

SPACE EQUIPMENT HANDBOOK

★ JOVIAN

CHRONICLES

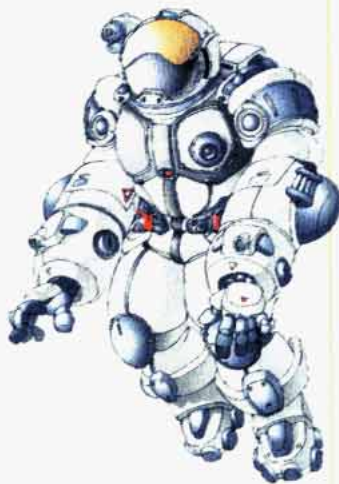
ADVANCED TOOLS & WEAPONS



FROM DREAM POD 9



★ JOVIAN CHRONICLES



Technology has advanced by leaps and bounds. While there are still wrenches and screwdrivers, computers and video displays, there are also plasma welders, self-sealing spacesuits and numerous other items needed for living and working in the Solar System.

The Space Equipment Handbook describes the everyday technology of the 23rd century. While not a complete list that describes every piece of equipment in existence, it is a comprehensive guide to common and important pieces of equipment used by adventurers in the Jovian Chronicles universe.

- Spacesuits and Accessories
- New Weapons and Armor
- Advanced Computer Rules
- Tools and Emergency Equipment

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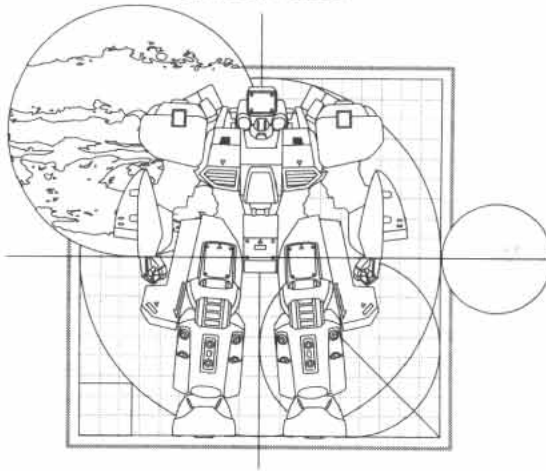


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Stuart's Dedication: To my
 parents, Clarence & Delaine, for
 their love and understanding; and
 my friends, Michael & Angela, for
 their friendship and encourage-
 ment.

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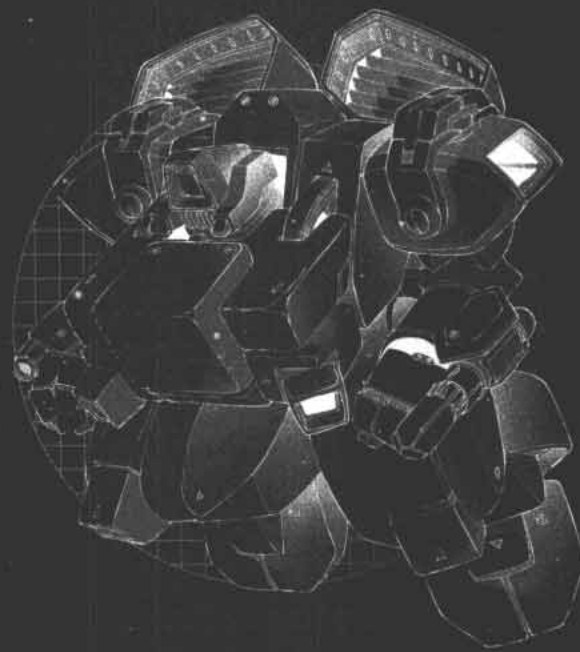
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INTRODUCTION

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CHAPTER ONE: INTRODUCTION

TOOLS FOR THE FUTURE ◀

The **Space Equipment Handbook** is a source of new technologies and new adventures. It is impossible to write a sourcebook that included every conceivable piece of useful equipment, so we have attempted to include the most useful and colorful items. The items we chose were created as either highly evolved versions of current technology, or as items that would be necessary or useful for a population that lives beyond Earth's atmosphere. Player Characters and Non-Player Characters alike should find something in these pages that proves useful in accomplishing their goals.

The *Book Content* (below) talks about what we included, but what did we leave out? Anything from the 21st century that would still be around in the 23rd century that would not have changed radically. Therefore we have not included every tool that could appear in a mechanic's tool box, nor have we included items of clothing. Common household items, food and drink are not included.

Undoubtedly, the writers and Players may disagree on what should and should not be included in this sourcebook. Remember the Golden Rule: If you, the Player or GM, don't like the way something is portrayed, feel free to change it. The game is meant to be fun, and only the Players and GM can ensure that.



1.1.1

BOOK CONTENT ▼

The *Introduction* includes two sections about the *Availability* and *Legality* of equipment in the Jovian Chronicles universe. Questions of how easy an item is to find, and who can legally purchase it, are addressed in this chapter. The information is a set of guidelines for Players and Gamemasters about the ways and means of acquiring equipment.

Space Suits introduces several new space suit types, and gives Players and GMs the option to customize and change the standard models. The space suits are divided into two classes — *soft* and *hard* — each containing different suits for different roles. The most common options for customizing suits are described.

Ordnance and Armor presents many new weapons from personal sidearms to heavy lasers to the sharp and pointed. New ammunition types for chemical slug throwers expands their useful and role to cover areas normally reserved for advanced, or energy, weapons. Accessories of all types and functions are now available for the entire arsenal of **Jovian Chronicles** weaponry. This chapter also includes new armor type, purchasing partial armor, rules for armor damage and repair, and armor accessories. Anti-missile and anti-laser defense systems are detailed for larger defensive applications.

Emergency Equipment provides new equipment for surviving the dangers of life in space. Most of the items are oriented towards surviving the space environment and damage control. Equipment for dealing with emergencies on a planet or moon is not forgotten.

Electronics covers new communication, computer, and audio-visual equipment. The *Computers* section includes new hardware examples, new academic and security Modules, and expanded computing rules provide a detailed system for resolving computer security and data retrieval. Surveillance equipment and electronic accessories complete the chapter.

Space Equipment is almost everything else a Player Character or Non-Player Character could need for an adventure in space. Personal items, construction equipment and surface vehicles form the bulk of this section. There is new information about portable sensor systems.

The *Appendix* contains *Availability* and *Legality* tables for equipment from the **Jovian Chronicles Rulebook**, **SolaPol Sourcebook**, and the **Ships of the Fleet** books. This brings the information in these books up to date with the *Availability* and *Legality* guidelines presented here.

1.1.1

HOOKS AND TIPS ▼

The **Space Equipment Handbook** is a gold mine of new adventure ideas for GMs. Each piece of equipment can provide the starting point of an adventure; however, the Players should be aware that a particular piece of equipment exists, and how it is used.

Each chapter ends with a *Point of Departure*: a piece of short fiction and adventure ideas based on the chapter's content. The *Background* provides information about the "big picture" and continues the scenario presented in the fiction. *Suggestions* gives Players and GMs ideas for variations on the adventure idea and other tips about the adventure.

1.1.2



▼ GETTING EQUIPMENT

Player Characters, or any character, in the campaign can obtain equipment from a variety of sources. Humankind has always used various tools to affect their environment, and this remains especially true with the sophisticated technology of the 23rd century solar system. These are some of the sources of equipment in a campaign.

In Stores: only the most common and unrestricted items are widely found in stores. Some specialty stores will have uncommon and/or restricted items (with the proper permit) available for sale. In small communities, common items are often stored centrally for all people and are available freely (though within reason — waste is not highly regarded in the space settlements).

Assigned Military Supplies: for people in the armed forces, there is often little choice as to what types and makes of equipment are available. The quartermaster is solely responsible for issuing equipment to personnel, with special items often requiring authorization from superior officers.

