108**
103-105	15B	13B	17B	19C	10B	11B	14B	3	1	–	7	8	8A	12A	8B	11B	13B	**103-105**
100-102	14B	12B	16B	18B	8A	9A	12B	2	–	–	6	7	7A	10A	7A	10B	11B	**100-102**
97-99	13A	10B	15B	16B	6A	7A	10A	2	–	–	6	6	6A	9A	5A	8A	9B	**97-99**
94-96	12A	9A	14B	14B	4A	5A	7A	1	–	–	5	5	5	8	4A	6A	8A	**94-96**
91-93	10A	7A	13A	13B	2A	3A	5A	1	–	–	4	4	4	6	2A	5A	6A	**91-93**
88-90	9A	6A	11A	11B	–	1	3A	–	–	–	3	3	3	5	–	3A	5A	**88-90**
85-87	8	4A	10A	10B	–	–	1	–	–	–	3	2	2	4	–	2	3A	**85-87**
82-84	7	3A	9A	8A	–	–	–	–	–	–	2	2	1	2	–	–	2A	**82-84**
79-81	5	1	8A	7A	–	–	–	–	–	–	1	–	–	1	–	–	—	**79-81**
76-78	4	–	7	5A	–	–	–	–	–	–	–	–	–	–	–	–	—	**76-78**
73-75	3	–	6	4A	–	–	–	–	–	–	–	–	–	–	–	–	—	**73-75**
70-72	1	–	4	2A	–	–	–	–	–	–	–	–	–	–	–	–	—	**70-72**
67-69	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**



WEAPON DATA

Weight: 2.7 kilograms

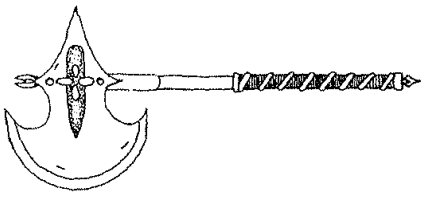
Range Modifiers: — (m=meters)

Fumble Range: 01 – 05UM (XX=5)

Critical Type: Slash (*SM,* p. 223)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7, 8; *Strength:* 65 - 75 w.
Note: Against modern armors (AT I-X), Slash criticals against armored locations are resolved as Krush criticals.



Broadsword Attack Table A-EM-2.2

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	16E	18E	20E	28E	22E	25E	30E	5A	6B	7C	8B	10C	13D	15D	16D	20D	20E	**148-150**
145-147	16E	18E	20E	28E	22E	25E	29E	5	6A	7B	8B	10C	13D	15D	16D	20D	20E	**145-147**
142-144	16E	17E	20E	27E	21E	24E	28E	5	6	7A	8B	10C	13D	15D	15D	19D	19E	**142-144**
139-141	15E	17E	19E	26E	20E	22E	27E	5	6	7	8A	10B	12D	14D	15D	18D	18E	**139-141**
136-138	15D	16D	18E	25E	19D	21D	25E	5	5	6	8A	9B	12C	14C	14C	18D	17E	**136-138**
133-135	14D	15D	18D	24E	18D	20D	24D	5	5	6	7	9B	11C	13C	13C	17C	16D	**133-135**
130-132	14D	15D	17D	23D	17D	19D	23D	5	5	5	7	8A	10C	12C	13C	16C	16D	**130-132**
127-129	13C	14D	17D	22D	17C	18D	22D	4	4	5	7	8A	10B	12C	12C	15C	15D	**127-129**
124-126	13C	13C	16D	21D	16C	17C	20D	4	4	4	6	8A	9B	11B	11C	14C	14D	**124-126**
121-123	12C	13C	15C	20D	15C	16C	19C	4	4	4	6	7A	9B	11B	11B	14B	13C	**121-123**
118-120	11C	12C	15C	19D	14C	15C	18C	4	3	3	6	7	8A	10B	10B	13B	12C	**118-120**
115-117	11B	11C	14C	18C	13B	14C	16C	4	3	3	6	6	8A	10A	9B	12B	11C	**115-117**
112-114	10B	11B	14C	17C	12B	13B	15C	3	2	2	5	6	7A	9A	9B	11B	10C	**112-114**
109-111	10B	10B	13B	16C	11B	12B	14B	3	2	2	5	6	7A	9A	8A	10B	10B	**109-111**
106-108	9B	9B	12B	15C	10B	11B	13B	3	2	2	5	5	6	8A	7A	10A	9B	**106-108**
103-105	9A	9B	12B	14C	10A	10B	11B	3	1	1	4	5	5	7	6A	9A	8B	**103-105**
100-102	8A	8A	11B	13B	9A	9A	10B	3	–	–	4	4	5	7	6A	8A	7B	**100-102**
97-99	8A	7A	11A	12B	8A	7A	9A	2	–	–	4	4	4	6	5	7A	6A	**97-99**
94-96	7A	7A	10A	11B	7A	6A	7A	2	–	–	4	4	4	6	4	6A	5A	**94-96**
91-93	7	6A	9A	10B	6	5A	6A	2	–	–	3	3	3	5	4	6	4A	**91-93**
88-90	6	5	9A	9B	5	4	5A	2	–	–	3	3	3	5	3	5	4A	**88-90**
85-87	6	5	8A	8B	4	3	4A	1	–	–	3	2	2	4	2	4	3A	**85-87**
82-84	5	4	8	7A	3	2	2	1	–	–	2	2	2	3	2	3	2	**82-84**
79-81	5	3	7	6A	2	1	1	1	–	–	2	2	1	3	1	2	1	**79-81**
76-78	4	3	6	5A	2	–	–	–	–	–	2	1	–	2	–	2	—	**76-78**
73-75	3	2	6	4A	–	–	–	–	–	–	1	–	–	2	–	–	—	**73-75**
70-72	3	1	5	3A	–	–	–	–	–	–	1	–	–	1	–	–	—	**70-72**
67-69	2	–	5	2	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	2	–	4	1	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	1	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 1.8 kilograms

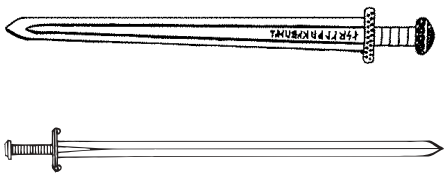
Range Modifiers: — (m=meters)

Fumble Range: 01 – 03UM (XX=3)

Critical Type: Slash (*SM,* p. 223)

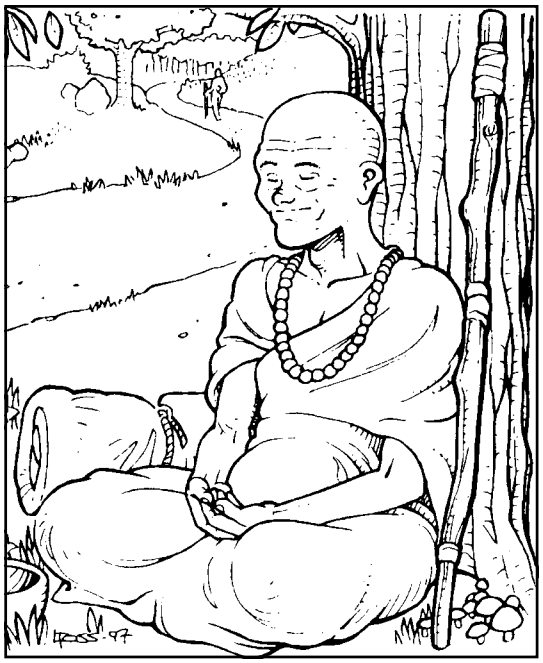
F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7;
Strength: 75 - 86 w.
Note: Against modern armors (AT I-X), Slash criticals against armored locations are resolved as Krush criticals.



Club/Jo Stick Attack Table A-EM-2.3

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	13E	15E	13E	21E	14E	17E	22E	5A	6B	7C	8B	11C	13D	12C	14D	17D	17D	**148-150**
145-147	13E	15E	13E	21E	14E	17E	22E	5	6A	7B	8B	11C	13D	12C	14D	17D	17D	**145-147**
142-144	13E	15E	13E	20E	14E	16E	21E	5	6	7A	8A	11B	13D	12C	13D	16D	16D	**142-144**
139-141	12D	14D	13D	19E	13D	15D	20D	5	6	7	8A	10A	12C	11C	13D	16D	15D	**139-141**
136-138	12D	13D	12D	19E	12D	15D	19D	5	5	6	8	10A	11C	11B	12C	15C	15D	**136-138**
133-135	12D	13D	12D	18D	12D	14D	18D	5	5	6	7	9	11C	10B	12C	14C	14C	**133-135**
130-132	11C	12D	11D	17D	11C	13C	17D	5	5	5	7	9	10B	10B	11C	13C	13C	**130-132**
127-129	11C	12C	11C	16D	11C	12C	16C	4	4	5	7	9	10B	9B	10B	13C	12C	**127-129**
124-126	10C	11C	11C	15D	10B	11C	15C	4	4	4	6	8	9B	9A	10B	12B	11C	**124-126**
121-123	10B	10C	10C	15C	9B	11B	14C	4	4	4	6	8	8A	9A	9B	11B	11B	**121-123**
118-120	9B	10B	10B	14C	9B	10B	13B	4	3	3	6	7	8A	8A	8A	10B	10B	**118-120**
115-117	9B	9B	9B	13C	8A	9B	11B	4	3	3	5	7	7A	8A	8A	10A	9B	**115-117**
112-114	8A	9B	9B	12C	8A	8A	10B	3	2	2	5	6	7	7	7A	9A	8B	**112-114**
109-111	8A	8B	8B	12B	7A	8A	9B	3	2	2	5	6	6	7	6A	8A	8B	**109-111**
106-108	8A	7A	8A	11B	6	7A	8A	3	2	2	4	5	5	6	6	8A	7A	**106-108**
103-105	7	7A	8A	10B	6	6	7A	3	1	1	4	5	5	6	5	7	6A	**103-105**
100-102	7	6A	7A	9B	5	5	6A	3	–	–	4	4	4	5	4	6	5A	**100-102**
97-99	6	6	7	8A	5	4	5	2	–	–	3	4	4	5	4	5	4A	**97-99**
94-96	6	5	6	8A	4	4	4	2	–	–	3	3	3	4	3	5	4A	**94-96**
91-93	5	4	6	7A	3	3	3	2	–	–	3	3	2	4	3	4	3	**91-93**
88-90	5	4	6	6A	3	2	2	2	–	–	2	2	2	3	2	3	2	**88-90**
85-87	4	3	5	5A	2	1	1	1	–	–	2	2	1	3	1	2	1	**85-87**
82-84	4	3	5	4	2	–	–	1	–	–	2	1	–	2	–	2	—	**82-84**
79-81	3	2	4	4	1	–	–	1	–	–	2	1	–	2	–	1	—	**79-81**
76-78	3	1	4	3	–	–	–	–	–	–	1	–	–	1	–	–	—	**76-78**
73-75	3	–	3	2	–	–	–	–	–	–	–	–	–	–	–	–	—	**73-75**
70-72	2	–	3	1	–	–	–	–	–	–	–	–	–	–	–	–	—	**70-72**
67-69	2	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**



WEAPON DATA

Weight: 1.7 kilograms

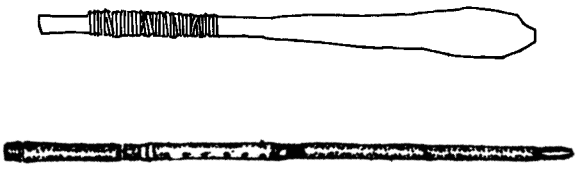
Range Modifiers: 0-3m: -40 (m=meters)

Fumble Range: 01 – 04UM (XX=4)

Critical Type: Krush (*SM,* p. 221)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7, 8; *Strength:* 46 - 54 w.



Combat Knife Attack Table A-EM-2.4

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	6E	8E	8E	16E	10E	13E	18E	2A	3B	4C	6C	87C	11D	6C	7C	11C	11D	**148-150**
145-147	6E	8E	8E	16E	10E	13E	18E	2	3A	4B	6C	83C	11D	6C	7C	11C	11D	**145-147**
142-144	6E	8E	8E	16E	10E	12E	17E	2	3	4A	6C	79C	11D	6C	7C	11C	11D	**142-144**
139-141	6D	8D	8E	15E	9D	12D	16E	2	3	4	6B	75C	10D	6B	7C	10C	10D	**139-141**
136-138	6D	8D	8D	14E	9D	11D	15D	2	3	4	6B	71B	10C	6B	6B	10B	10C	**136-138**
133-135	6C	7D	8D	14D	9D	11D	14D	2	3	3	6B	67B	9C	6B	6B	9B	9C	**133-135**
130-132	6C	7C	7D	13D	8C	10D	13D	2	3	3	5A	63B	9C	5A	6B	9B	9C	**130-132**
127-129	5B	6C	7C	12D	8C	9C	12C	2	3	2	5A	59B	8C	5A	5A	8B	8C	**127-129**
124-126	5B	6B	7C	12D	7C	9C	12C	2	2	2	5A	55A	7B	5A	5A	8A	7B	**124-126**
121-123	5A	6B	7C	11D	7B	8C	11C	2	2	2	5	51A	7B	5	5A	7A	7B	**121-123**
118-120	5A	5B	6C	10C	6B	7B	10C	2	2	1	4	47A	6B	4	4	7A	6B	**118-120**
115-117	4A	5A	6B	10C	6B	7B	9B	2	2	1	4	42A	6A	4	4	6A	6A	**115-117**
112-114	4	5A	6B	9C	5A	6B	8B	2	2	–	4	38	5A	4	4	6	5A	**112-114**
109-111	4	4A	5B	8C	5A	5B	7B	2	1	–	4	34	5A	4	3	5	5A	**109-111**
106-108	4	4	5B	8B	4A	5A	6B	2	1	–	3	30	4A	3	3	5	4A	**106-108**
103-105	4	4	5A	7B	4	4A	5A	1	1	–	3	26	4	3	3	4	4	**103-105**
100-102	3	3	5A	7B	3	3A	4A	1	–	–	3	22	3	3	2	4	3	**100-102**
97-99	3	3	4A	6B	3	3	3A	1	–	–	3	18	2	3	2	3	2	**97-99**
94-96	3	3	4A	5B	3	2	3A	1	–	–	2	14	2	2	2	3	2	**94-96**
91-93	3	2	4	5A	2	1	2	1	–	–	2	10	1	2	1	2	1	**91-93**
88-90	2	2	4	4A	2	–	–	–	–	–	2	6	–	2	–	2	—	**88-90**
85-87	2	2	3	3A	1	–	–	–	–	–	2	2	–	2	–	1	—	**85-87**
82-84	2	1	3	3A	–	–	–	–	–	–	1	–	–	1	–	–	—	**82-84**
79-81	2	1	3	2A	–	–	–	–	–	–	1	–	–	1	–	–	—	**79-81**
76-78	2	–	3	1	–	–	–	–	–	–	–	–	–	–	–	–	—	**76-78**
73-75	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**73-75**
70-72	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**70-72**
67-69	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 1.8 kilograms