Autofactories: Player Characters can get equipment directly from autofactories, but this is an extremely rare occurrence. This will only occur with first run models or thefts from the autofac line. If the PCs want something special made, they must have the appropriate tool templates and blueprint instructions to manufacture the item.

The Machine Shop: the technicians that work in a machine shop are likely able to manufacture or assemble the parts of many items. It is unlikely that techs will simply drop everything to accommodate the requests of a Player Character, but this is often the only way to obtain certain items in remote locations or onboard ship.

The Bargain/Deal: when someone lacks currency, or both parties possess an item their opposite wishes to obtain, any number of bargains or deals can be struck. Exchanges of services for goods, or for goods and a smaller cash amount, or any combination thereof, are perfectly acceptable means of acquiring things. This is the most common means of conducting transactions through the black market or connections, though black market deals will often require large sums of money.

Stealing: whether by reason of desperation or a price too high, stealing what you need is always an option. Of course, this course of action carries with it its own risks and rewards of varying magnitude. If Player Characters are caught stealing by a law enforcement agency, they can expect to be treated humanely. Intelligence agencies and criminals will likely have other ideas about the suitable treatment for a thief.

▼ EQUIPMENT IN AN ADVENTURE

At the most basic level, a character's equipment is the tools of his trade. From the weapons and armor of the mercenary to the instruments and tools of the scientist, every Player Character will have at least some of the equipment normally associated with his occupation, and even some that isn't. Over the course of a game, the PCs can obtain new equipment in a number of ways.

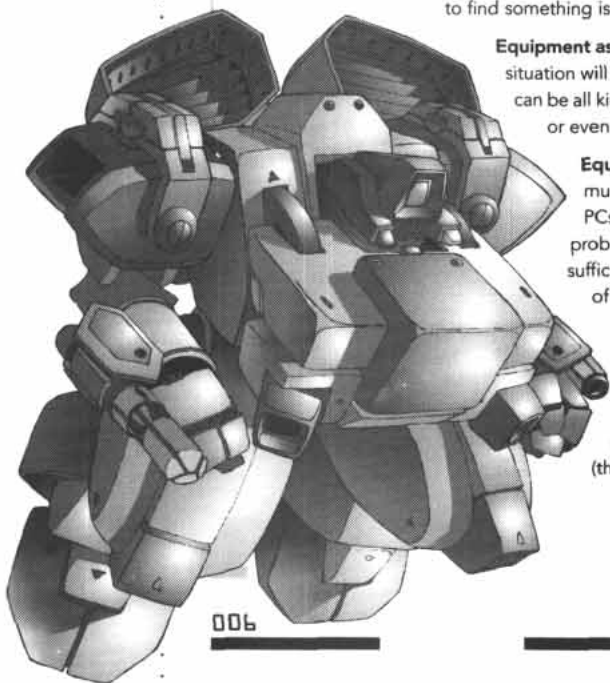
Equipment as Reward: it is usually at the end of an adventure that Player Characters have the chance to restock their supplies and buy new or better equipment. The PCs have made some money, or found something of value to trade, and now they want something newer or better.

Equipment as Punishment: it is the latest and greatest in newly developed technology, and the Player Characters get to field test. Of course, it probably works a lot better on paper and in the lab than in the field. There is also the case of someone else wanting to play with the new toys. Sometimes what you want is not necessarily what you get, so it is surprising to find something is big and bulky if you were expecting the something much smaller.

Equipment as Goal: in this case, a certain piece of equipment becomes the goal of the whole adventure. This situation will see the Player Characters trying to locate, steal or retake a specific piece of equipment. There can be all kinds of complications possible with this situation. PCs could have no idea where to start looking, or even what the item looks like.

Equipment as Tool: sometimes things are just easier with the right tool. A Player Character's life is much easier with the right tools, but the wrong tools can surely make their live a living nightmare. PCs can always arrest a known criminal with nothing more than their bare hands, but it would probably be a lot easier with a sidearm if the criminal is also armed. A commercial computer may be sufficient to hack information out of a personal assistant, but is no match for the electronic defenses of a corporate network.

Equipment as Means to an End: this case is a combination of the previous two cases: a specific piece of equipment is required to reach a specific goal. For example, the Player Characters need to find out the location of a corporation's covert lab and destroy it. To accomplish this they will need a better computer and software to access the corporations network, or maybe they need it to disable the security system. They must find right computer (the tool) to get the information they need (the goal).



AVAILABILITY ◀

Some things are just harder to find than others. Whether by virtue of the cost, or difficulty of manufacture, or even the utility or demand for a specific item, the items described in this book, and previous books (see the *Appendix*), are assigned an *Availability Threshold*. Players roll two dice, plus any modifiers the GM applies, against this Threshold to determine if they can find the item for sale. If the Player Characters are looking for a restricted or illegal item (see *Legality* for more information), then they may need to locate it through non-standard channels — the black market. In this case, a Player should roll *Streetwise* against the *Availability Threshold*.

The intent of this system is not for Players to roll the dice, subtract some credits from their account, and add the item to their inventory. For Gamemasters, this is an opportunity for roleplaying encounters. While shopping for mundane items does slow down a game, any situation can test the wits of Players and provide a moment of entertainment. Entire adventures can revolve around the search for a single needed item, or the Players could be looking for one thing and find something else unexpectedly.



1-2

AVAILABILITY THRESHOLD ▢

Threshold	Availability
1	Very common; available almost anytime, anywhere
2	Common; can be found with little effort
3	Common
4	Common
5	Uncommon
6	Hard to find
7	Very hard to find
8	Restricted items
9	Very limited production runs
10	Only a few units in existence
11	Prototypes
12	One of a kind

MODIFYING AVAILABILITY THRESHOLDS ⓘ

Modifying *Availability Thresholds* is not an exact science, which is why a table of modifiers is not provided. It is recommended that Gamemasters apply modifiers to *Availability* depending on the situation. In general, it will always be easier to acquire items where there is a large population; the larger the population, the easier it is to find something. It bears repeating that *Availability* is used to determine if they can find the item at all, not if the item is for sale.

As an alternative to rolling dice, the GM can use the *Availability Threshold* as an indicator of how much trouble to put the Player Characters through to get the item. High thresholds may require the Characters to visit old friends, call in some favors, or take risks to locate what they need or want. Lower thresholds are simply a matter of calling a few shops on the vidphone to find out if they have any in stock.

Though it is described in the next section, *Legality* is complementary to *Availability*. Civilians trying to purchase military equipment will have a very hard time. The police are likely to show up and ask them why they are trying to purchase military gear. If the Players are military or law enforcement personnel, items restricted to the military or law enforcement are more easily available, though there are often strict procedures for personnel to gain access to these items.

WHAT IS THE CODE? ⓘ

The *Code* is simply the combination of the *Availability Threshold* and *Legality Code* (see next section) presented as X-YZ. The first number, X, is the *Availability Threshold*. The second part, YZ, is the *Legality Code* — Y is the *Restriction Class*, and Z is the *Violation Level*.

While in many cases the *Code* is designated for each area of the solar system, some items have a single, system-wide *Code*. In the end, the *Code* assigned to various items can be modified by the GM, or they can be disregarded entirely. The *Codes* are listed in tables in each section. *Codes* for previous *Jovian Chronicles* books are listed in the *Appendix*.

HOOKS & TIPS

HOOKS & TIPS

end of section 1.2 availability

▶ LEGALITY



The Legality system is a set of guidelines for Players and Gamemasters when dealing with restricted items. The material that follows is subject to multiple interpretations of its application. In the end, the GM must decide how to apply these guidelines in their campaign, and inform the Players of how these changes will affect the Legality of their equipment. For example, if the Gamemaster decides to place further restrictions on certain weapons that every Player Character happens to be carrying, the PCs will face greater opposition from law enforcement personnel.

Legality Codes are a letter and number combination. The letter is the Restriction Class, or how hard to find the item is. Increasing the Restriction Class level makes it harder to obtain an item legally. The number is the Violation Level, which is the severity of the restrictions in terms of punishment for violating them. Items with high Violation Levels are viewed by law enforcement and legislative bodies as being dangerous to the public.