Fumble Range: 01 – 04UM (XX=4)

Critical Type: Puncture (*SM*, p. 225)

Range Modifiers: (m=meters)

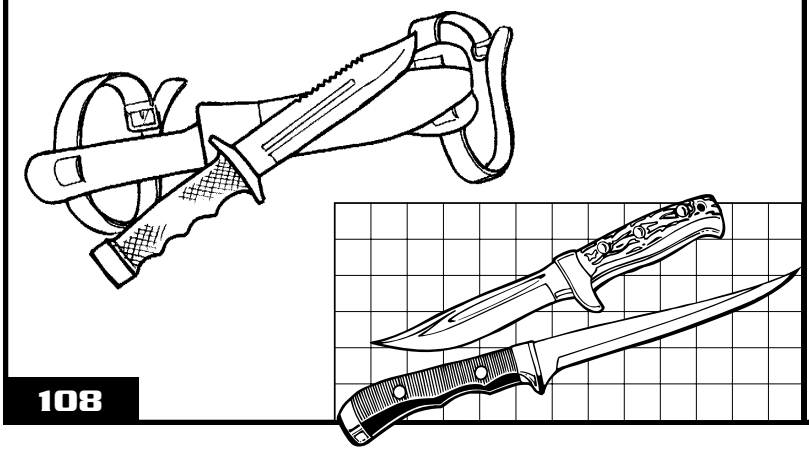
0-3m:	-10
4-8m:	-20
9-17m:	-30

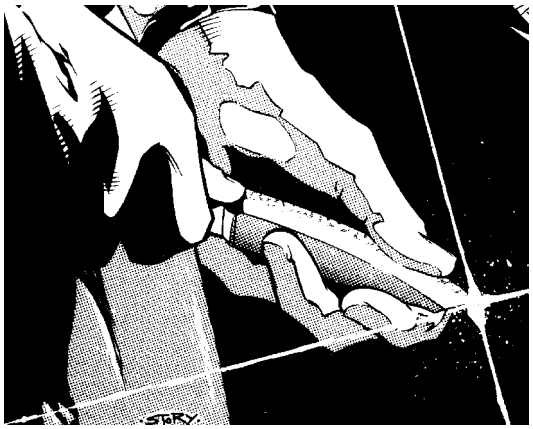
F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6;
Strength: 74 - 86 w.

Note: Against modern armors (AT I-X), criticals against armored locations are resolved as Ballistic Impact criticals.





Compound Bow Attack Table A-EM-2.5

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	23E	26E	23E	32E	19E	22E	30E	7A	8B	9C	23E	26E	29E	23E	26E	29E	29E	**148-150**
145-147	23E	26E	23E	32E	19E	22E	29E	7	8A	9B	23E	26E	28E	23E	25E	28E	28E	**145-147**
142-144	22E	25E	22E	30E	18E	21E	28E	7	8	8A	22E	24E	27E	22E	24E	27E	27E	**142-144**
139-141	21E	24E	22E	29E	17E	20E	27E	7	7	7	21E	23E	26E	21E	23E	26E	26E	**139-141**
136-138	20E	22E	21E	28E	16D	19E	25E	6	6	6	20D	22D	25E	20D	22D	25E	25E	**136-138**
133-135	20D	21D	20E	27E	16D	18D	24D	6	6	6	19D	21D	23D	19D	21D	23D	23D	**133-135**
130-132	19D	20D	19D	26D	15D	17D	22D	5	5	5	18D	20D	22D	18D	19D	22D	22D	**130-132**
127-129	18D	19D	19D	25D	14D	16D	21D	5	4	4	17D	19D	21D	17D	18D	21D	21D	**127-129**
124-126	17D	18D	18D	24D	13C	15D	20D	4	4	3	16C	18D	20D	16C	17D	20D	20D	**124-126**
121-123	16C	17D	17D	23D	12C	14C	18C	4	3	2	15C	17C	19D	15C	16C	18C	19D	**121-123**
118-120	15C	16C	16D	22D	12C	13C	17C	3	3	1	14C	16C	17C	14C	15C	17C	17C	**118-120**
115-117	14C	15C	16C	21D	11C	11C	16C	3	2	–	13C	15C	16C	13C	13C	16C	16C	**115-117**
112-114	14C	14C	15C	20C	10B	10C	14C	2	1	–	12B	14C	15C	12B	12C	15C	15C	**112-114**
109-111	13C	13C	14C	19C	9B	9B	13B	2	–	–	11B	13B	14C	11B	11B	13B	14C	**109-111**
106-108	12B	12C	14C	18C	8B	8B	12B	2	–	–	10B	11B	12B	10B	10B	12B	12B	**106-108**
103-105	11B	11B	13C	16C	8B	7B	10B	1	–	–	10B	10B	11B	9B	9B	11B	11B	**103-105**
100-102	10B	10B	12B	15C	7A	6B	9B	–	–	–	9A	9B	10B	8A	7B	10B	10B	**100-102**
97-99	9B	9B	11B	14C	6A	5A	8B	–	–	–	8A	8A	9B	7A	6A	8A	9B	**97-99**
94-96	9A	8B	11B	13B	5A	4A	6A	–	–	–	7A	7A	8B	6A	5A	7A	8B	**94-96**
91-93	8A	7B	10B	12B	4A	3A	5A	–	–	–	6A	6A	6A	5A	4A	6A	6A	**91-93**
88-90	7A	6A	9B	11B	3	2A	4A	–	–	–	5	5A	5A	5	3A	5A	5A	**88-90**
85-87	6A	5A	9B	10B	3	1A	2A	–	–	–	4	4A	4A	4	1A	3A	4A	**85-87**
82-84	5A	4A	8A	9B	2	–	1	–	–	–	3	3	3A	3	–	2	3A	**82-84**
79-81	4	3A	7A	8B	1	–	–	–	–	–	2	2	1A	2	–	1	1A	**79-81**
76-78	4	2A	6A	7A	–	–	–	–	–	–	1	–	–	–	–	–	—	**76-78**
73-75	3	–	6A	6A	–	–	–	–	–	–	–	–	–	–	–	–	—	**73-75**
70-72	2	–	5A	5A	–	–	–	–	–	–	–	–	–	–	–	–	—	**70-72**
67-69	1	–	4	4A	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	–	–	3	2A	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	–	–	3	1A	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

WEAPON DATA

Weight: 1.1 kilograms

Fumble Range: 01 – 04[UM] (XX=4)

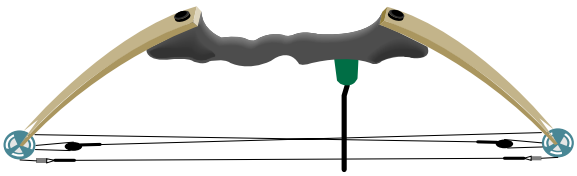
Critical Type: Puncture (*SM*, p. 225)

Range Modifiers: (m=meters)

0-3m:	+25
4-33m:	+0
34-67m:	-30
68-100m:	-40
101-150m:	-50

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: Auto;
Strength: 75 w.
Note: Against modern armors (AT I-X), criticals against armored locations are resolved as Ballistic Impact criticals.



Crossbow Attack Table A-EM-2.6

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	19E	21E	20E	28E	18E	21E	26E	4A	5B	6C	17D	19D	21E	17D	18D	22D	21E	**148-150**
145-147	19E	21E	20E	28E	18E	20E	25E	4	5A	6B	17D	19D	21E	17D	18D	22D	21E	**145-147**
142-144	18E	20E	19E	26E	17E	19E	24E	4	5	5A	16D	18D	20E	16D	17D	20D	20E	**142-144**
139-141	17E	19E	19E	25E	16D	18E	23E	4	5	5	15D	17D	19E	15D	17D	19D	19E	**139-141**
136-138	17D	18D	18E	24E	15D	17D	21D	4	4	4	15C	16D	18D	15C	16C	18D	18D	**136-138**
133-135	16D	17D	17D	23D	14D	16D	20D	4	4	3	14C	15C	16D	14C	15C	17C	16D	**133-135**
130-132	15D	16D	17D	22D	13D	15D	19D	4	4	3	13C	14C	15D	13C	14C	16C	15D	**130-132**
127-129	14C	15D	16D	21D	12C	14C	17D	3	3	2	12C	13C	14D	12C	14C	15C	14D	**127-129**
124-126	14C	14C	15D	20D	12C	12C	16C	3	3	1	11B	12C	13C	11B	13C	14C	13C	**124-126**
121-123	13C	13C	14C	19D	11C	11C	15C	3	3	–	11B	12B	12C	11B	12B	13B	12C	**121-123**
118-120	12C	12C	14C	18C	10B	10C	13C	3	2	–	10B	11B	11C	10B	12B	12B	11C	**118-120**
115-117	11B	11C	13C	16C	9B	9B	12C	2	2	–	9A	10B	10C	9A	11B	11B	10C	**115-117**
112-114	11B	10B	12C	15C	8B	8B	11B	2	1	–	8A	9B	9B	8A	10B	9B	9B	**112-114**
109-111	10B	9B	12B	14C	7B	7B	9B	2	1	–	8A	8A	8B	8A	9A	8B	8B	**109-111**
106-108	9B	8B	11B	13C	6A	6B	8B	2	–	–	7A	7A	7B	7A	9A	7A	7B	**106-108**
103-105	8A	7B	10B	12B	5A	4A	7B	1	–	–	6	6A	6B	6	8A	6A	6B	**103-105**
100-102	8A	6A	9B	11B	4A	3A	5A	1	–	–	5	5A	5A	5	7A	5A	5A	**100-102**
97-99	7A	5A	9A	10B	3	2A	4A	1	–	–	4	4A	4A	4	7	4A	4A	**97-99**
94-96	6A	4A	8A	9B	3	1A	3A	–	–	–	4	3	3A	4	6	3A	3A	**94-96**
91-93	5	3A	7A	8B	2	–	1A	–	–	–	3	3	2A	3	5	2	2A	**91-93**
88-90	5	2	7A	7A	–	–	–	–	–	–	2	2	1	2	4	–	1	**88-90**
85-87	4	1	6A	5A	–	–	–	–	–	–	1	–	–	1	4	–	—	**85-87**
82-84	3	–	5	4A	–	–	–	–	–	–	–	–	–	–	3	–	—	**82-84**
79-81	2	–	5	3A	–	–	–	–	–	–	–	–	–	–	2	–	—	**79-81**
76-78	2	–	4	2A	–	–	–	–	–	–	–	–	–	–	1	–	—	**76-78**
73-75	–	–	3	1	–	–	–	–	–	–	–	–	–	–	–	–	—	**73-75**
70-72	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**70-72**
67-69	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 1.1 kilograms

Fumble Range: 01 – 05UM (XX=5)

Critical Type: Puncture (*SM*, p. 225)

Range Modifiers: (m=meters)

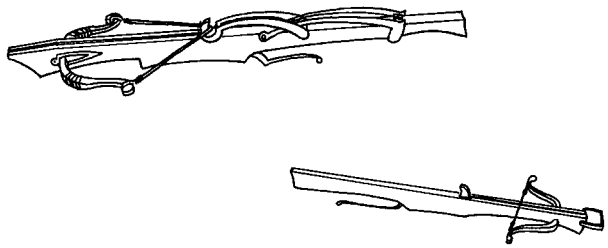
0-3m:	+15
4-33m:	+0
34-67m:	-35
68-100m:	-50
101-120m:	-75

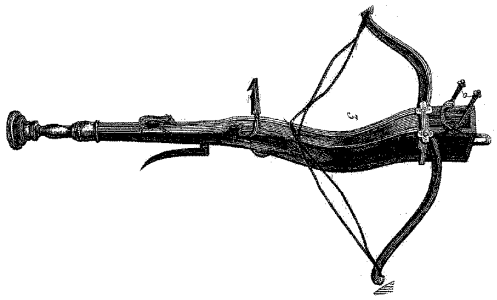
F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: Auto;
Strength: 63 – 67 w.

Note: Against modern armors (AT I-X), criticals against armored locations are resolved as Ballistic Impact criticals.



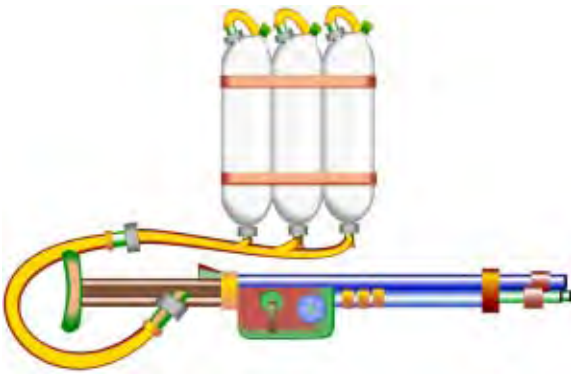


Flamer Attack Table A-EM-2.7

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	24E	24E	29E	41E	38E	41E	48E	10D	21E	23E	22E	30E	34E	40D	36E	31E	24E	**148-150**
145-147	24E	24E	29E	40E	37E	40E	47E	10D	21E	23E	22E	30E	33E	39D	36E	31E	24E	**145-147**
142-144	23E	23E	28E	39E	36E	39E	46E	10D	21E	22E	21E	29E	32E	38D	34E	30E	23E	**142-144**
139-141	23E	23E	27E	37E	35E	38E	44E	10D	20E	21E	21E	28E	31E	37D	33E	29E	23E	**139-141**
136-138	22D	22E	26E	36E	34E	37E	43E	10D	19E	21E	20E	27E	30E	36D	32D	28D	22D	**136-138**
133-135	21D	21D	25D	35E	33E	35E	41E	10C	19E	20E	19D	26E	29E	34D	31D	27D	21D	**133-135**
130-132	20D	20D	24D	33D	32E	34E	40E	9C	18D	19D	19D	25D	28D	33C	30D	26D	21D	**130-132**
127-129	20D	20D	24D	32D	31D	33D	38D	9C	17D	18D	18D	24D	27D	32C	29D	25C	20C	**127-129**
124-126	19D	19D	23D	31D	30D	32D	37D	9C	17D	18D	17D	23D	25D	30C	28C	25C	19C	**124-126**
121-123	18C	18D	22D	29D	28D	31D	35D	9B	16D	17D	17D	22D	24D	29C	27C	24C	19C	**121-123**
118-120	18C	17C	21D	28D	27D	29D	34D	8B	15D	16D	16C	21D	23D	28C	26C	23C	18C	**118-120**
115-117	17C	17C	20C	27D	26D	28D	32D	8B	15D	15D	15C	20C	22D	27B	25C	22B	18B	**115-117**
112-114	16C	16C	19C	25C	25D	27D	31D	8B	14C	15C	15C	19C	21C	25B	24B	21B	17B	**112-114**
109-111	15B	15C	18C	24C	24C	26C	29C	7B	13C	14C	14C	18C	20C	24B	22B	20B	16B	**109-111**
106-108	15B	14C	18C	22C	23C	24C	28C	7A	13C	13C	13C	17C	18C	23B	21B	19A	16B	**106-108**
103-105	14B	14B	17C	21C	22C	23C	26C	7A	12C	12C	13C	16C	17C	22B	20B	18A	15A	**103-105**
100-102	13B	13B	16B	20C	20C	22C	25C	7A	12C	11C	12B	15C	16C	20B	19A	17A	14A	**100-102**
97-99	13A	12B	15B	18C	19C	21C	24C	6A	11C	11C	11B	14B	15C	19A	18A	17A	14A	**97-99**
94-96	12A	12B	14B	17B	18C	19C	22C	6A	10B	10B	11B	13B	14B	18A	17A	16	13	**94-96**
91-93	11A	11B	13B	16B	17C	18C	21C	6	10B	9B	10B	12B	13B	17A	16A	15	12	**91-93**
88-90	10A	10A	12B	14B	16B	17B	19B	6	9B	8B	9B	11B	11B	15A	15	14	12	**88-90**
85-87	10A	9A	11A	13B	15B	16B	18B	5	8B	8B	9A	10B	10B	14A	14	13	11	**85-87**
82-84	9	9A	11A	11B	14B	15B	16B	5	8B	7B	8A	9A	9B	13A	13	12	10	**82-84**
79-81	8	8A	10A	10B	12B	13B	15B	5	7B	6B	7A	8A	8B	12	12	11	10	**79-81**
76-78	7	7A	9A	9A	11B	12B	13B	5	6A	5A	7A	7A	7A	10	10	10	9	**76-78**
73-75	7	6	8A	7A	10B	11B	12B	4	6A	5A	6A	6A	6A	9	9	9	8	**73-75**
70-72	6	6	7A	6A	9A	10B	10A	4	5A	4A	5	6A	4A	8	8	8	8	**70-72**
67-69	5	5	6	5A	8A	8A	9A	4	4A	3A	5	5A	3A	6	7	8	7	**67-69**
64-66	5	4	5	3A	7A	7A	7A	3	4A	2A	4	4	2A	5	6	7	6	**64-66**
61-63	4	3	4	2A	6A	6A	6A	3	3A	2A	3	3	1A	4	5	6	6	**61-63**
58-60	3	3	4	–	4A	5A	4A	3	3	–	3	2	–	3	4	5	5	**58-60**
55-57	2	2	3	–	3A	3A	3A	3	2	–	2	–	–	1	3	4	4	**55-57**
52-54	2	1	2	–	2A	2A	1A	2	1	–	1	–	–	–	2	3	4	**52-54**
49-51	1	–	1	–	1	1A	–	2	–	–	–	–	–	–	–	2	3	**49-51**
46-48	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	1	2	**46-48**
43-45	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	2	**43-45**
40-42	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	**40-42**
37-39	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7;
Strength: 90 w.



WEAPON DATA

Weight: 5.0 kilograms

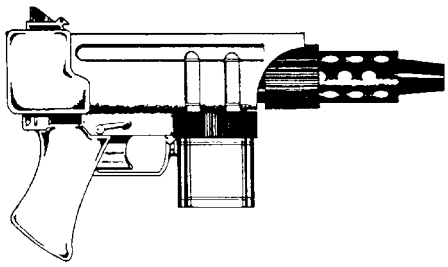
Fumble Range: 01 – 10UM (XX=10)

Critical Type: Heat (*SM*, p. 220)

Range Modifiers: (m=meters)

0-10m:	+10
11-25m:	+5
26-40m:	+0
41-60m:	-25
61-75m:	-50

F — Weapon fumbled, roll on *SM* Table A-8.10.1 (p. 229).
UM — Unmodified roll. Apply result with no modifications.



Grenade Attack Table A-EM-2.8

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	45F	36F	55F	69F	46F	69F	90F	11B	14D	17F	26D	30D	36D	45E	54E	63E	72E	**148-150**
145-147	44F	36F	54F	68F	46F	68F	88F	11B	14D	17F	26D	30D	36D	45E	53E	62E	71E	**145-147**
142-144	43F	35F	53F	66F	44F	66F	87F	11B	14D	17F	26D	29D	35D	43E	52E	60E	69E	**142-144**
139-141	42F	34F	51F	65F	43F	65F	85F	11B	14D	17F	25D	29D	34D	42E	51E	59E	67E	**139-141**
136-138	41F	33F	50F	63F	42F	63F	83F	11B	13D	16F	24D	28D	33D	41E	49E	57E	66E	**136-138**
133-135	40F	32F	49F	62F	41F	61F	81F	10B	13D	16F	24D	27D	33D	40E	48E	56E	64E	**133-135**
130-132	39E	31E	47E	60F	40F	60F	79F	10B	13D	15E	23D	26D	32D	39D	47D	54D	62E	**130-132**
127-129	38E	31E	46E	59E	39E	58E	77F	10B	12D	15E	22C	26D	31D	38D	45D	53D	61D	**127-129**
124-126	37E	30E	44E	57E	38E	57E	75E	10B	12C	15E	22C	25C	30D	37D	44D	51D	59D	**124-126**
121-123	35E	29E	43E	55E	37E	55E	73E	9B	12C	14E	21C	24C	29C	36D	43D	50D	57D	**121-123**
118-120	34E	28E	42E	54E	36E	53E	71E	9B	11C	14E	21C	24C	28C	35D	42D	48D	56D	**118-120**
115-117	33E	27E	40E	52E	34E	52E	69E	9B	11C	13E	20C	23C	27C	34D	40D	47D	54D	**115-117**
112-114	32D	26D	39E	51E	33E	50E	67E	8B	11C	13E	19C	22C	27C	33C	39D	45D	52D	**112-114**
109-111	31D	25D	38D	49E	32D	48D	65E	8A	10C	13D	19C	21C	26C	31C	38C	44C	51C	**109-111**
106-108	30D	25D	36D	48D	31D	47D	63E	8A	10C	12D	18C	21C	25C	30C	36C	42C	49C	**106-108**
103-105	29D	24D	35D	46D	30D	45D	61D	8A	10C	12D	17B	20C	24C	29C	35C	41C	47C	**103-105**
100-102	27D	23D	33D	45D	29D	44D	60D	7A	9B	11D	17B	19B	23C	28C	34C	39C	45C	**100-102**
97-99	26D	22C	32D	43D	28D	42D	58D	7A	9B	11D	16B	18B	22B	27B	32C	38C	44C	**97-99**
94-96	25C	21C	31D	41D	27D	40D	56D	7A	9B	10D	15B	18B	22B	26B	31C	36C	42C	**94-96**
91-93	24C	20C	29C	40D	25D	39D	54D	6A	8B	10C	15B	17B	21B	25B	30B	35B	40C	**91-93**
88-90	23C	19C	28C	38D	24C	37C	52D	6A	8B	10C	14B	16B	20B	24B	28B	33B	39B	**88-90**
85-87	22C	18C	26C	37C	23C	36C	50D	6A	7B	9C	14B	16B	19B	23B	27B	31B	37B	**85-87**
82-84	21C	18C	25C	35C	22C	34C	48C	5A	7B	9C	13A	15B	18B	22B	26B	30B	35B	**82-84**
79-81	20C	17B	24C	34C	21C	32C	46C	5A	7B	8C	12A	14B	17B	21A	25B	28B	34B	**79-81**
76-78	18B	16B	22C	32C	20C	31C	44C	5A	6A	8C	12A	13A	16B	20A	23B	27B	32B	**76-78**
73-75	17B	15B	21B	31C	19C	29C	42C	5	6A	8B	11A	13A	16A	18A	22A	25A	30B	**73-75**
70-72	16B	14B	19B	29C	18C	27C	40C	4	6A	7B	10A	12A	15A	17A	21A	24A	29B	**70-72**
67-69	15B	13B	18B	27C	17B	26B	38C	4	5A	7B	10A	11A	14A	16A	19A	22A	27A	**67-69**
64-66	14B	12B	17B	26B	15B	24B	36C	4	5A	6B	9A	10A	13A	15A	18A	21A	25A	**64-66**
61-63	13B	11A	15B	24B	14B	23B	34C	3	5A	6B	9	10A	12A	14	17A	19A	24A	**61-63**
58-60	12A	11A	14B	23B	13B	21B	33B	3	4A	6B	8	9A	11A	13	15A	18A	22A	**58-60**
55-57	10A	10A	13B	21B	12B	19B	31B	3	4A	5B	7	8A	11A	12	14A	16A	20A	**55-57**
52-54	9A	9A	11A	20B	11B	18B	29B	3	4	5A	7	8	10A	11	13	15	18A	**52-54**
49-51	8A	8A	10A	18B	10A	16A	27B	2	3	4A	6	7	9A	10	11	13	17A	**49-51**
46-48	7A	7A	8A	17B	9A	14A	25B	2	3	4A	5	6	8	9	10	12	15	**46-48**
43-45	6A	6	7A	15A	8A	13A	23B	2	3	3A	5	5	7	8	9	10	13	**43-45**
40-42	5	5	6A	13A	7A	11A	21B	1	2	3A	4	5	6	6	8	9	12	**40-42**
37-39	4	4	4A	12A	5A	10A	19A	1	2	3A	4	4	6	5	6	7	10	**37-39**
34-36	3	4	3	10A	4A	8A	17A	–	1	2	3	3	5	4	5	6	8	**34-36**
xx-33	1	3	1	9A	3A	6A	15A	–	1	2	2	2	4	3	4	4	7	**xx-33**
UM 01-xx	F	F	F	FA	FA	FA	FA	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 0.1 kilograms

Fumble Range: 01 – 02[UM] (XX=2)

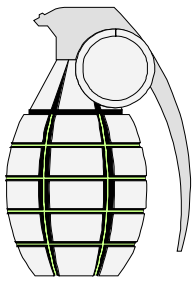
Critical Type: Shrapnel (p. 103)

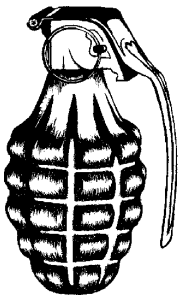
Range Modifiers: (m=meters)

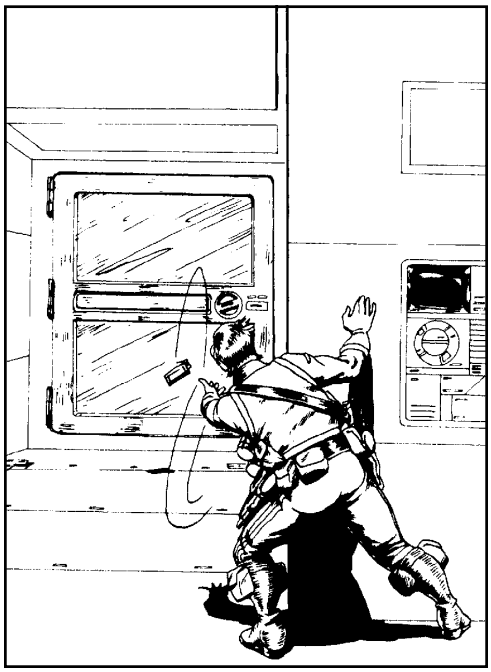
0-5m:	+50
6-15m:	+25
16-25m:	+15
26-50m:	+0
51-100m:	-30

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: 1,2; *Strength:* 90 w.