▣ RESTRICTION CLASS

Class	Description
A	Illegal to transport, possess, use, sell or store.
B	Transportation, possession, use, sale or storage restricted to military organizations.
C	Transportation, possession, use, sale or storage restricted to law enforcement.
D	Transportation, possession, use, sale or storage of restricted items accessible to civilians.
E	Unrestricted.

Class A items fall under the jurisdiction of special government agencies, like the Edicts Enforcement Bureau of SolaPol or the Edicts Research and Review Board. Special exemptions are available under the supervision of these agencies, but the requirements and procedures are very strict. Of course, these same agencies also give themselves exemptions regularly. Class A items include any Edicts-violating technology, NBC weapons, or any other technology listed by Solar governments as extremely dangerous for one reason or another, such as basic nanotechnology.

Class B items include capital ship weaponry, heavy weapons, assault weapons, exo-suits, military-grade body armor and defensive systems, explosives, and highly advanced electronics. Even military personnel are not found carrying around their equipment all the time; usually, the necessary equipment is only issued when personnel are on deployment.

Class C items include sidearms and rifles, light body armor, some advanced electronics, and any item deemed too dangerous for general public use. Many of these items are used by law enforcement and security firms in some capacity, while other items are simply designated as Class C to keep them out of public circulation.

Class D items include protective garments, non-lethal or low damage weapons, and some types of high end consumer electronics and computers. Most of the time, these items are restricted because the governing body wants to know who is using the item, and why the item is being acquired. Many of these items are Class D to ensure only the "right kind" of person can obtain the item.

Class E items are freely available to any person. This class of items still has a Violation Level attached with their use, though the punishment is meant to deter mischief. Items with a Legality Code of E0 are not considered a threat at all.

▣ VIOLATION LEVEL

Level 0:	No violation
Level 1:	1d6 weeks community service; therapy with personal psychiatrist; repayment of damages; 1d6 months probation
Level 2:	minor fines; 1d6 months community service; extensive therapy with psychiatrist; any combination of above; 1d6 years probation
Level 3:	1d6 months incarceration in rehabilitation center; large fines; charge entered on permanent record
Level 4:	1d6 years incarceration in rehabilitation center; huge fines; charge entered on permanent record
Level 5:	permanent incarceration (25 to 50% chance of parole after 10+1d6 years)
Level 6:	permanent incarceration; no parole; death (if applied)

The Violation Level of the Legality Code is set depending on the perceived severity of any unlawful, damaging, or dangerous act that can be committed with the item. While it may seem unnecessary to do so with some apparently benign items, troublemakers can always find ways to cause problems with even simple items. Manufacturing any Class A, B, C, or D, restricted item without the permission of the local government is universally illegal. The penalties for unauthorized manufacturing are usually one or two levels above the Violation Level of the item being manufactured.

PERMITS ▼

In some cases, permits are available for restricted items. Permits are issued for a specifically defined use and item. Depending on the nature of the permit request, multiple uses and items may also be designated. Permits also have conditions attached to them depending upon what the permit is being issued for. Violation of a permit's conditions is grounds for seizure of the item and permit, not to mention charges for the violation to the order of the permit's Violation Level. For example, a PC has a permit for the possession and storage of a laser pistol. If the PC shot someone he saw steal something, he would be charged with illegal use, and murder if the person was killed.

1.3.1

PERMIT DEFINITIONS □

Transportation	The secured movement (i.e. locked in a case) of a restricted item by the permit holder, possibly between designated points.
Possession	The transportation of an unsecured restricted item on the person of the permit holder.
Use	The activation of restricted equipment, or the discharge of a restricted weapon, in authorized areas.
Selling	The transfer of possession of a restricted item for money; restricted item designated by the issuer.
Storage	The storage of a restricted item in a designated location; restricted item and location designated by the issuer.

GM'S NOTE ●

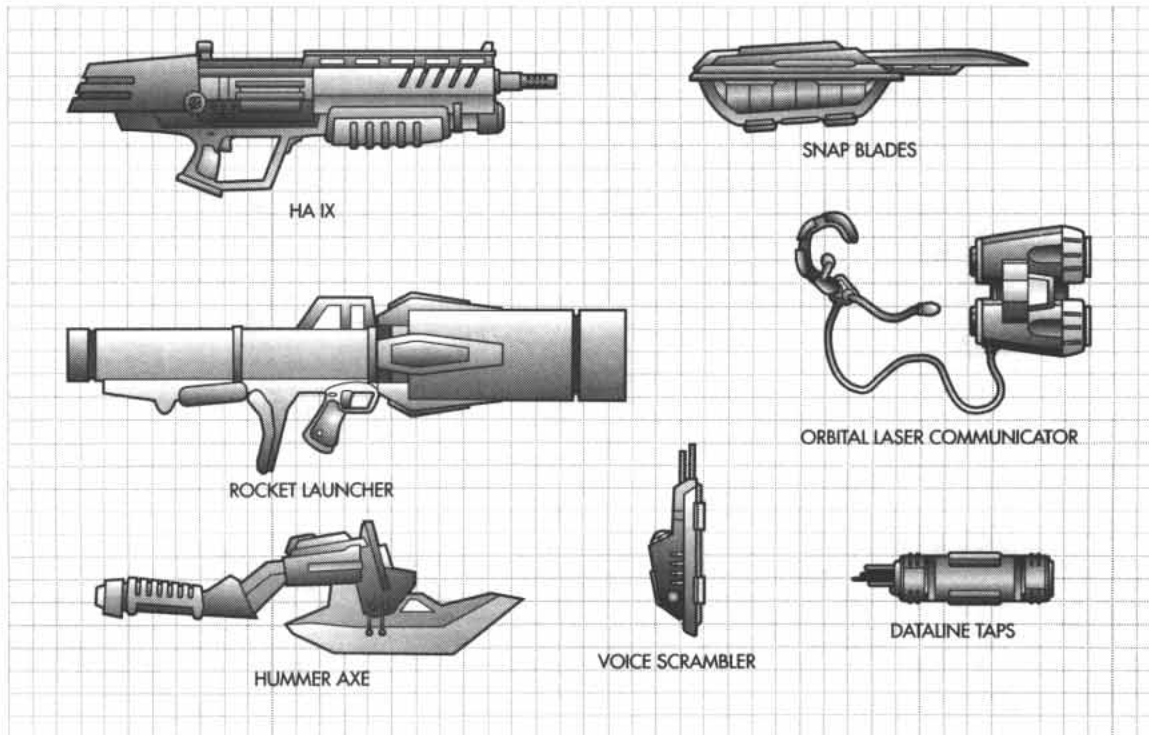
There are a couple of important points to remember when dealing with things that require permits. It is important that the GM understands the implications, and even more important that Players understand the consequences.

First, there are often more costs involved than simply purchasing the appropriate permit. There are often storage and transportation codes that must be met in order to obtain the permit. Special safes (1000+ credits), transportation containers (100+ credits), and security measures (50+ credits/month rental or 2000+ credits owned) are just some of the additional costs that are involved with obtaining a permit. These kinds of conditions will vary depending on location and the nature of the item.

Second, storage and transportation are two separate issues, and as such may require different permits for each activity. In the eyes of some law enforcement personnel, if a PC has a permit to store an item and not a transport permit, when the police catch the PC without the proper permit they are likely to think the PC is up to no good.

Finally, additional penalties may result from the consequences of any action taken with the item. For example, murdering someone with a weapon carries penalties for murder in addition to violating weapon restrictions. Simply firing the weapon may be considered a crime, with or without intent to harm, if the Player Character does not have the proper permit.

HOOKS & TIPS

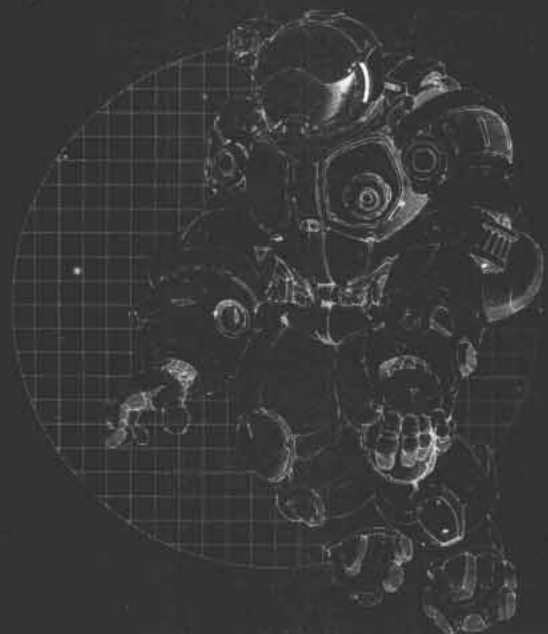


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SPACE SUITS



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CHAPTER TWO: SPACE SUITS

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SPACE SUITS IN THE 23RD CENTURY ◀

The basics of space suit design remain unchanged after more than 200 years of human space exploration. What has changed, and drastically, are the manufacturing methods and materials that make modern space suits far superior to the space suits of the 20th and 21st centuries. The biggest change is the use of a layer of self-sealing material capable of closing holes up to 0.5 cm in diameter in one round.

For the most part, space suits manufactured in different parts of the solar system will vary only in the appearance, and the placement of, components. Suits function at the same five psi mixture of oxygen and nitrogen (3.5 psi/1.5 psi) that all ships and habitats use. Most space suits feature a myomer layer to help move the suit and counteract the suit's air pressure. The myomer is powered by the suit's power supply and micro-generators in the suit's joints that provide power when the wearer moves. Because nitrogen is a buffer gas, the amount of nitrogen carried is minimal. Additional nitrogen is often carried as reaction mass for integrated suit propulsion systems. Using standard atmosphere gases also eliminates pre-breathing; thus, a person can quickly put on a space suit in an emergency without worrying about developing nitrogen narcosis (nitrogen bubbles forming in the joints.)

SPACE SUIT COMPONENTS ▼

The space suit itself is several interlocking pieces: a helmet, torso, arms, gloves, legs, boots, and a mission pack. This modular fit allows the space suit to accommodate any body size or shape. For convenience, the arms and mission pack are left attached to the torso unless it is replaced with a new component. The same thing is done with the legs and boots. The gloves and helmet are left unattached since it makes getting into a space suit easier. The mission pack is the backpack that carries the air supply, power source, and cooling system for the suit.

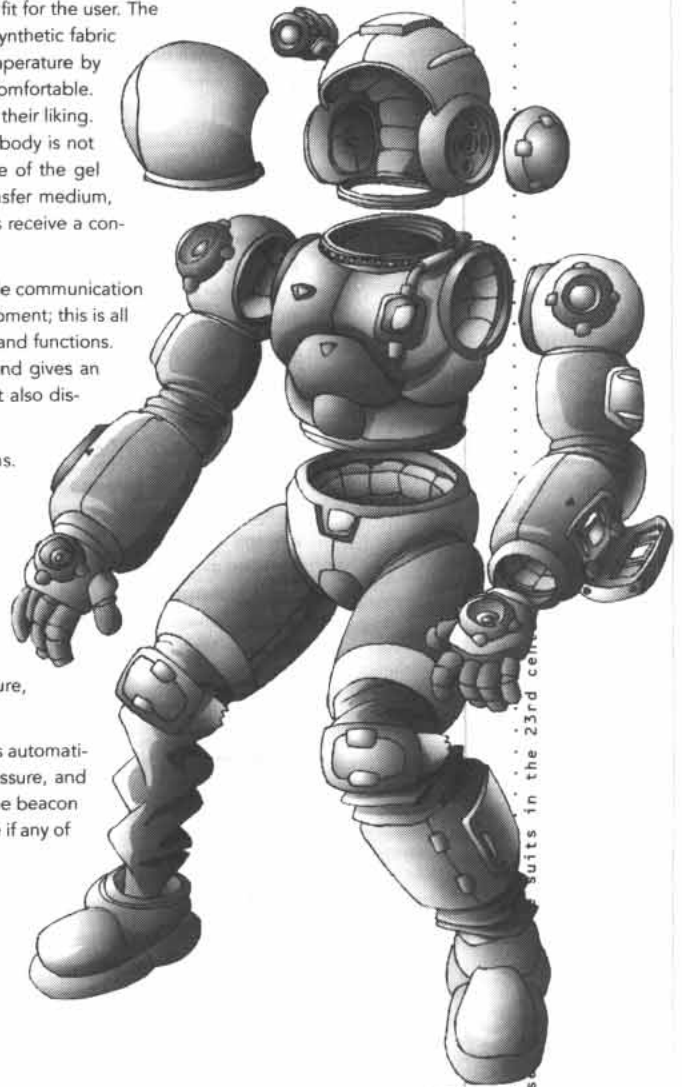
The inside of a space suit consists of numerous gel bladders that provide a skin-tight fit for the user. The gel also acts as a temperature control medium. This means the user wears a simple synthetic fabric suit to channel body moisture away from the skin. The bladders maintain body temperature by shifting the gel between hot and cold areas of the body to keep the wearer uniformly comfortable. The control panel allows the user to modify the relative body temperature settings to their liking. The gel medium temperature can also be modified by the life support system if the body is not generating sufficient heat to keep the temperature comfortable. Another advantage of the gel temperature system is in the gloves that can be worn. Because of the gel heat transfer medium, manual dexterity and sensation are completely uninhibited by the gloves. The gloves receive a constant flow of heated gel to keep the hands warm.

The suit control pads are mounted on the forearms of the suit. The control pads include communication controls, suit function and resource monitors, and connections to any additional equipment; this is all displayed on a small video screen with buttons around the screen to choose menus and functions. The suit function and resource monitor alerts the wearer to any suit malfunctions, and gives an appropriate course of action. The suit is equipped with a radiation level monitor that also displays warnings on the screen in addition to an audio alarm.

A communications jack is located next to the radio controls for hardline communications. A small compartment next to the jack contains a one meter coil of hardline. Only one person needs to connect to their partner to communicate, though it is possible to "chain" the hardlines together to increase the number of people on the circuit.

Helmets carry the suit radio, drawing power from the mission pack and an internal backup. In addition to polarized anti-glare visors, the helmet faceplate tint is adjustable to reduce the light level. A light is also mounted on the helmet. A water dispenser is standard equipment for all space suit helmets. Turning your head to the left brings the drinking tube within easy reach of the mouth. The water is under low pressure, so biting down on the mouthpiece quickly dispenses a mouthful of cool water.

Finally, all space suits are equipped with a rescue locator beacon. The beacon activates automatically for a number of circumstances: oxygen depleted, power depleted, loss of pressure, and extreme fluctuations in temperature or radiation levels. Under these circumstances, the beacon can be overridden by the wearer, but it is assumed that the wearer will be unresponsive if any of these situations should happen. The wearer can also manually activate the beacon.



2.1

2.3.1

end of suits in the 23rd cent

▶ TYPES OF SPACE SUITS

Suits are generally divided into two classes: soft and hard. Space suits are considered soft suits if they are made with soft materials and flexible polymers. Soft suits are the most common of all space suits. Soft suit types include the basic (soft) worksuit, flight suits, crew suits, and Mars suits. Hard suits are designed for extremes. These space suits are made from hard polymers, composites and metals to resist the hardest use and harshest environments. Hard suits are commonly used in space construction, during exploration, by law enforcement, and by the military. Hard suit types include the hard worksuit, armored suit, augmented suits, and the new adaptive technology suit.