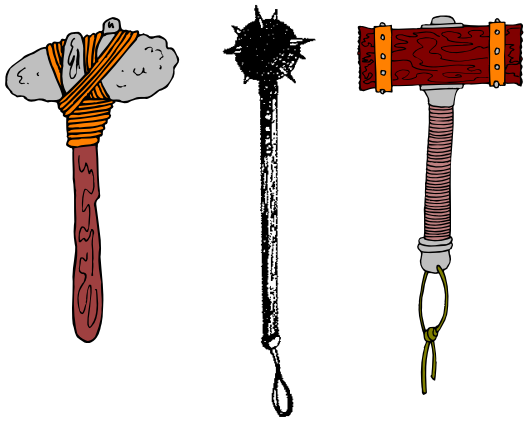


Hammer/Mace Attack Table A-EM-2.9

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	14E	16E	15E	23E	15E	18E	23E	8B	9C	10C	13D	16D	18E	13D	15D	16D	18E	**148-150**
145-147	14E	16E	15E	23E	15E	18E	23E	8	9A	10B	13D	16D	18E	13D	15D	16D	18E	**145-147**
142-144	14E	16E	15E	22E	14E	17E	21E	8	9	10A	13D	16D	17E	13D	15D	16D	17E	**142-144**
139-141	13E	15E	14E	21E	14D	16E	20E	8	9	9	12D	15D	16E	12D	14D	15D	16E	**139-141**
136-138	13D	14D	14D	20E	13D	15D	19D	8	8	9	12C	14D	16E	12C	13C	14D	16E	**136-138**
133-135	13D	14D	13D	19D	12D	14D	18D	7	8	8	11C	14C	15D	11C	13C	14C	15D	**133-135**
130-132	12D	13D	13D	19D	12D	13D	17D	7	7	8	11C	13C	14D	11C	12C	13C	14D	**130-132**
127-129	12C	13D	13D	18D	11C	13C	16D	7	7	7	10C	12C	13D	10C	11C	12C	13D	**127-129**
124-126	11C	12C	12C	17D	10C	12C	15C	7	7	6	10B	12C	13D	10B	11C	12C	13D	**124-126**
121-123	11C	11C	12C	16D	10C	11C	14C	6	6	6	9B	11B	12C	9B	10B	11B	12C	**121-123**
118-120	10C	11C	11C	15C	9B	10C	13C	6	6	5	9B	10B	11C	9B	9B	10B	11C	**118-120**
115-117	10B	10C	11C	14C	8B	9B	11C	6	6	5	8A	10B	10C	8A	9B	10B	10C	**115-117**
112-114	9B	10B	10B	13C	8B	8B	10B	5	5	4	8A	9B	9C	8A	8B	9B	9C	**112-114**
109-111	9B	9B	10B	13C	7B	7B	9B	5	5	4	7A	8B	9B	7A	7A	8B	9B	**109-111**
106-108	8B	8B	9B	12C	6A	7B	8B	5	4	3	7A	8A	8B	7A	7A	8A	8B	**106-108**
103-105	8A	8B	9B	11B	6A	6A	7B	5	4	3	7	7A	7B	7	6A	7A	7B	**103-105**
100-102	7A	7A	8A	10B	5A	5A	6A	4	4	2	6	7A	6B	6	6A	7A	6B	**100-102**
97-99	7A	7A	8A	9B	4	4A	5A	4	3	2	6	6A	6A	6	5	6A	6A	**97-99**
94-96	6A	6A	7A	8B	4	3A	4A	4	3	1	5	5A	5A	5	4	5A	5A	**94-96**
91-93	6	5A	7A	7B	3	2	2A	3	2	–	5	5	4A	5	4	5	4A	**91-93**
88-90	6	5	6	6A	2	1	1	3	2	–	4	4	3A	4	3	4	3A	**88-90**
85-87	5	4	6	6A	2	–	–	3	2	–	4	3	3A	4	2	3	3A	**85-87**
82-84	5	4	5	5A	1	–	–	2	1	–	3	3	2	3	2	3	2	**82-84**
79-81	4	3	5	4A	–	–	–	2	–	–	3	2	1	3	1	2	1	**79-81**
76-78	4	2	4	3A	–	–	–	2	–	–	2	1	–	2	–	1	—	**76-78**
73-75	3	2	4	2	–	–	–	2	–	–	2	–	–	2	–	–	—	**73-75**
70-72	3	1	4	1	–	–	–	1	–	–	1	–	–	1	–	–	—	**70-72**
67-69	2	–	3	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**67-69**
64-66	2	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7, 8;
Strength: 74 - 86 w.



WEAPON DATA

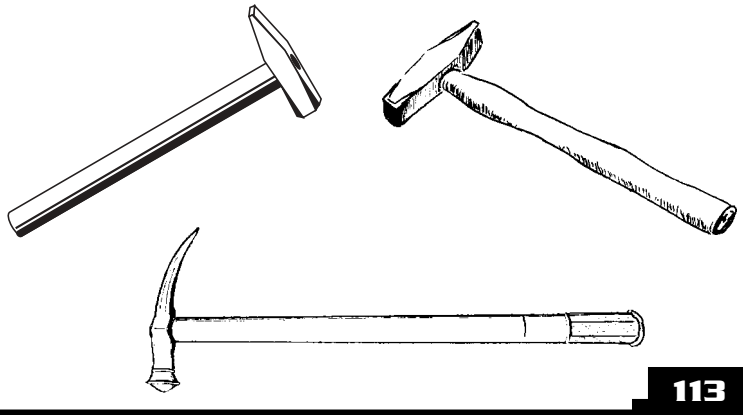
Weight: 2.0 kilograms

Range Modifiers: 0-3m: -35 (m=meters)

Fumble Range: 01 – 02[UM] (XX=2)

Critical Type: Krush (*SM*, p. 221)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.



Monosword Attack Table A-EM-2.10

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	30E	30E	30E	30E	30E	30E	30E	12E	15E	18E	30E	30E	30E	30E	30E	30E	30E	**148-150**
145-147	30E	30E	30E	30E	29E	29E	29E	12E	15E	18E	30E	29E	29E	30E	30E	29E	29E	**145-147**
142-144	29E	28E	29E	29E	28E	28E	28E	12E	15E	17E	29E	28E	28E	29E	28E	28E	28E	**142-144**
139-141	28E	27E	28E	27E	27E	27E	27E	12D	14D	17E	27E	27E	27E	27E	27E	27E	27E	**139-141**
136-138	27E	26E	27E	26E	26E	25E	25E	11D	14D	16D	26E	26E	25E	26E	26E	26E	25E	**136-138**
133-135	26E	25D	26E	25E	25D	24D	24D	11D	13D	15D	25E	25D	24D	25E	25D	25D	24D	**133-135**
130-132	25D	24D	25D	24D	23D	23D	23D	11C	13D	15D	24D	24D	23D	24D	24D	23D	23D	**130-132**
127-129	24D	23D	24D	23D	22D	22D	22D	10C	12C	14D	23D	23D	22D	23D	23D	22D	22D	**127-129**
124-126	23D	22D	24D	22D	21D	20D	20D	10B	12C	13C	22D	21D	20D	22D	22D	21D	20D	**124-126**
121-123	22D	21D	23D	21D	20D	19D	19D	10B	11C	12C	21D	20D	19C	21D	21D	20D	19C	**121-123**
118-120	21D	19C	22D	20D	19C	18C	18C	9B	11B	12C	20D	19C	18C	20D	19C	19C	18C	**118-120**
115-117	20C	18C	21D	19C	17C	16C	16C	9A	10B	11C	19C	18C	16C	19C	18C	17C	16C	**115-117**
112-114	19C	17C	20D	18C	16C	15C	15C	9A	10B	10B	18C	17C	15C	18C	17C	16C	15C	**112-114**
109-111	18C	16C	19C	17C	15C	14C	14C	8A	9A	10B	17C	16C	14B	17C	16C	15C	14B	**109-111**
106-108	17C	15C	18C	16C	14C	13B	13B	8	9A	9B	16C	14C	13B	16C	15C	14B	13B	**106-108**
103-105	16C	14B	17C	15C	13B	11B	11B	7	8A	8A	15C	13B	11B	15C	14B	13B	11B	**103-105**
100-102	15C	13B	16C	14B	11B	10B	10B	7	8A	8A	14B	12B	10B	14B	13B	11B	10B	**100-102**
97-99	14B	12B	15C	13B	10B	9B	9B	7	7	7A	13B	11B	9A	13B	12B	10B	9A	**97-99**
94-96	13B	10B	15C	12B	9B	7B	7B	6	7	6A	12B	10B	7A	12B	10B	9B	7A	**94-96**
91-93	12B	9B	14B	11B	8B	6A	6A	6	6	5	11B	9B	6A	11B	9B	8A	6A	**91-93**
88-90	11B	8A	13B	9B	7A	5A	5A	6	6	5	9B	8A	5A	9B	8A	7A	5A	**88-90**
85-87	10B	7A	12B	8B	5A	4A	4A	5	5	4	8B	6A	4A	8B	7A	5A	4A	**85-87**
82-84	9B	6A	11B	7A	4A	2A	2A	5	5	3	7A	5A	2	7A	6A	4A	2	**82-84**
79-81	8A	5A	10B	6A	3A	1A	1A	5	4	3	6A	4A	1	6A	5A	3A	1	**79-81**
76-78	7A	4A	9B	5A	2A	–	–	4	4	2	5A	3A	–	5A	4A	2	—	**76-78**
73-75	6A	3	8A	4A	–	–	–	4	3	1	4A	2	–	4A	3	–	—	**73-75**
70-72	5A	1	7A	3A	–	–	–	4	3	–	3A	–	–	3A	1	–	—	**70-72**
67-69	4A	–	6A	2	–	–	–	3	2	–	2	–	–	2	–	–	—	**67-69**
64-66	3A	–	6A	1	–	–	–	3	2	–	1	–	–	1	–	–	—	**64-66**
61-63	2	–	5A	–	–	–	–	2	1	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	4A	–	–	–	–	2	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	3	–	–	–	–	2	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	2	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 1.0 kilograms

Range Modifiers: — (m=meters)

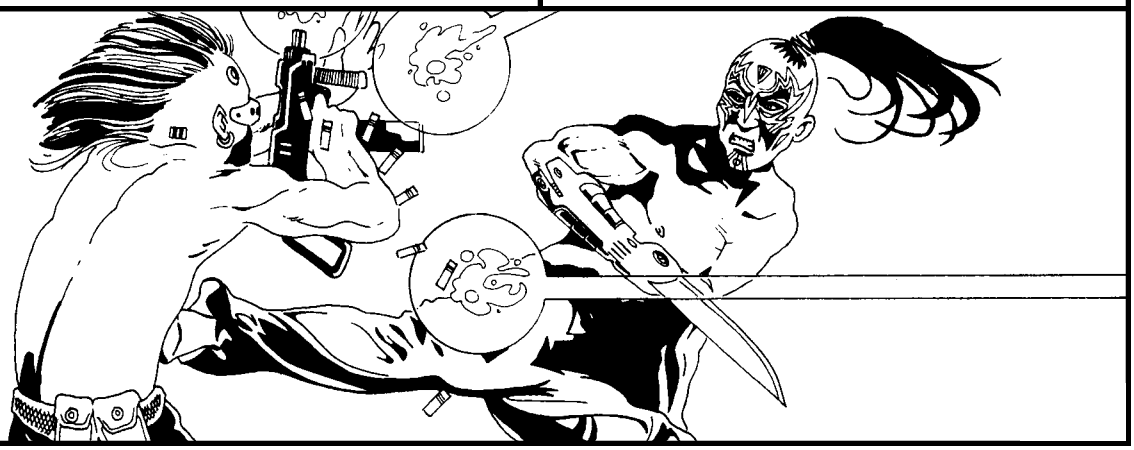
Fumble Range: 01 – 04UM (XX=4)

Critical Type: Raking (p. 102)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

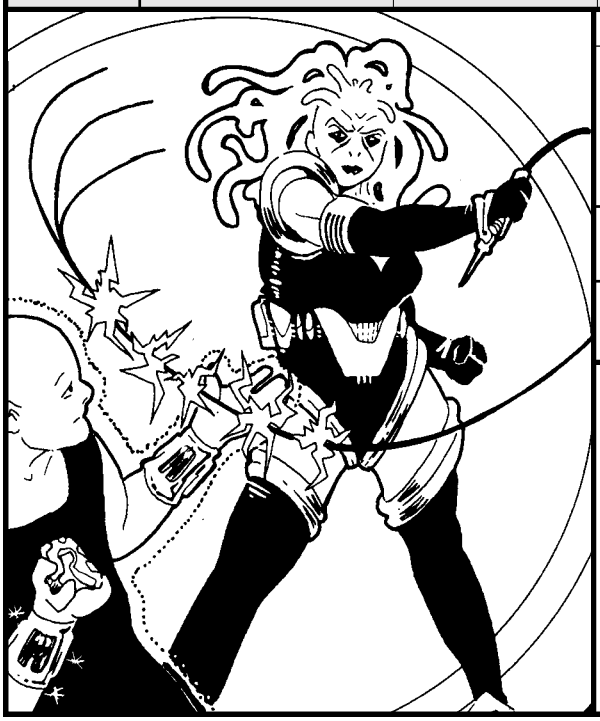
WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3;
Strength: 95 w.



Monowhip Attack Table A-EM-2.11

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	7E	9E	10E	18E	19E	22E	27E	2E	5E	8E	7E	10E	13E	7E	9E	13E	13E	**148-150**
145-147	7E	9E	10E	18E	19E	22E	27E	2E	5E	8E	7E	10E	13E	7E	9E	13E	13E	**145-147**
142-144	7E	9E	10E	18E	19E	21E	26E	2E	5E	8E	7E	10E	13E	7E	9E	13E	13E	**142-144**
139-141	7E	9E	10E	17E	18E	20E	25E	2E	5E	8E	7E	10E	12E	7E	9E	13E	12E	**139-141**
136-138	7E	9E	10E	17E	17E	20E	24E	2D	5D	8E	7E	10E	12E	7E	9E	12E	12E	**136-138**
133-135	7E	8E	10E	16E	17E	19E	23E	2D	5D	8D	7E	9E	12E	7E	8E	12E	12E	**133-135**
130-132	7E	8D	9E	16E	16D	18D	22D	2D	5D	7D	7D	9D	11D	7D	8D	11D	11D	**130-132**
127-129	7D	8D	9E	15D	15D	17D	21D	2C	5D	7D	6D	9D	11D	6D	8D	11D	11D	**127-129**
124-126	6D	8D	9D	15D	15D	17D	20D	2C	5C	7D	6D	8D	10D	6D	7D	10D	10D	**124-126**
121-123	6D	7D	9D	14D	14D	16D	19D	2C	5C	7D	6D	8D	10D	6D	7D	10D	10D	**121-123**
118-120	6D	7D	8D	13D	13D	15D	18D	2C	4C	6C	6D	8D	9D	6D	7D	10D	9D	**118-120**
115-117	6D	7D	8D	13D	13D	14C	17C	2B	4C	6C	5D	7C	9C	5D	6C	9D	9C	**115-117**
112-114	6D	6C	8D	12D	12C	13C	16C	2B	4C	6C	5C	7C	8C	5C	6C	9C	8C	**112-114**
109-111	5C	6C	8D	12C	11C	13C	15C	2B	4B	5C	5C	7C	8C	5C	6C	8C	8C	**109-111**
106-108	5C	6C	7D	11C	11C	12C	14C	2B	4B	5B	5C	6C	7C	5C	5C	8C	7C	**106-108**
103-105	5C	6C	7C	11C	10C	11C	13C	2A	4B	5B	5C	6C	7C	5C	5C	7C	7C	**103-105**
100-102	5C	5C	7C	10C	10C	10C	12C	2A	4B	5B	4C	6C	7B	4C	5B	7C	7B	**100-102**
97-99	5C	5C	6C	10C	9C	10B	11B	2A	3A	4B	4C	5B	6B	4C	4B	7B	6B	**97-99**
94-96	4C	5B	6C	9C	8B	9B	11B	2A	3A	4B	4B	5B	6B	4B	4B	6B	6B	**94-96**
91-93	4C	5B	6C	9B	8B	8B	10B	2	3A	4A	4B	5B	5B	4B	4B	6B	5B	**91-93**
88-90	4B	4B	6C	8B	7B	7B	9B	2	3A	4A	4B	4B	5B	4B	4B	5B	5B	**88-90**
85-87	4B	4B	5C	8B	6B	6B	8B	2	3	3A	3B	4B	4B	3B	3B	5B	4B	**85-87**
82-84	4B	4B	5B	7B	6B	6B	7B	2	3	3A	3B	4B	4A	3B	3A	4B	4A	**82-84**
79-81	3B	3B	5B	7B	5B	5A	6A	2	3	3A	3B	3A	3A	3B	3A	4A	3A	**79-81**
76-78	3B	3A	5B	6B	4A	4A	5A	2	2	3	3A	3A	3A	3A	2A	4A	3A	**76-78**
73-75	3B	3A	4B	5B	4A	3A	4A	2	2	2	2A	3A	2A	2A	2A	3A	2A	**73-75**
70-72	3B	3A	4B	5A	3A	3A	3A	2	2	2	2A	2A	2A	2A	2A	3A	2A	**70-72**
67-69	3A	2A	4B	4A	2A	2A	2A	2	2	2	2A	2A	1	2A	1	2A	1	**67-69**
64-66	2A	2A	4B	4A	2A	1A	1A	2	2	1	2A	2A	1	2A	1	2A	1	**64-66**
61-63	2A	2A	3A	3A	1A	–	–	1	2	1	2A	1	–	2A	–	1	—	**61-63**
58-60	2A	1	3A	3A	–	–	–	1	2	–	1	–	–	1	–	1	—	**58-60**
55-57	2A	1	3A	2A	–	–	–	1	1	–	1	–	–	1	–	–	—	**55-57**
52-54	2A	–	3A	2	–	–	–	1	1	–	–	–	–	–	–	–	—	**52-54**
49-51	1A	–	2A	1	–	–	–	1	1	–	–	–	–	–	–	–	—	**49-51**
46-48	1	–	2A	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	2A	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	2A	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**



WEAPON DATA

Weight: 1.0 kilograms

Range Modifiers: — (m=meters)

Fumble Range: 01 – 10UM (XX=10)

Critical Type: Raking (p. 102)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4; *Strength:* 65 w.

Needler Attack Table A-EM-2.12

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	1C	1C	1C	2C	1C	1C	2C	1B	1C	1C	1A	1B	2C	1A	1B	2B	2C	**148-150**
145-147	1C	1C	1C	2C	1C	1C	2C	1B	1C	1C	1A	1B	2C	1A	1B	2B	2C	**145-147**
142-144	1C	1C	1C	2C	1C	1C	2C	1B	1C	1C	1A	1B	2C	1A	1B	2B	2C	**142-144**
139-141	1C	1C	1C	2C	1C	1C	2C	1B	1C	1C	1A	1B	2C	1A	1B	2B	2C	**139-141**
136-138	1C	1C	1C	2C	1C	1C	2C	1A	1C	1C	1A	1B	2C	1A	1B	2B	2C	**136-138**
133-135	1C	1C	1C	2C	1C	1C	2C	1A	1C	1C	1A	1A	2C	1A	1A	2B	2C	**133-135**
130-132	1C	1C	1C	2C	1B	1C	2C	1A	1B	1C	1A	1A	2C	1A	1A	2A	2C	**130-132**
127-129	1C	1C	1C	2C	1B	1B	2B	1A	1B	1B	1	1A	2B	1	1A	2A	2B	**127-129**
124-126	1B	1B	1C	2C	1B	1B	2B	1A	1B	1B	1	1A	2B	1	1A	2A	2B	**124-126**
121-123	1B	1B	1C	2B	1B	1B	2B	1	1B	1B	1	1A	2B	1	1A	2A	2B	**121-123**
118-120	1B	1B	1B	2B	1B	1B	2B	1	1B	1B	1	1A	2B	1	1A	2A	2B	**118-120**
115-117	1B	1B	1B	2B	1B	1B	2B	1	1A	1B	1	1	2B	1	1	2A	2B	**115-117**
112-114	1B	1B	1B	2B	1B	1B	2B	1	1A	1B	1	1	2B	1	1	2	2B	**112-114**
109-111	1B	1B	1B	2B	1A	1A	2B	1	1A	1A	1	1	2A	1	1	2	2A	**109-111**
106-108	1B	1B	1B	2B	1A	1A	2A	1	1A	1A	1	1	2A	1	1	2	2A	**106-108**
103-105	1A	1A	1B	2B	1A	1A	2A	1	1A	1A	1	1	2A	1	1	2	2A	**103-105**
100-102	1A	1A	1B	2B	1A	1A	2A	1	1	1A	1	1	2A	1	1	2	2A	**100-102**
97-99	1A	1A	1B	2B	1A	1A	2A	1	1	1A	1	1	2A	1	1	2	2A	**97-99**
94-96	1A	1A	1B	2A	1A	1A	2A	1	1	1A	1	1	2A	1	1	2	2A	**94-96**
91-93	1A	1A	1A	2A	–	1A	1A	1	1	1	1	1	1A	1	1	2	1A	**91-93**
88-90	1A	1A	1A	2A	–	1	1A	1	1	1	1	1	1	1	1	1	1	**88-90**
85-87	1A	1A	1A	1A	–	–	1	1	1	1	1	1	1	1	1	1	1	**85-87**
82-84	1A	1A	1A	1A	–	–	1	1	1	1	1	1	1	1	1	1	1	**82-84**
79-81	1	1	1A	1A	–	–	1	1	1	1	1	1	1	1	1	1	1	**79-81**
76-78	1	–	1A	1A	–	–	1	1	1	–	1	1	1	1	1	1	1	**76-78**
73-75	1	–	1A	1A	–	–	–	1	1	–	1	1	–	1	1	1	—	**73-75**
70-72	1	–	1A	1A	–	–	–	1	1	–	1	1	–	1	1	1	—	**70-72**
67-69	–	–	1A	1A	–	–	–	1	1	–	1	1	–	1	1	–	—	**67-69**
64-66	–	–	1A	–	–	–	–	1	1	–	1	–	–	1	–	–	—	**64-66**
61-63	–	–	1	–	–	–	–	1	1	–	1	–	–	1	–	–	—	**61-63**
58-60	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 0.5 kilograms

Fumble Range: 01 – 04[UM] (XX=4)

Critical Type: Tiny (p. 104)

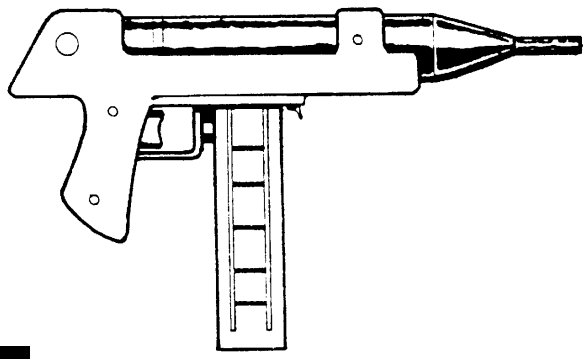
Range Modifiers: (m=meters)

0-3m:	+10
4-8m:	+0
9-15m:	-25
16-27m:	-50
28-40m:	-100

F — Weapon fumbled, roll on *SM* Table A-8.10.2 (p. 230).
UM — Unmodified roll. Apply result with no modifications.

WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4;
Strength: 75 w.
Note: Kinetic Armor will nullify all criticals and RR's if the needles hit an armored location.



Nuclear Grenade Attack table A-EM-2.13

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
	Maximum Result for 2nd Blast Radius.																	
148-150	224J	229J	274J	343J	229J	343J	448J	55F	70H	85J	130H	150H	180H	224I	269I	313I	358I	148-150
145-147	218J	224J	267J	336J	224J	335J	438J	54F	69H	83J	127H	146H	175H	219I	262I	306I	350I	145-147
142-144	213J	218J	260J	328J	218J	327J	429J	53F	67H	81J	124H	143H	171H	213I	256I	298I	341I	142-144
139-141	207J	212J	253J	320J	212J	319J	419J	51F	65H	79J	121H	139H	167H	208H	249I	291I	333I	139-141
	Maximum Result for 3rd Blast Radius.																	
136-138	201I	207I	246I	312I	207I	311I	409J	50E	63G	77I	117G	135G	163G	202H	243H	283H	324H	136-138
133-135	196I	201I	239I	304I	201I	303I	400I	48E	62G	75I	114G	132G	159G	197H	236H	275H	316H	133-135
130-132	190I	196I	232I	297I	196I	295I	390I	47E	60G	73I	111G	128G	154G	192H	230H	268H	308H	130-132
127-129	184H	190I	225I	289I	190I	287I	380I	45E	58G	71I	108F	124G	150G	186G	223G	260G	299H	127-129
	Maximum Result for 4th Blast Radius.																	
124-126	179H	185H	218H	281H	185H	279H	371I	44E	56F	69H	105F	121F	146G	181G	217G	252G	291G	124-126
121-123	173H	179H	211H	273H	179H	271H	361H	42D	55F	67H	102F	117F	142F	175G	210G	245G	282G	121-123
118-120	167H	174H	204H	266H	174H	262H	351H	41D	53F	65H	98F	114F	137F	170F	204G	237G	274G	118-120
115-117	162G	168G	197G	258H	168H	254H	342H	39D	51F	63G	95E	110F	133F	164F	197F	230F	265F	115-117
	Maximum Result for 5th Blast Radius.																	
112-114	156G	162G	190G	250H	162G	246G	332H	38D	49E	61G	92E	106E	129F	159F	190F	222F	257F	112-114
109-111	150G	157G	184G	242G	157G	238G	322G	37C	47E	59G	89E	103E	125E	153E	184F	214F	249F	109-111
106-108	145F	151G	177G	234G	151G	230G	313G	35C	46E	57G	86E	99E	121E	148E	177E	207E	240F	106-108
103-105	139F	146F	170F	227G	146G	222G	303G	34C	44E	54F	83D	95E	116E	143E	171E	199E	232E	103-105
	Maximum Result for 6th Blast Radius.																	
100-102	133F	140F	163F	219G	140F	214F	294G	32C	42D	52F	80D	92D	112E	137D	164E	192E	223E	100-102
97-99	128F	135F	156F	211F	135F	206F	284G	31B	40D	50F	76D	88D	108D	132D	158E	184E	215E	97-99
94-96	122E	129F	149F	203F	129F	198F	274F	29B	39D	48F	73C	84D	104D	126D	151D	176D	206E	94-96
91-93	116E	123E	142E	196F	123F	190F	265F	28B	37D	46E	70C	81D	99D	121C	145D	169D	198D	91-93
88-90	111E	118E	135E	188F	118E	182E	255F	26B	35C	44E	67C	77C	95D	115C	138D	161D	189D	88-90
85-87	105E	112E	128E	180E	112E	174E	245F	25A	33C	42E	64C	74C	91C	110C	132C	153C	181D	85-87
82-84	99D	107E	121E	172E	107E	165E	236E	23A	32C	40E	61B	70C	87C	104B	125C	146C	173C	82-84
79-81	94D	101D	114D	164E	101E	157E	226E	22A	30C	38D	58B	66C	83C	99B	119C	138C	164C	79-81
76-78	88D	96D	107D	157E	96D	149D	216E	20A	28B	36D	54B	63B	78C	94B	112C	131C	156C	76-78
73-75	82C	90D	100D	149D	90D	141D	207E	19	26B	34D	51A	59B	74B	88B	106B	123B	147C	73-75
70-72	77C	84D	93D	141D	84D	133D	197E	18	25B	32D	48A	55B	70B	83A	99B	115B	139B	70-72
67-69	71C	79C	87C	133D	79D	125D	187D	16	23B	30C	45A	52B	66B	77A	92B	108B	130B	67-69
64-66	65C	73C	80C	126D	73C	117C	178D	15	21A	28C	42A	48A	61B	72A	86A	100A	122B	64-66
61-63	60B	68C	73C	118C	68C	109C	168D	13	19A	26C	39	45A	57A	66	79A	92A	114B	61-63
58-60	54B	62B	66B	110C	62C	101C	159D	12	17A	24B	36	41A	53A	61	73A	85A	105A	58-60
55-57	48B	57B	59B	102C	57C	93C	149C	10	16A	22B	32	37A	49A	55	66A	77A	97A	55-57
52-54	43A	51B	52B	94C	51B	85B	139C	9	14	20B	29	34	45A	50	60	70	88A	52-54
49-51	37A	46B	45B	87B	46B	76B	130C	7	12	17B	26	30	40A	45	53	62	80A	49-51
46-48	31A	40A	38A	79B	40B	68B	120C	6	10	15A	23	26	36	39	47	54	71	46-48
	Maximum Result for 7th Blast Radius.																	
43-45	26A	34A	31A	71B	34B	60B	110C	4	9	13A	20	23	32	34	40	47	63	43-45
40-42	20	29A	24A	63B	29A	52A	101B	3	7	11A	17	19	28	28	34	39	54	40-42
	Maximum Result for 8th Blast Radius.																	
37-39	14	23A	17A	55A	23A	44A	91B	1	5	9A	14	16	24	23	27	31	46	37-39
34-36	9	18	10	48A	18A	36A	81B	–	3	7	10	12	19	17	21	24	38	34-36
	Maximum Result for 9th Blast Radius.																	
31-33	3	12	3	40A	12A	28A	72B	–	2	5	7	8	15	12	14	16	29	31-33
28-30	2	8	3	34A	8	20A	63B	–	1	4	5	6	11	8	10	12	24	28-30
	Maximum Result for 10th Blast Radius.																	
25-27	2	5	2	28A	6	14	54A	–	–	3	4	5	8	5	6	8	19	25-27
22-24	1	4	2	20A	5	10	40A	–	–	2	3	4	6	4	5	6	14	22-24
	Maximum Result for 11th Blast Radius.																	
19-21	1	3	1	12	4	6	24	–	–	1	2	3	4	2	4	5	9	19-21
16-18	–	1	–	4	2	3	8	–	–	–	1	2	3	1	2	3	4	16-18
UM 01-02	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	01-02 UM

Critical Type:
'A' = an 'A' Heat crit & an 'A' Radiation crit
'B' = a 'B' Heat crit & a 'B' Radiation crit
'C' = a 'C' Heat crit & a 'C' Radiation crit
'D' = a 'D' Heat crit & a 'D' Radiation crit
'E' = an 'E' Heat crit & an 'E' Radiation crit
'F' = an 'E' Heat crit & an 'A' Plasma crit & an 'E' Radiation crit
'G' = an 'E' Heat crit & a 'B' Plasma crit & an 'E' Radiation crit
'H' = an 'E' Heat crit & a 'C' Plasma crit & an 'E' Radiation crit
'I' = an 'E' Heat crit & a 'D' Plasma crit & an 'E' Radiation crit
'J' = an 'E' Heat crit & an 'E' Plasma crit & an 'E' Radiation crit

Weight: 0.2–0.6 kilograms
Fumble Range: 01 – 02UM (XX=2)
Critical Type: see below

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.
Note: If *AL* is used: *Breakage Numbers:* 1; *Strength:* 95 w.
Note: If *Gamemaster Manual* is used, leave the Radiation critical off and use its rules instead. This will make these grenades much deadlier. Whatever the rules, everything within the 1st Blast Radius is destroyed.