▼ SOFT WORKSUIT

Soft worksuits are used inside stations and in low Earth orbit, where the magnetosphere offers greater radiation protection. They are also used on the Lunar colonies for short duration excursions; longer duration excursions are made with a radiation screen. These worksuits are often worn by M-Pod pilots and other personnel operating machinery in non-Earth environments. Soft worksuits are manufactured throughout the solar system by numerous companies. Each model will often have its own design peculiarities to try and distinguish it from a competitor's version. Some users are known to insist on using a single model only because of perceived differences in performance.

◇ CREW SUIT

Crew suits are soft worksuits with several modifications for use by ship crews. The first is the addition of a socket for plugging into the ship's life support and internal communication systems at crew stations. Each station has a connector cable situated under a clearly marked cover. The end of the connection and the suit socket are shaped with the top half rounded and the bottom half square. This makes the connection easy and foolproof. The connection provides oxygen-nitrogen in/out, drinking water, power and communication hookups. High friction points on the suit are covered with duraplast mail to prevent wear. Military crew suits have even more duraplast mail as protection against shrapnel from combat damage. The Mercurian Apollo crew suit is considered to be the best available on the market. It has less protection, but it is more comfortable and easy to use.

◇ PILOT SUIT

Pilot suits are the least bulky of all space suits. This keeps the pilot's movements from being restricted in any way — an especially important trait for exo-armor pilots. These suits also have a crew connection socket that draws air and power from the onboard systems. This conserves the suit's air and power supplies for emergency use. A holographic HUD-equipped helmet (see *Accessories and Options*) is standard equipment for pilot suits; there is a socket at the base of the helmet for the HUD data feed.

The Jovian A-9 flight suit and CEGA SPFS-3.3 flight suit are manufactured by various companies to military specifications. Each Jovian state has their own supplier, and CEGA get their suits from various Orbital and lunar companies.

◇ MARS SUIT

Mars suits are the lightest of the soft suits, and are designed exclusively for use on the Martian surface. The major suit component is a snug body suit that is impervious to ultraviolet radiation. The body suit contains heating elements since the average surface temperature is still quite cold, especially at night. The enclosed helmet has the standard radio and light. Standard mission pack endurance is six hours, and is quite light compared to space suit packs. Most Mars suits are equipped with a recharge port for air and power from Mars surface vehicles. Mars suits used by the Martian militaries are covered in red camouflaged duraplast mail, have extended duration, and are equipped with military radios (see *Accessories and Options*). Mars suits are manufactured by numerous companies on the red planet.

▣ SOFT SUITS

Suit Type	Expandability*	Armor Rating	Encumbrance	Endurance	Mass	Cost
Military Crew Suit	1/0/0/2	22	-1	6 hrs+hookup	12	8000
Civilian Crew Suit	1/0/0/2	18	-1	6 hrs+hookup	10	6000
Mars Suit	1/1/2/1	5	0	6 hrs+recharge	8	5000
Military Mars Suit	1/1/2/0	24	0	8 hrs+recharge	10	6500
Pilot Suit	0/1/1/0	5	0	2 hrs+hookup	8	6000
Soft Worksuit	1/1/3/2	10	-1	8 hrs	10	5500
Apollo Crew Suit	1/1/1/1	16	0	6 hrs+hookup	8	6000

* Expansion Slots available in order: Helmet/Torso/Mission Pack/Legs

STEALTH SPACE SUITS ◊

Nearly any space suit can be stealth equipped. Every military force, and some paramilitary groups like SolaPol and intelligence services, have some stealth space suits for use. The prohibitive cost of manufacturing and maintaining stealth suits means there are relative few examples possessed by any one group.

Stealth space suits cannot be modified with equipment other than was originally fitted (since this would lower the suit's effective stealthiness.) Because of the complexity of stealth space suits, a space suit cannot be retrofitted with stealth capabilities. To determine the cost and added weight of a stealth space suit consult the *Armor Accessories* table on page 37, including any modifications to the base suit. Stealth space suits are have a universal Code of 9-B4.

HARD WORKSUIT ▼

Hard worksuits are the same as a soft worksuit, except for the addition of a tough "shell". Typical hard worksuits have a solid, durashell torso, while the remainder of the suit is covered with duraplast mail. These worksuits are commonly used in space construction and extended EVAs.

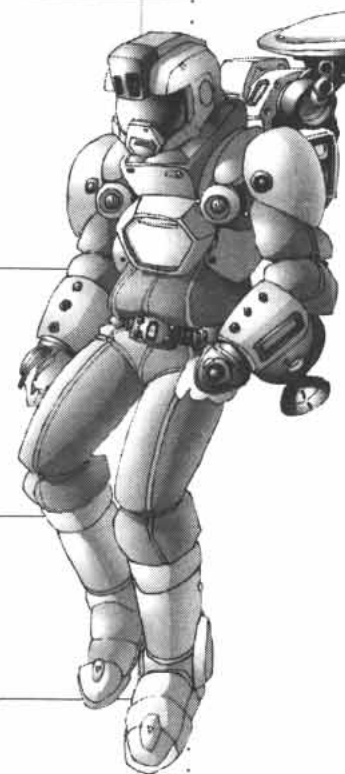
The Hercules is the common hard suit of the outer solar system, while the Venusian Kame (Japanese for "turtle") is the common hard suit of the inner Solar System (though Mercurians call it "smelly".) A special variant, the Shakunetsu ("scorching heat"), is available for working on the Venusian surface at the expense of endurance and expansion space.

ARMORED SUIT ◊

Armored suits, like the armored version of the Hercules, are regularly worn by marines in the various fleets. The suit is built around a one piece durashell torso with the limbs encased in articulated durashell plates. In essence, armored suits are hard worksuits with even more armor protection, meaning that manufacturers of commercially available hard worksuits are the same companies supplying the military. Few people have use for an armored suit outside of military or police organizations.

AUGMENTED SUIT ◊

Augmented suits have additional myomer and actuator additions to increase the strength of the user. These space suits are the last step before an exo-skeleton or exo-suit. The majority of materials are more flexible than a normal hard suit, technically making the augmented suit a heavy soft suit. These suits are considered hard suits because of the structural reinforcement to support the user and accommodate the myomers and actuators. Augmented suits are used where exo-skeletons cannot operate, or when exo-suits are too costly to use. The space suit does not increase the wearer's movement rate, but it gives the wearer an effective Strength of +2. (If the character has a STR of 2 or higher, they gain no benefit to their STR.)



HARD SUITS ☐

Suit Type	Expandability*	Armor Rating	Encumbrance	Endurance	Mass	Cost
Armored Suit	1/2/2/1	50	-2	10 hrs	18	7500
Augmented Suit	1/2/2/2	25	-1	10 hrs	20	9000
Hard Worksuit	1/2/2/2	30	-1	10 hrs	15	6500
Shakunetsu Worksuit	1/1/0/0	24	-1	6 hrs	16	8000

* Expansion Slots available in order: Helmet/Torso/Mission Pack/Legs

SPACE SUIT AVAILABILITY AND LEGALITY ☐

Space Suit	M	V	E	Or	L	Mf	Mr	N	J	S
Soft Worksuit	6-D1	6-D1	9-D1	4-D1	5-D1	7-D1	7-D1	6-D1	7-D1	9-D1
Civilian Crew Suit	6-D1	5-D1	9-D1	5-D1	6-D1	7-D1	7-D1	5-D1	5-D1	7-D1
Military Crew Suit	6-B1	6-B1	10-B1	6-B1	6-B1	8-B1	8-B1	7-B1	6-B1	9-B1
Apollo Crew Suit	4-D1	6-D1	9-D1	5-D1	5-D1	7-D1	7-D1	6-D1	5-D1	7-D1
Pilot Suit	6-B1	6-B1	9-B1	6-B1	8-B1	8-B1	8-B1	8-B1	6-B1	8-B1
Mars Suit	10-D1	10-D1	10-D1	10-D1	10-D1	3-D1	3-D1	10-D1	10-D1	11-D1
Military Mars Suit	10-B1	10-B1	10-B1	10-B1	10-B1	5-B1	5-B1	10-B1	10-B1	11-B1
Hard Worksuit	4-D1	5-D1	10-D1	6-D1	5-D1	9-D1	9-D1	3-D1	4-D1	4-D1
Shakunetsu Worksuit	9-D1	4-D1	10-D1	9-D1	10-D1	11-D1	11-D1	10-D1	10-D1	11-D1
Armored Suit	6-B2	6-B2	10-B2	6-B2	6-B2	8-B2	8-B2	8-B2	6-B2	7-B2
Augmented Suit	8-D1	8-D1	10-D1	8-D1	8-D1	9-D1	9-D1	8-D1	8-D1	8-D1

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn

end of section 2.2 types of space suits



▶ ACCESSORIES AND OPTIONS

Space suit accessories and options are available for many different suit components: helmets, gloves, boots, life support, propulsion, and electronics. While the following items are the most widely available, Players and Gamemasters can always create new items to add to their space suits. Indeed, modularity is the key feature of every space suit design, to some degree.

◇ HEADS-UP DISPLAY

An integrated HUD is a standard feature of pilot helmets. Other professions also like to use helmet HUDs. M-Pod pilots like to have vital information always in sight since they are often not looking forward through the canopy, but always surveying their surroundings for collision hazards. There are two HUD models available: a 2D projection, and a 3D holographic projection.

◇ FOOD DISPENSER

Dispensers for food are available, though calling it 'food' is actually misleading, since dispensers don't actually provide solid products. Various nutrient rich pastes and thick drinks are normally dispensed through a tube that slowly serves the food when the user bites down on the mouthpiece. Concentrate tablets are another common food supplement for space suit users.

◇ LIGHT SOURCES

Light sources of varying size and power are attached to the helmet. The light source is self-contained, though some of the most powerful versions carry their power sources in the mission pack. Helmet lights are rated by the effective range and arc they illuminate. The standard helmet light is a 20/45 light (20 meter range over a 45 degrees arc). The most common self-contained model upgrades are the 20/90, 50/45 and 50/90 (which uses a lamp on each side of the helmet). Lights powered by the batteries in the mission pack are available in 100/45, 100/90, and 250/60 models (all of them a twin-lamp configuration). All light sources can operate for twelve hours before requiring a recharge, which can be done through a standard charge port (see below).

◇ WALDO GLOVES

Waldo gloves — a misnomer since they actually replace the suit's arms — feature built-in controls for using remote manipulators. Activating the gloves allows the user to enter a control code to take over a set of robotic manipulators on any manipulator-equipped system. The back of the right hand glove has controls for calibration, motion and feedback. The back of the left hand glove has controls for manipulator override and the waldo-manipulator interface. Limited voice recognition is used to allow the user to freeze the manipulators when he needs his hands for something else. The manipulators do not unlock their position until the controls are unfrozen and the waldo gloves are returned to a position that approximates the manipulator's current position. Waldo gloves are only available in pairs.

◇ PSEUDO-HANDS

A pseudo-hand is a mechanical hand and elongated forearm unit that mimics the user's hand movements via a hand waldo. This gives the impression that the user has longer than normal forearms. The heavy duty version gives the user a stronger grip strength and extended reach that is useful for handling extremely hot, cold or dangerous items. The light duty pseudo-hand is much narrower and smaller for detailed work in hard to reach places. Both versions have the option to include a light (+50 credits) and video feed to a helmet heads-up display (+250 credits).

◇ GRAVITY BOOTS

The electrohesive attachment system, or "gravity boots," is a common feature for colony cylinder workers. It gives the user the ability to walk along the construct in zero gravity conditions, which reduces MMU usage for increased durations. Gravity boots use the same molecular polymer technology as scaling pads (*SolaPol Sourcebook*, p.111) to keep the user attached to whatever they are standing on. It provides the user with a +1 modifier for any Zero-G Movement test. The power supply is carried in a pocket above each ankle, but can be turned on or off from the wrist controls.

◇ REINFORCED BOOTS

Reinforced boots are constructed with additional composite panels and duraplast mail that reach the mid-thigh, enabling them to take extra abuse. The boots are simple additions for users that spend a lot of time on the surface of planets and moons. Frequent users are geologists who spend time on their knees, or in various crevices that might catch the suit legs, collecting samples. Reinforced boots add six points to a soft suit's Armor Rating.

ARMORED BOOTS ◇

Armored boots are composite-metal boots that reach the mid-thigh. They are meant specifically for users that spend a lot of time in above-average "hostile" environments. Prospectors and miners use armored boots to protect themselves from debris thrown out by mining equipment. The armor is appreciated when it absorbs blows from erratic equipment that would otherwise maim or sever the leg. It is also a lot cheaper to partially armor a soft suit instead of buying a complete armored suit. Armored boots add ten points to a soft suit's Armor Rating.

RADIATION SCREENS ◇

Radiation protection is provided by a magnetic screen generator attached to the suit's torso or mounted in the mission pack. Radiation screens are available in three levels of protection: 100 rads/hour, 1000 rads/hour, and 10,000 rads/hour. The most powerful version is normally used within the orbit of Venus, during times of increased solar flare activity, or in areas of high radiation. All screens come with an independent power supply sufficient for 12 hours of operation.

ENDURANCE UPGRADE ◇

Space suit endurance upgrades are accomplished by mounting additional air tanks and batteries internally or externally. Internal upgrades permanently increase the size and mass of the mission pack. External endurance upgrades lock onto specified attachment points with air and power connectors. The mission pack can carry a maximum of four external upgrades or two internal upgrades, though external upgrades are still usable with the internal additions. Each endurance upgrade increases the suit's endurance by two hours.

RECHARGE PORT ◇

For suits that are not normally fitted with an accessible recharge port, it can be retrofitted. The end of the connection, and suit socket, is shaped with the top half hexagonal and the bottom half square. This makes the connection easy and fool-proof. The connection replenishes the suit's atmosphere supply, drinking water, and power. Separate oxygen and nitrogen lines mean that integral MMU systems are also refueled. A recharge port should not be confused with the resupply ports that are located on the side of a mission pack — an inaccessible spot for a lone person.

INTEGRAL MMU ◇

Integral MMUs for space suits add a set of thrusters and reaction mass tanks to the top and bottom of the missions pack. The thrusters (2 MP) are set into the ends diagonal extensions at each corner of the mission pack. The MMU uses nitrogen gas, heated by the suit's thermal control system, for reaction mass (20 BP). (External MMUs are described on pages 67-69 of *Space Equipment*.)

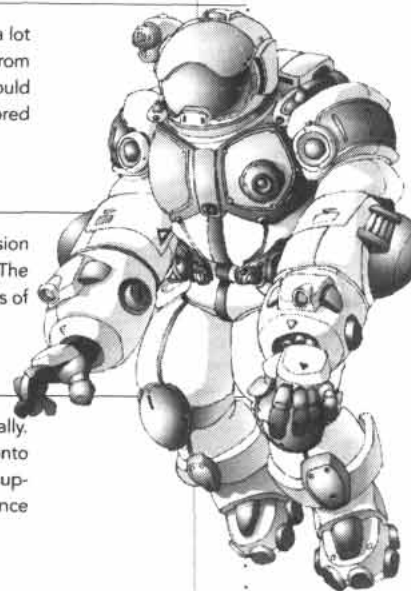
The MMU controls are two keypads located on the upper thigh of the suit's legs. A switch locks out keypad inputs to prevent accidental thruster bursts. The left keypad controls yaw, pitch, and roll. The right keypad controls translation along the x-, y- and z-axis. Each time a key is pressed, a controlled burst of nitrogen is released. This allows easy control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

ADVANCED MMU ◇

Advanced MMUs are identical to a normal integral MMU in every aspect (2 MP, 20 BP) except the degree of control. Advanced voice commands and inertial navigation allow the user greater flexibility and precision control of the MMU. Some of the commands available include precise rotation and lateral movements, stability and orientation correction (constant or specified), and moving at specific rates. Advanced MMUs are only available to expert users, since it is very easy to quickly deplete the onboard re-mass.