Range Modifiers: (m=meters)

0-5m:	+50
6-15m:	+25
16-25m:	+15
26-50m:	+0
51-100m:	-30

Rapier Attack Table A-EM-2.14

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	8E	10E	12E	20E	14E	17E	22E	2A	4B	5C	8D	11D	13E	8D	10D	13D	13E	**148-150**
145-147	8E	10E	12E	20E	14E	17E	22E	2	4A	5B	8D	11D	13E	8D	10D	13D	13E	**145-147**
142-144	8E	10E	12E	20E	14E	17E	21E	2	4	5A	8D	11D	13E	8D	10D	13D	13E	**142-144**
139-141	8E	10E	12E	19E	14E	16E	21E	2	4	5	8D	11D	12E	8D	10D	13D	12E	**139-141**
136-138	8D	10D	12E	18E	13E	16E	20E	2	4	5	8C	10C	12D	8C	10C	12C	12D	**136-138**
133-135	8D	9D	11D	18E	13D	15D	19D	2	4	4	8C	10C	12D	8C	9C	12C	12D	**133-135**
130-132	8D	9D	11D	17D	12D	14D	18D	2	4	4	7C	10C	11D	7C	9C	11C	11D	**130-132**
127-129	7C	9D	11D	17D	12D	14D	18D	2	4	4	7B	9C	11D	7B	8C	11C	11D	**127-129**
124-126	7C	8C	10D	16D	11D	13D	17D	2	3	4	7B	9C	10C	7B	8B	10C	10C	**124-126**
121-123	7C	8C	10C	15D	11C	13D	16D	2	3	3	7B	9B	10C	7B	8B	10B	10C	**121-123**
118-120	7B	8C	10C	15D	10C	12C	15C	2	3	3	6A	8B	9C	6A	7B	10B	9C	**118-120**
115-117	6B	7B	9C	14C	10C	12C	15C	2	3	3	6A	8B	9C	6A	7B	9B	9C	**115-117**
112-114	6B	7B	9C	14C	9C	11C	14C	2	3	3	6A	7B	8B	6A	7A	9B	8B	**112-114**
109-111	6B	7B	9C	13C	9B	10C	13C	2	3	2	6A	7A	8B	6A	6A	8A	8B	**109-111**
106-108	6A	7B	8B	12C	9B	10B	12C	2	2	2	5	7A	7B	5	6A	8A	7B	**106-108**
103-105	5A	6A	8B	12C	8B	9B	12B	2	2	2	5	6A	7B	5	6A	7A	7B	**103-105**
100-102	5A	6A	8B	11C	8B	9B	11B	2	2	1	5	6A	6A	5	5	7A	6A	**100-102**
97-99	5	6A	7B	11B	7A	8B	10B	2	2	1	5	6	6A	5	5	6	6A	**97-99**
94-96	5	5A	7B	10B	7A	7B	9B	2	2	–	4	5	5A	4	5	6	5A	**94-96**
91-93	4	5	7A	9B	6A	7A	9B	2	1	–	4	5	5A	4	4	6	5A	**91-93**
88-90	4	5	6A	9B	6A	6A	8A	1	1	–	4	4	5A	4	4	5	5A	**88-90**
85-87	4	4	6A	8B	5A	6A	7A	1	1	–	3	4	4	3	4	5	4	**85-87**
82-84	4	4	6A	8B	5	5A	6A	1	–	–	3	4	4	3	3	4	4	**82-84**
79-81	4	4	5	7A	5	5A	6A	1	–	–	3	3	3	3	3	4	3	**79-81**
76-78	3	3	5	6A	4	4	5A	1	–	–	3	3	3	3	3	3	3	**76-78**
73-75	3	3	5	6A	4	3	4	1	–	–	2	3	2	2	2	3	2	**73-75**
70-72	3	3	4	5A	3	3	3	1	–	–	2	2	2	2	2	3	2	**70-72**
67-69	3	3	4	5A	3	2	3	–	–	–	2	2	1	2	2	2	1	**67-69**
64-66	2	2	4	4	2	2	2	–	–	–	2	1	–	2	1	2	—	**64-66**
61-63	2	2	3	3	2	1	1	–	–	–	1	1	–	1	–	1	—	**61-63**
58-60	2	2	3	3	1	–	–	–	–	–	1	–	–	1	–	–	—	**58-60**
55-57	2	1	3	2	1	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	1	1	2	2	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	1	–	2	1	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

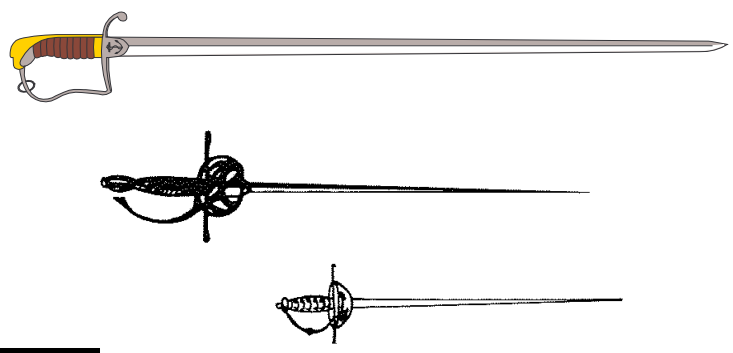
Weight: 1.0 kilograms

Range Modifiers: — (m=meters)

Fumble Range: 01 – 04UM (XX=4)

Critical Type: Puncture (*SM*, p. 225)

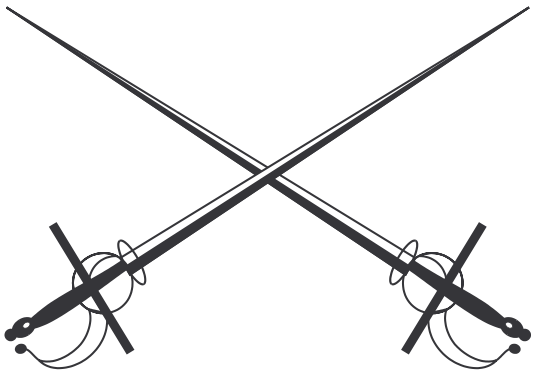
F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.



WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4;
Strength: 38 - 42 w.

Note: Against modern armors (AT I-X), criticals against armored locations are resolved as Ballistic Impact criticals.



Staff/Bo Stick Attack Table A-EM-2.15

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	20E	22E	28E	36E	30E	33E	38E	7A	9B	10C	19C	21C	24C	19C	20C	24D	24D	**148-150**
145-147	20E	22E	28E	36E	30E	33E	37E	7	9A	10B	19C	21C	24C	19C	20C	24D	24D	**145-147**
142-144	20E	21E	27E	34E	29E	31E	36E	7	9	10A	19C	20C	23C	19C	19C	23D	23D	**142-144**
139-141	19E	21D	27E	33E	28D	30D	35D	7	9	9	18C	20C	22C	18C	19C	23D	22D	**139-141**
136-138	19E	20D	26D	32E	27D	29D	33D	7	8	9	18B	19C	21C	18B	18B	22C	21D	**136-138**
133-135	18E	19D	25D	31D	26D	28D	32D	7	8	9	17B	18B	21C	17B	17B	21C	21C	**133-135**
130-132	18E	19D	25D	30D	25C	27C	31D	6	8	8	16B	18B	20B	16B	17B	20C	20C	**130-132**
127-129	17E	18C	24C	29D	24C	26C	30C	6	7	8	16A	17B	19B	16A	16B	20B	19C	**127-129**
124-126	16E	17C	23C	28D	23B	25C	28C	6	7	7	15A	16B	18B	15A	15B	19B	18C	**124-126**
121-123	16D	17C	22C	27C	22B	24B	27C	6	7	7	15A	16B	17B	15A	15A	18B	17B	**121-123**
118-120	15D	16B	22C	26C	21B	23B	26B	5	6	6	14A	15A	17B	14A	14A	17B	17B	**118-120**
115-117	15D	15B	21B	25C	20A	21B	24B	5	6	6	14	14A	16B	14	13A	17A	16B	**115-117**
112-114	14D	15B	20B	24C	19A	20A	23B	5	6	5	13	14A	15A	13	13A	16A	15B	**112-114**
109-111	14D	14A	20B	23C	18A	19A	22B	5	5	5	12	13A	14A	12	12	15A	14A	**109-111**
106-108	13D	13A	19A	22B	17	18A	21A	4	5	4	12	12A	13A	12	11	14A	13A	**106-108**
103-105	13D	13A	18A	20B	16	17	19A	4	4	4	11	12	12A	11	11	14	12A	**103-105**
100-102	12D	12	18A	19B	16	16	18A	4	4	4	11	11	12A	11	10	13	12A	**100-102**
97-99	12D	11	17A	18B	15	15	17	4	4	3	10	11	11A	10	9	12	11A	**97-99**
94-96	11C	11	16	17A	14	14	16	3	3	3	10	10	10	10	9	11	10	**94-96**
91-93	10C	10	15	16A	13	12	14	3	3	2	9	9	9	9	8	11	9	**91-93**
88-90	10C	9	15	15A	12	11	13	3	3	2	9	9	8	9	7	10	8	**88-90**
85-87	9C	9	14	14A	11	10	12	3	2	1	8	8	8	8	6	9	8	**85-87**
82-84	9C	8	13	13A	10	9	10	2	2	–	7	7	7	7	6	8	7	**82-84**
79-81	8C	7	13	12	9	8	9	2	1	–	7	7	6	7	5	8	6	**79-81**
76-78	8C	7	12	11	8	7	8	2	1	–	6	6	5	6	4	7	5	**76-78**
73-75	7C	6	11	10	7	6	7	2	–	–	6	5	4	6	4	6	4	**73-75**
70-72	7C	5	11	9	6	5	5	1	–	–	5	5	3	5	3	5	3	**70-72**
67-69	6C	5	10	7	5	4	4	1	–	–	5	4	3	5	2	5	3	**67-69**
64-66	6B	4	9	6	4	2	3	–	–	–	4	3	2	4	2	4	2	**64-66**
61-63	5B	3	8	5	3	1	1	–	–	–	3	3	1	3	1	3	1	**61-63**
58-60	4B	3	8	4	2	–	–	–	–	–	3	2	–	3	–	2	—	**58-60**
55-57	4B	2	7	3	1	–	–	–	–	–	2	1	–	2	–	2	—	**55-57**
52-54	3B	1	6	2	–	–	–	–	–	–	2	–	–	2	–	1	—	**52-54**
49-51	3B	–	6	1	–	–	–	–	–	–	1	–	–	1	–	–	—	**49-51**
46-48	2B	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	2B	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	1B	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	FA	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

Weight: 1.9 kilograms

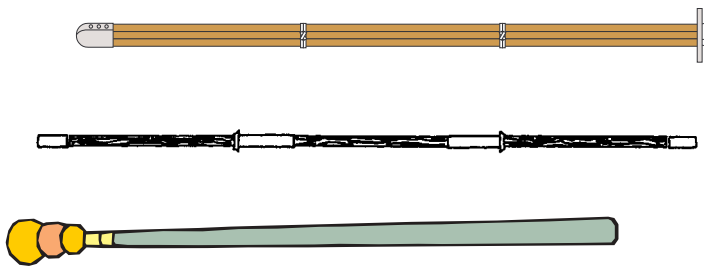
Range Modifiers: — (m=meters)

Fumble Range: 01 – 03UM (XX=3)

Critical Type: Krush (*SM*, p. 221)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7; *Strength:* 65 - 75 w.



Two-Handed Sword Attack Table A-EM-2.16

	No Armor							Combat Armor			Kinetic Armor			Armored Cloth				
	12	11	8	5	4	3	1	X	IX	VIII	VII	VI	V	IV	III	II	I	
148-150	34E	36E	38E	46E	40E	43E	48E	9A	10B	11C	31E	34E	36E	31E	32E	35E	36E	**148-150**
145-147	33E	35E	37E	45E	39E	41E	46E	9	10A	11B	30E	33E	35E	30E	31E	34E	35E	**145-147**
142-144	32E	33E	36E	43E	37E	39E	44E	9	9	10A	29E	32E	33E	29E	29E	32E	33E	**142-144**
139-141	31E	32E	35E	42E	35E	37E	42E	8	9	9A	28E	30E	32E	28E	28E	31E	32E	**139-141**
136-138	29E	30E	34E	40E	33E	36E	40E	8	8	8	26D	29D	30E	26D	26D	29E	30E	**136-138**
133-135	28D	29D	32D	38E	31D	34D	38D	8	8	7	25D	27D	29D	25D	24D	27D	29D	**133-135**
130-132	27D	27D	31D	37D	29D	32D	36D	7	7	6	24D	26D	27D	24D	23D	26D	27D	**130-132**
127-129	26D	26D	30D	35D	27D	30D	34D	7	6	5	22C	24D	26D	22C	21D	24D	26D	**127-129**
124-126	24D	24D	28D	33D	26D	28D	32D	6	6	4	21C	23C	24D	21C	20C	23D	24D	**124-126**
121-123	23C	23D	27D	32D	24C	26C	30C	6	5	3	20C	21C	22C	20C	18C	21C	22C	**121-123**
118-120	22C	21C	26C	30D	22C	24C	27C	5	4	2	18C	20C	21C	18C	16C	19C	21C	**118-120**
115-117	21C	20C	25C	28C	20C	22C	25C	5	4	1	17B	18C	19C	17B	15C	18C	19C	**115-117**
112-114	19C	18C	23C	27C	18C	20C	23C	4	3	–	16B	17C	18C	16B	13B	16C	18C	**112-114**
109-111	18B	16C	22C	25C	16B	18B	21C	4	2	–	15B	16B	16C	14B	12B	14B	16C	**109-111**
106-108	17B	15B	21C	23C	15B	16B	19B	3	2	–	13B	14B	15B	13B	10B	13B	15B	**106-108**
103-105	15B	13B	20B	22C	13B	14B	17B	3	1	–	12A	13B	13B	12A	8B	11B	13B	**103-105**
100-102	14B	12B	18B	20C	11B	12B	15B	2	–	–	11A	11B	11B	10A	7A	10B	11B	**100-102**
97-99	13A	10B	17B	19B	9A	10A	13B	2	–	–	9A	10A	10B	9A	5A	8A	10B	**97-99**
94-96	12A	9B	16B	17B	7A	8A	11A	1	–	–	8A	8A	8A	8A	4A	6A	8A	**94-96**
91-93	10A	7A	15B	15B	5A	6A	9A	1	–	–	7	7A	7A	6	2A	5A	7A	**91-93**
88-90	9A	6A	13A	14B	3A	4A	7A	–	–	–	5	5A	5A	5	–	3A	5A	**88-90**
85-87	8A	4A	12A	12B	2A	2A	4A	–	–	–	4	4	4A	4	–	2A	4A	**85-87**
82-84	7	3A	11A	10A	–	–	2A	–	–	–	3	2	2A	2	–	–	2A	**82-84**
79-81	5	1A	9A	9A	–	–	–	–	–	–	1	1	–	1	–	–	—	**79-81**
76-78	4	–	8A	7A	–	–	–	–	–	–	–	–	–	–	–	–	—	**76-78**
73-75	3	–	7	5A	–	–	–	–	–	–	–	–	–	–	–	–	—	**73-75**
70-72	1	–	6	4A	–	–	–	–	–	–	–	–	–	–	–	–	—	**70-72**
67-69	–	–	4	2A	–	–	–	–	–	–	–	–	–	–	–	–	—	**67-69**
64-66	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**64-66**
61-63	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**61-63**
58-60	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**58-60**
55-57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**55-57**
52-54	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**52-54**
49-51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**49-51**
46-48	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**46-48**
43-45	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**43-45**
40-42	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**40-42**
37-39	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**37-39**
34-36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**34-36**
xx-33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	—	**xx-33**
UM 01-xx	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	**01-xx UM**

WEAPON DATA

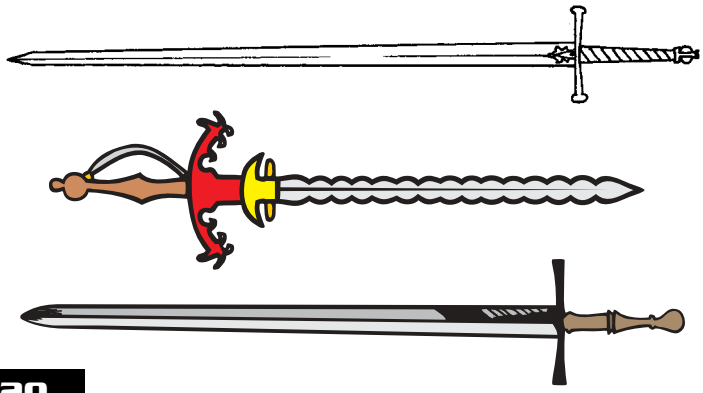
Weight: 3.6 kilograms

Range Modifiers: — (m=meters)

Fumble Range: 01 – 05UM (XX=5)

Critical Type: Slash (*SM*, p. 223)

F — Weapon fumbled, roll on *SM* Table A-8.10.3 (p. 231).
UM — Unmodified roll. Apply result with no modifications.



WEAPON DATA

Note: If *Arms Law* is used:
Breakage Numbers: 1, 2, 3, 4, 5, 6, 7, 8;
Strength: 69 - 81 w.

Note: Against modern armors (AT I-X), criticals against armored locations are resolved as Krush criticals.

A-4.0 :: PRICE TABLES

This section collects all of the price tables from Part III so that they can be more easily used for reference.

FIREARMS TABLE EM-7.26

Item*	Weight	COSTS Low	Average	High
Assault Rifles:				
Light (P)	3.5	100	250	500
Medium (P)	4	500	600	1K
Heavy (P)	4.5	2K	4K	5K+
Hunting/Sniping Rifles:				
Light (N)	3	150	400	600+
Medium (N)	4	250	500	700+
Heavy (N)	5	400	700	900+
Machine Guns:				
Light (M)	7	1K	1.2K	1.5K
Medium (M)	14	1.5K	2K	2.2K
Heavy (M)	21	4K	5K	5.5K+
Pistols:				
Light (N)	.3	180	350	600
Medium (N)	.6	200	400	625+
Heavy (N)	1	350	550	900+
Revolvers:				
Light (N)	.3	80	250	350+
Medium (N)	.6	150	350	500+
Heavy (N)	1	200	425	600+
Shotguns:				
Light (N)	3	100	200	300
Medium (N)	4	150	250	350
Heavy (N)	5	175	350	500
Auto (P)	5	500	900	1.5K
Small Automatics:				
Machine Pistol (P)	2	400	600	1K
Submachine Gun (P)	3.5	600	900	1.2K

WEAPON ACCESSORIES TABLE EM-7.27

Item*	Weight	Cost
Recoil Compensator (N)	.2	100
Flash Suppressor (N)	.3	50
Holo-Sight (N)	.05	50
Laser Sight (N)	.3	80
Scope (N)	.3	25 x Class
Silencer (P)	.3	80
Luminous Sights (N)		50

BLASTERS TABLE EM-7.28

Item*	Weight	Cost
Assault Blasters:		
Light (P)	3	800
Medium (P)	3.5	1,000
Heavy (P)	4	1,400
Blaster Pistols:		
Hold-Out (N)	.1	700
Light (N)	.2	350
Medium (N)	.4	400
Heavy (N)	.6	550
Hunting/Sniping Blasters:		
Light (N)	3	400
Medium (N)	3.5	500
Heavy (N)	4	700
Heavy Sniping Blaster	18	7,500
Subassault Blaster:		
Light (N)	2.5	1,000
Medium (N)	3	1,600
Heavy (N)	3.5	2,200
Support Blaster:		
Light (N)	6	2,400
Medium (N)	12	4,000
Heavy (N)	18	10,000

LASERS TABLE EM-7.29

Item*	Weight	Cost
Assault Lasers:		
Light (P)	2.4	520
Medium (P)	2.8	650
Heavy (P)	3.2	910
Hunting/Sniping Lasers:		
Light (N)	2.4	320
Medium (N)	2.8	400
Heavy (N)	3.2	560
Heavy Sniping Laser	14.4	9,000
Laser Pistols:		
Hold-Out (N)	.1	560
Light (N)	.2	280
Medium (N)	.3	320
Heavy (N)	.5	440
Subassault Laser:		
Light (N)	2	650
Medium (N)	2.4	1,040
Heavy (N)	2.8	1,430
Support Laser:		
Light (N)	4.8	1,560
Medium (N)	9.6	2,600
Heavy (N)	14.4	6,500

PLASMA WEAPONS TABLE EM-7.30

Item*	Weight	Cost
Assault Plasma Carbine:		
Light (P)	3.9	800
Medium (P)	4.6	1,000
Heavy (P)	5.2	1,400
Hunting/Sniping Plasma Carbine:		
Light (N)	3.9	600
Medium (N)	4.6	750
Heavy (N)	5.2	1,050
Heavy Sniping Plasma Carbines	23.4	10,000
Plasma Pistols:		
Hold-Out (N)	.1	1,050
Light (N)	.3	525
Medium (N)	.5	600
Heavy (N)	.8	825
Subassault Plasma Carbines:		
Light (P)	3.3	1,000
Medium (P)	3.9	1,600
Heavy (P)	4.6	2,200
Support Plasma Cannon:		
Light (M)	7.8	2,400
Medium (M)	15.6	4,000
Heavy (M)	23.4	10,000

AMMUNITION TABLE EM-7.32

Item*	Weight	Cost
Submachine Guns and Smaller (Box of 100):		
Light (N)	2	5
Medium (N)	4	10
Heavy (N)	6	15
Rifles (Box of 100):		
Light (N)	3	10
Medium (N)	5	15
Heavy (N)	7	20
Machine Gun (Box of 100):		
Light (P)	5	20
Medium (P)	10	30
Heavy (P)	15	40
Shotgun (Box of 100):		
Light (N)	4	5
Medium (N)	6	10
Heavy (N)	8	1
Needler (Box of 1,000):		
Standard (N)	.1	10
Knock-Out (N)	.1	20
Poison (M)	.1	100
Special Rounds:		
Armor Piercing Rounds (P)	x1	x1
Dual-Purpose Rounds (P)	x1	x10
Explosive Rounds (P)*	x1	x100
Flechette Rounds (P)*	x1	x50
HEAP Rounds (M)*	x1	x150
Knock-Out Rounds (N)*	x1	x50
Nullifier Rounds (M)*	x1	x1000
Poison Rounds (M)*	x1	x100

* — These weapons are not affected in price and weight by tech level.

ARMOR TABLE EM-7.31

Item*	Weight	Cost
Helmets:		
Bullet Proof Helmet (P)	1	500
With Visor (Tech Level 17) (P)	1.5	700
Kevlar (Tech Level 16):		
Flak Vest (P)	1	500
Extended Flak Vest (P)	1.5	700
Reinforced Flak Vest (P)	2	1K
Reinforced Flak Armor (P)	3	2K
Kinetic Armor (Tech Level 18):		
Vest (P)	1.5	1K
Jacket (P)	2.5	2K
Body Armor (P)	5	5K
Combat Armor (Tech Level 19):		
Torso (P)	10	50K
Torso and Greaves (P)	30	100K
Full Combat Armor (P)	100	1 Mil.
Powered Armor (M)	1,000	10 Mil.
Armor Enhancements (Tech Level 18):		
Reflect Coating (P)		1K
Ablative Coating (10 Layers) (P)		1K

OTHER WEAPONS/ARMOR TABLE EM-7.34

		COSTS		
Item	Weight	Low	Average	High
Flamer (M)	5	500	1K	1.5K
Grenade (M)	.1	50	100	150
Monosword or Monowhip (N)	1	800	1K	1.2K
Needler (N)	.5	200	500	800
Sonic Stunner (N)	.01	300	400	500
Nullifier (2 Ear Pieces)	.01	30	40	50
Nuclear Grenade:				
Small (M)	.2	1K	2K	3K
Medium (M)	.4	1K	2K	3K

SHIELD TABLE EM-7.33

	WEIGHT		COST	
Item †	Pack	Belt	Pack	Belt
Absorption Shield (P)	65	16	20K	80K
Barrier Shield (P)	85	20	150K	600K
Deflector Shield (P)	65	15	20K	80K
Velocity Shield (P)	65	15	20K	80K
Weapon Dissipater	.1	.1	100	100
Arm-Mounted Force Shields:				
Buckler (P)	50	10	10K	30K
Normal (P)	50	10	10K	40K
Full (P)	50	10	10K	05K

† — Tech Level 24.

DATA STORAGE AND RETRIEVAL TABLE EM-9.1

Item	Tech Level	Weight	Cost
Audio Disks* (N)	18	.08	2
Audio Recorder (N)	17	2	400
Datapad* (N)	17	.5	100-10K
Digital Camera (N)	17	5	2K
Holocamera (N)	18	5	500
Hologlass* (N)	18	.1	15
Holoprojector (N)	18	15	500
Holoviewer (N)	18	10	700
Memory Disks (10)* (N)	16	.05	20
Memory Recorder (N)	17	15	1.2K
Neural Interface (P)	17	1	1K
Neural Recorder (M)	17	5	800
Neural Translator (P)	17		20K
Computers:*			
Mainframe Computer (N)	15	1-10K	10K-1mil
Personal Computer (N)	16	5	1K-10K

* — These items do not decrease in size and cost as tech levels increase. They merely become more and more powerful, adding features, storage capacity, etc.