EXTERNAL REACTION MASS TANKS ◇

Increased reaction mass is possible by attaching additional tanks (10 BPs each) to the suit. These are externally mounted to the MMU sections of the mission pack (since it is preferable to carry additional oxygen internally.) Integral and advanced MMU systems both have the necessary mounts to double their reaction mass capacity with external tanks that decreases the maximum number of external life support upgrades by two.





◇ ENHANCED COMMUNICATOR

Enhanced communication systems provide improved voice and data transmission over longer ranges. The standard radio (-5 Comm, 10 km ground/1000 km space) is replaced with a more powerful radio (-3 Comm, 20/2000 km). The enhanced radio is also capable of handling real-time video and data transmission from equipment attached to the suit comm system.

Military-grade communicators improve their transmission capabilities with encryption, frequency hopping, and increase power output. The standard radio (-5 Comm, 10 km ground) is replaced with a powerful military version (0 Comm, 30 km ground). The military radio is capable of handling real-time video and data transmission from equipment attached to the suit comm system. This gives officers current situation intelligence during a mission for better command decision making.

◇ SENSOR SYSTEMS

Though a person can always carry a portable sensor unit, there are two methods for mounting sensors on space suits: modular and permanent. Modular sensors are mounted to an interface plate on the suit's torso. The suit's forearm control pad acts as the interface to the sensor; sensor data is also displayed on the control pad screens. Permanent sensors are simply hardwired into the suit; the sensor unit is still located on the suit's torso. It is not uncommon for people performing certain tasks, like prospecting or search and rescue, to have the appropriate sensor unit permanently attached to their space suit. Audible sensor alarms can be set with both versions to alert the user to important, or dangerous, readings.

Installation of a modular sensor mount costs 200 credits. Modified portable sensors that mount on the suit cost an additional 10%. Permanently mounting a sensor system to the suit also costs an additional 10%. (See *Portable Sensors*, page 72, for further information about sensors.)

◇ ELECTRONIC WARFARE PACKS

Two electronic warfare packages are available to mount on space suits: electronic counter measures (ECM) and electronic counter-counter measures (ECCM). Both systems use an separate power source, but their operating time is limited to approximately thirty minutes of continuous use. Either system is plainly visible from the numerous antennae on the mission pack's exterior. These antennae preclude the use of any other externally mounted options, like additional reaction mass. These systems are equivalent to Rating 1 vehicle system with a basic range of one kilometer.

◇ ADAPTIVE FITTINGS

Adaptive fittings allow a space suit to fit different accessories for different tasks; thus, a single suit can perform the functions of several suits with permanently attached accessories. A universal helmet ring allows for numerous helmet options, but because of the limited space inside a helmet, different helmets must fit different options. The adaptive fittings occupy the existing suit expansion slots, and can only accept accessories no larger than the normal suit expansion slots, with the exception of the mission pack.

An open-frame mission pack — replacing the normal pack — has fixed internal support structures, but also several adjustable structures. The only fixed components occupy the middle third of the pack: atmospheric gas storage, power source, comm system, and gel pump and temperature control system. The fixed systems provide the suit with an endurance of six hours (instead of the normal suit endurance.) The rest of the pack interior consists of adjustable frame members and color coded connectors — blue for life support, red for electronics, and black for propulsion. The mission pack is a hard shell design that uses sliding panels to adjust the internal volume, and mount external equipment. These changes increase the number of available expansion slots on the suit's mission pack by two.

Attachment points for suit accessories are added to the torso, arms legs to accept most optional equipment. The accessories require some modification to attach to the adaptive fittings, but once modified can easily attached and detached (two rounds) by a trained user. Systems that require power either have their own source or a connection to the suit's power supply. Components that are adaptive-fitting compatible cost an additional 10%.

○ WEARING A SUIT

A spacesuit is a miniature, form-fitting spaceship designed to keep its single occupant alive in the deadly conditions of outer space. It has to defend the fragile human body against extremes of temperature, vacuum and hard radiation. No matter how high tech the suit is, it cannot accomplish these tasks and yet feel like casual clothes. Wearing a suit is a tiring, bothersome affair. The joints restrict movements, the gloves remove tactile sensations (though some of the better gel-based "thin" models manage to transmit quite a few sensations) and the helmet always block at least a portion of the field of vision.

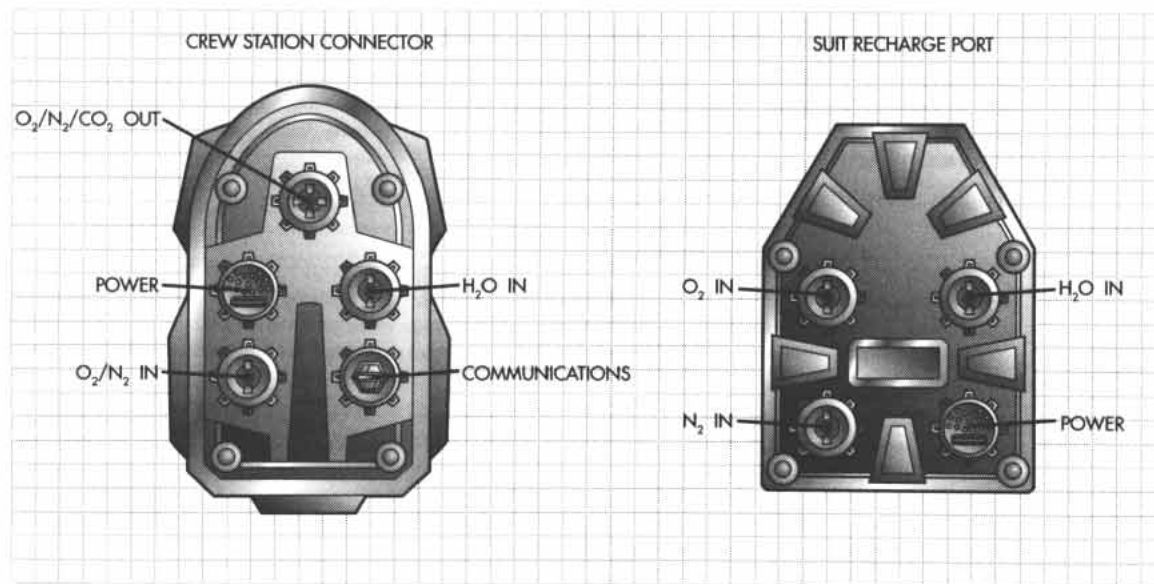
Depending on the Reality Distorsion Factor of the campaign, this can be used for ambiance or simply ignored. In a high action, anime-inspired adventure, suits are like clothes: they can be put on within seconds, always work without being checked out, and can be worn for hours on end without discomfort. For a more hard science game, however, Gamemasters would be well-advised to read astronaut reports and learn about pressure-stiffened joints, suiting-up procedure checklists and fogging helmet faceplates. Either approach is entirely valid, and the two can even be mixed when the plot calls for it.