MEDICAL EQUIPMENT TABLE EM-11.1

Item	Tech Level	Weight	Cost
Field Equipment:			
Arterial Sealer (P)	21	5	4k
Dermal Closer (P)	21	5	2k
Diagnostic Computer (P)	19	20	12k
Field Cast (P)	17	1	300
Field Splint (N)	17	2	200
First Aid Kit (N)	All	.5	20
Hypodermic Spray (P)	16	1	800
Laserscapel (Field) (P)	17	4	2.5k
Life Support Unit (M)	17	30	5k
Medispenser (M)	17	1	2k
Medscanner (P)	19	20	8.5k
Skeletal Knitter (P)	21	10	8k
Tissue Knitter (P)	21	5	3.5k
Tissue Regenerator (P)	21	8	4k
Infirmary Equipment:			
Autodoctor (N)	21	7,000	2 mil
Cryochamber (M)	17	4,500	200k
Laserscalpel (Infirmary) (P)	16	7	2k
NPR Gear (P)	22	10,000	10 mil
Scannerbed (P)	18	4,000	200k
Stasis Chamber (P)	17	5,000	250k
Surgical Arterial Sealer (P)	20	8	20k
Surgical Dermal Sealer (P)	20	8	12k
Surgical Tissue Knitter (P)	20	9	18k
Surgical Tissue Regenerator (P)	20	11	22k

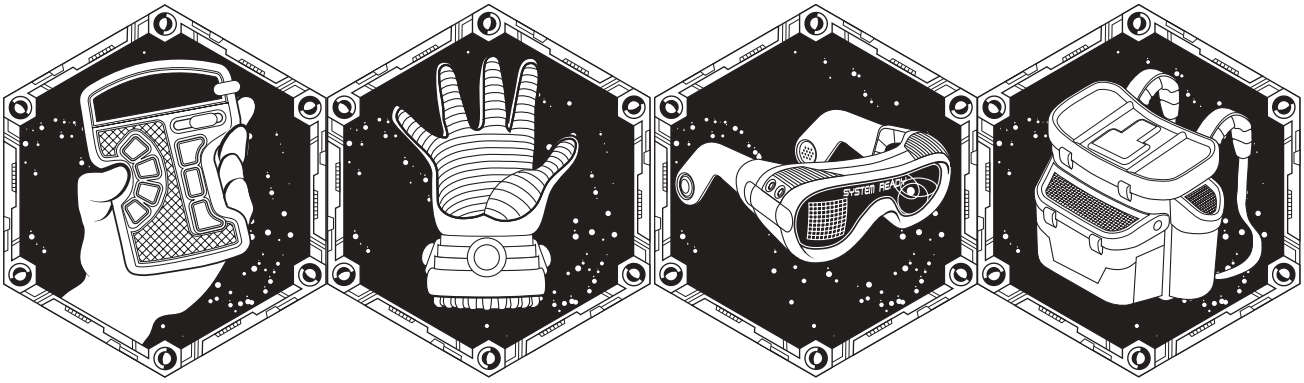
SURVIVAL GEAR TABLE EM-14.1

Item	Tech Level	Weight	Cost
Air Mattress (N)	14	2	60
Air Tanks (N)	13	Varies	200
All Weather Bag (N)	16	1	50
Anti-Glare Goggles (N)	16	–	50
Armored Vac Suit (P)	17	Varies	Varies
Breath Mask (N)	16	.5	50
Combat Knife (N)	3	.5	60
Compressor (N)	13	2	100
Coolpack (N)	18	2	50
Concentrated Rations* (N)	16	.05	2
Desert Suit (N)	20	100	7k
Emergency Bubble (N)	17	2.5	800
Environment Tent (N)	16	8	900
Exoskeletal Armored Vac Suit (M)	17	+50	+10k
Exoskeleton (P)	17	50	10k
Filter Attachment (N)	13	.5	1k
Filtration Canteen (N)	15	1.5	500
Foodpack* (N)	16	.08	5
Gill Pack (N)	17	5	500
Holomapper (N)	19	6	600
Inertial Compass (N)	18	.5	250
Infrared Goggles (P)	16	1.5	200
Instameal* (N)	17	.5	10
Life Support System (N)	17	10	500
Lo-Lite Goggles (P)	16	1.5	80
Magnetic Compass (N)	11	1	10
Micro Oven (N)	17	5	300
Multipurpose Goggles (P)	17	1.5	400
NBC Suit (P)	16	5	6k
Rebreather (N)	16	.5	200
Respirator (N)	18	1.5	300
Scrubber (N)	15	.5	200
Survival Knife (N)	11	.5	100
Synthcord* (N)	17	1	50
Telescopic Goggles (N)	17	1.5	65
Tent (N)	3	30	200
Vac Suit (N)	15	50	10k
Vapor Canteen (N)	18	10	4.5k
Wet Suit (N)	13	10	5k

* These items don't go down in price and weight the tech level after introduction, they just taste better.

POWER CELL TABLE EM-13.3

Item	Weight	Cost
Flamer Cell	.05	5
Micro Power Generator	Varies	100,000
Utility Cell	.01	5
Vehicle Cell	1	100
Weapon Cell	.1	18
Weapon Pack	10	1,800



PHARMACEUTICAL TABLE EM-10.1

Name	Tech Level	Usage	Cost	AF	Effect
Unrestricted					
Beard-Suppressor	18	Apply	1	Non	Retards hair growth for one week.
E-Z-Sleep	17	Ingest	1	5	Level five sleeping drug.
Korteline	17	Apply	250	20	Stimulant. Relieves d10 rounds of stun.
Siradrel	17	Ingest	20	20	Mild stimulant, much like caffeine.
Smelling Salts	13	Inhale	5	Non	Instantly wakes from normal unconsciousness. +30 RR otherwise.
Stims	18	Ingest	5	15	Accumulates half exhaustion. Eliminates current exhaustion.
Thiagorex III	17	Ingest	10	15	Relives headaches and minor muscle tension.
Restricted					
Alerlene	20	Ingest	150	10	Stimulant, allows user to operate all day without penalties.
Amboathorphin	17	Inject	230	10	Universal nerve gas antidote. Protects for twelve hours.
Anacept	20	Ingest	300	1	100% effective contraceptive. Male: 103 hrs. Female 28 days.
Andeline	22	Inject	100	10	Regenerates 30 hits over one minute.
Arelnex	18	Ingest	15	10	Cures the common cold.
Cedoraline	17	Ingest	50	15	Makes the user extremely susceptible to suggestion.
Decilage	18	Inject	600	15	Micro-organism. Hunts down all toxins and other M.O.s.
Fir-Queline	23	Inject	100	5	This powerful regenerative heals 10 hits instantly.
Hemoflux	22	Inject	120	20	Regenerative. Replaces all blood loss within two hours.
Interferon IV	23	Ingest	100	10	Grants +100 RR against viral infection.
Luryadrenaline	17	Inject	100	5	Removes character from suspended animation without shock.
Perserverine Compound	18	Inject	120	50	Ignore one level of exhaustion/damage penalties.
Regenex III	23	Ingest	250	Non	Regrows body parts. 20 days for finger, 150-200 for arm/leg.
Stirene	17	Ingest	25	Non	+100 RR vs. Bacterial infections.
Thetacoagulin	17	Ingest	25	Non	Seals all wounds up to 5 hits/round. Dangerous to O.D.
Torethene	24	Inject	150	10	Regenerative. Heals 100 hits over two minutes.
Tyreline	28	Inject	150	100	Suspends life functions for one hour
Verex Compound	20	Inject	100	25	+100 RR versus poison.
Virlene	17	Inject	50	30	Level 20 sedative.
Ziclomene	21	Inject	60	10	Cures the bends. Causes character to bleed an extra hit/rnd.
Military					
Andrex	18	Inject	550	25	Allows 50% more hits. Doubles exhaustion points.
Jirolene	17	Apply	2	35	+20 to perception checks.
Triadrenaline	20	Apply	200	40	Grants 200% activity for four rounds.
White Burn	19	Inject	40	25	Stuns are reduced by 5 rounds. Initiative +5.
Recreational					
Ambrosia	18	Ingest	25	75	Causes feelings of euphoria, sexual arousal, invulnerability, etc.
Berserk	17	Apply	40	25	Puts user into frenzy for 10 + d10 minutes.
Doseline	22	Ingest	50	50	Allows full night's rest in 1/4 time.
Gorteline	18	Inhale	20	50	Euphoric. Like cocaine, but milder and safer.
Mickey Finn	18	Ingest	10	1	Puts the person into a very deep sleep.
Soar	16	Ingest	10	5	Euphoria and overconfidence.
Urlene	17	Ingest	30	80	Powerful hallucinogenic.

PERSONAL GEAR TABLE EM-12.1

Item	Tech Level	Weight	Cost
Antiglare Lenses (N)	17	–	100
Antigravity Chair (N)	25	1,000	300k
Antigravity Platform (N)	25	500	40k
Bio-Disguise Kit (P)	22	50	50k
Bug Detector (N)	16	.5	500
Bug (P)	17	.01	500
Bug Stomper (P)	16	1	1.2k
Bypass Kit (P)	17	2	1.5k
Chronometer (N)	10	.1	500
Communicator (N):*	17		
Short Range		Special	30
Medium Range		Special	120
Long Range		Special	1,200
Contact Mike Set (P)	16	.1	3k
Deceleration Pack (N)	25	10	25k
Disguise Kit (N)	9	5	450
Electronic Countermeasures Belt (M)	20	1.5	22k
Electronic Handcuffs (P)	17	2.5	400
Flying Belt (P)	26	20	35k
Glowglobe (N)	26	2.5	100k
Hand Thruster (N)	16	2	500
Holobelt (M)	19	20	11k
Holo/EC Belt (M)	20	25	40k
Implant Communicator (N)	17	–	10K
Master Unit (N)	17	25	10k
Infrared Lenses (P)	18	–	1.5k
Laser Listening Device (P)	16	6	12k
Lock Picks (P)	4	–	200
Lo-Lite Lenses (P)	18	–	600
Magnetic Boots (N)	16	5	1k
Molecutronic Scrambler (P)	20	.1/lvl	400/lvl
Multipurpose Lenses (P)	19	–	3k
Multiscanner (P)	19	20	8k
Personal Kit (N)	3	1	100
Poison Sniffer (N)	19	10	5k
Quantum Communicator (N)*	23		
Short Range		Special	10k
Medium Range		Special	40k
Long Range		Special	400k
Radiation Alarm (N)	15	1	1k
Radiation Badge (N)	15	–	1k
Radiation Counter (N)	15	5	5k
Scanner, General (P)	19	10	2k
Security Scanner (P)	17	5	1k
Signal Beacon (N)	19	1	100
Sneak Suit (M)	18	50	18.5k
Tachyon Communicator (N)*	20		
Short Range		Special	5k
Medium Range		Special	20k
Long Range		Special	200k
Tactical Scanner (M)	19	15	3k
Technical Scanner (N)	19	20	7k
Telepathic Communicator (N)	27	25	35k
Telepathic Translator (N)	27	1	20k
Telescopic Lenses (N)	18	–	500
Thermite Lock Pick (P)	17	5	5k
Thruster Pack (N)	16	25	20k
Towel (N)	2	.5	100
Translator (N)	17	1	12k
Trembler (N)	16	.1	1k
Web Belt (N)	12	1	50

* — These communicators drop in weight and increase in range each tech level. They do not become cheaper.

TOOLS TABLE EM-15.1

Item	Tech Level	Weight	Cost
AFV Tool Kit* (M)	13	8	1.5k
Basic Tool Kit* (N)	15	5	800
Fire Extinguisher* (N)	17	1	50
Flashlight (N)	13	.5	50
Grapnel Gun (P)	17	1	200
Heavy Torch (N)	17	10	2.5k
Infra-Plate (N)	18	1	2k
Laser Torch (N)	17	5	1.5k
Light Rod (N)	23	.25	100k
Mini-Tool Kit (N)	11	3	400
Piton Gun (N)	16	2	500
Portable Machine Shop (P)	17	10,000	100K
Spacecraft Tool Kit* (P)	15	8	2K
Starfighter Tool Kit* (M)	20	16	5K

* — These items do not drop in size and price by tech level.

CLOTHING TABLE EM-8.1

Item	Tech Level	Weight	Cost
Business Attire (P)	2	Varies	100
Business Footwear (P)	2	Varies	20
Dress Attire (N, P)	2	Varies	100
Dress Footwear (N, P)	2	Varies	20
Dress Uniform (M)	2	Varies	120
Leisure Attire (N)	2	Varies	50
Leisure Footwear (N, M)	2	Varies	10
Light Jacket (N, P, M)	2	Varies	10
Thermal Jacket (N, P, M)	15	Varies	300
Thermal Suit (N, P, M)	15	Varies	500
Uniform (P, M)	2	Varies	80

TL = Tech Level

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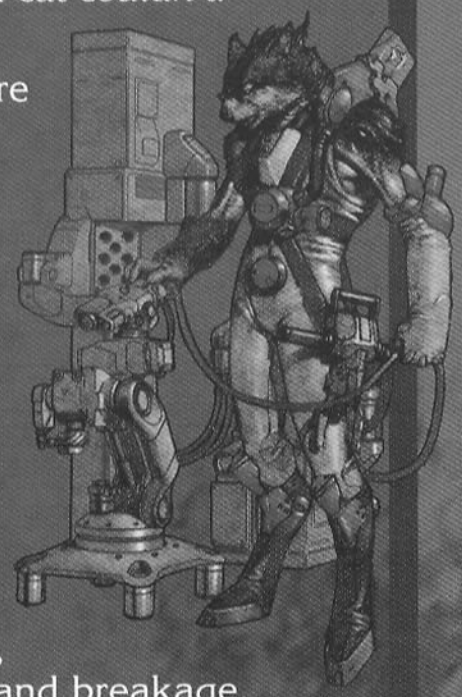
TL = Tech Level

SPACEMASTER™: EQUIPMENT MANUAL™

The cat pounced again, and Christian swung his sword. The monoblade clashed with the cat's hazzok, throwing Christian to one side and bruising his shoulder as 250 kg barreled through where he used to be standing.

Christian scrambled back to his feet, just in time. He didn't know why the cat was after him, but when a Falar wanted you dead, you usually died. He swung again as the cat charged. This time several supports cracked and the scaffolding slid to a bit of an angle. Not good. The cat was crazy. What was he thinking?

It didn't matter. Christian didn't need to think like a cat. He needed to think like a monkey. What could a monkey do that a cat couldn't?



This Equipment Manual provides everything an enterprising privateer can carry—and more! Picture yourself in kinetic armor with a needler in one hand, a monosword in the other hand, and a sniping plasma-carbine with holo-sights on your back. How about adding on a thruster pack, a medscanner, a sneak suit, and a velocity shield? Going camping? Try anti-glare lenses, a vapor canteen, and an environment tent. With the right connections, you might even be able to load up with professional and military-grade gear.

Also included are 5 critical tables, 16 attack tables, complete tech level benchmarks, and guidelines for construction & design, malfunction & repair, and breakage.

Outfit yourself for adventure! Dress for the kill! Equip to the max!

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