SPACE SUIT ACCESSORIES AND OPTIONS

Equipment	Expansion Slots	Wt	Cost	Code
Heads-Up Display, 2D	H1	-	400	4-C1
Heads-Up Display, 3D	H1	-	550	5-C2
Food Dispenser	H1	0.5	50	4-E0
Lights				
20/90	H0	-	10	3-E0
50/45	H0	0.5	20	3-E0
50/90	H0	1	35	4-E0
100/45	H0/M1	1	60	4-E0
100/90	H0/M1	1.5	80	4-E0
250/60	H0/M1	2.5	100	5-E0
Waldo Gloves	T2	2	500	5-E1
Pseudo-Hand, Heavy	T1	2	250	5-E1
Pseudo-Hand, Light	T1	1	175	5-E0
Gravity Boots	L1	2	500	5-O2
Reinforced Boots	L1	2	200	4-E0
Armored Boots	L2	4	400	5-E1
Integral MMU	M1	6	2000	5-E1
Advanced MMU	M1	6	3500	6-E1
External Re-Mass (10 BP)	M*	2	100	4-E0
Radiation Screen (100 rad/hr)	T1	2	500	5-E0
Radiation Screen (1000 rad/hr)	M1	3	1000	5-E0
Radiation Screen (10,000 rad/hr)	M1	5	1500	6-E0
Endurance Upgrade, Int.	M1	1.5	100	6-E0
Endurance Upgrade, Ext.	M*	2	125	4-E0
Recharge Port	T0	1	50	4-E0
Military Comm	H1	1	200	6-B2
Enhanced Comm	H1	1	150	5-E0
Sensor System	T1	*	200*	6-E0*
ECM	M2	4	2,000	6-B2
ECCM	M2	4	2,000	6-B2
Adaptive Fittings	*	4	5,000	5-E0

H = Helmet, T = Torso, L = Legs, M = Mission Pack

• See description on previous pages



2.4

2.4.1

2.4.2



▶ SPACE SUIT MAINTENANCE

Maintenance requirements for space suits are surprising low, but most users check components more often than required, especially if heavily used. Overpressure checks — increasing the pressure to seven psi for ten minutes to see if the pressure drops — before an excursion indicates whether the suit has any leaks.

Each space suit rack in the airlock white room, or any other suit storage location, has resupply lines for oxygen, nitrogen, water, power, and reaction mass hung in the suit locker to charge systems. The recharge sockets are located along the side of the mission pack.

Dusty surface environments require the regular and thorough cleaning of a space suit. Fouled joints and connections are the number one source of maintenance downtime from surface use. Surface habitat white rooms are equipped with a forced air chamber attached to the airlock entrance. The chamber blasts all returning personnel with 30 seconds of high pressure air to remove the majority of surface dust. A “duster” high-suction vacuum is also used for thorough cleaning.

▼ REPAIR

Depending on the nature of the damage, a space suit may or may not be repairable. Any electronic or mechanical part is easily fixed by replacing the part. Any extensive damage to the suit structure or polymers is not considered repairable due to concerns about failures from faulty repairs. In this case, the damaged section must be replaced. Even suits with arms or boots integral to the torso or legs, respectively, have rotation or connector rings that allow the arm or boot to be replaced individually.

Ideally, the replacement parts should be from the same suit model. If it becomes necessary to replace space suit parts with parts from a different suit model, the GM should decide what effect the replacement parts will have on the repaired suit's operation. Effects may include limited mobility, decreased duration, an increased chance of component failure, or simply an annoyance, like a restricted visual range or uncomfortable fit. Characters use the Tinker skill to determine the success of any jury-rigged repairs; replacing damaged components with the proper parts is a trivial task for anyone with a thorough knowledge of suit operations (Space Survival 2 or greater).

◇ WAYLAND INDUSTRIES DUAL SPRAY

Shrapnel has always been a threat in combat. In space that threat is compounded by the need to wear a space suit. Not only does shrapnel cause the loss of blood and atmosphere, the presence of a space suit means treatment of the first problem compromises the fix for the second problem. Dual spray is a polymer bonding agent and synthe-flesh combination that addresses both problems simultaneously.

Because of the dissimilarity between flesh and polymer, the two agents perform their function separately — the bonding agent secures the damaged suit, and the synthe-flesh closes the wound. The spray, applied directly to the puncture, quickly seals up to a fist sized hole. Bleeding and atmosphere loss are stopped or dramatically reduced. The spray patch hardens quickly, so a proper patch must be quickly applied.

Dual spray comes in cases of six canisters for 150 credits, and has a code of 4-E0.

◇ WAYLAND INDUSTRIES EMERGENCY PATCH

Some suit damage isn't nearly as life threatening as a puncture wound, but tears and rips are another common type of damage. The emergency patch is a half centimeter thick, 15 centimeter square with a folding grip on the back. To apply the patch, unfold the grip, cover tear with the patch, and twist the grip while pushing down. Twisting the grip releases the catalyst that “melts” the patch onto the suit to form an airtight seal.

Emergency patches come in boxes of ten for 50 credits, and have a Code of 3-E0.

▼ MODIFICATIONS

Each space suit is listed, under Expandability, with a number of expansion slots available (listed under the suit statistics as Expandability). The slots represent how much room the suit has for accessories. Some items will simply replace existing suit equipment, while others will replace the existing system and require extra slots. Some items may also be attached without requiring a slot.

If the space suit is purchased with the modifications in place, the character doesn't have to worry about the quality of work. If the suit is retrofitted with a modification, a technician with the appropriate skill — Tinker, Mechanics, or Electronics, whichever is appropriate to the modification — makes a Skill Test against a Threshold of 4. If the test succeeds, everything works perfectly. If the test is failed or fumbled, subtract the Margin of Failure from six, treating a fumble as zero. This is the threshold to see if the suit suffers a failure under adverse conditions. A person trained in space suit operation can attach endurance upgrades and external reaction mass without incident.

POINT OF DEPARTURE: SABOTAGE ◀

"Valeri, get the hell out of my way!"

Valeri was always nervous, and more so when yelled at by the likes of Stella, so he moved hand-over-hand three rungs down, watching Stella's M-Pod blot out the station floods with its cargo — a life-support equipment module tricked out with ten kilos of C-5. If the Martian terrorists from whom Stella had acquired the plans were to be trusted, the shaped-charge device would prove as effective as it was crude. Trade delegation or simple thugs, no CEGA scum would escape these explosives.

Valeri moved in to work, his left gloved hands doing what the M-Pods manipulators could not. Most of the life-support module had been gutted, but enough of it needed to work to fool the tell-tales on the station's control boards. Valeri thought it ironic that he had to go to so much trouble making the module appear not only benign, but helpful to life, only to use it to end lives. In the end it didn't bother him; irony was best appreciated by a conscience free from guilt. He finally closed the last panel.

"Everything checks out, Stella! I'm jetting over for the ride back!"

Valeri pushed off the station hull gently, tapping the thrusters of his MMU expertly. As he turned towards the M-Pod he saw Stella bring her hand down decisively on a control stud, and each of the sounds a spacer loves as much as his life came to an end. His suit was dead, electronics dark and air circulation silent. Valeri flailed his limbs, hopelessly reaching for an antenna he had left meters behind. The M-Pod thrust towards him, a collision course that would send him tumbling helplessly into the void. He couldn't hear Stella on the radio, but he could read her lips:

"I don't like liabilities," mouthed her cold lips. "Besides, I told you to get out of my way, Tovshenko."



2.5

BACKGROUND ▼

STRIKE is planning give a group of CEGA officials visiting an Orbital colony cylinder quite the welcome. The explosive charge is set to cause an explosive decompression of the adjacent interior area, which happens to be where the CEGA officials are staying. The charge is set to go off shortly after their arrival. Valeri is a blundering fool who has been causing Stella headaches with the problems he creates. She has decided to dispose of him by causing an "accident" with his space suit.

Valeri's suit has been modified (without his knowledge, of course) to include a remote controlled "kill switch" that will cause his life support and communications equipment to fail. Stella isn't worried about law enforcement recovering the body because she used her pod to place it in a decaying orbit that will cause the corpse (and the sabotaged suit) to burn up in the Earth's atmosphere in a day or two. Fake telemetry will confirm the malfunction, and she does not plan to be around after the bomb goes off anyway (when the inspectors will have more important things to do anyway).

2.5.1

SUGGESTIONS ▼

The central elements for this adventure are Valeri's death and the explosive charge. The most common angle to the approach this kind of adventure is for the Player Characters to play the roles of investigators. Initially, the PCs will be concerned with the death of Valeri. If the PCs don't investigate the work Valeri was involved with, the bomb will explode and cause the PCs new and bigger problems.

Less common approaches to this scenario include the PCs acting as STRIKE terrorists or CEGA officials. As members of STRIKE the PCs could be dealing with a loose cannon in Stella. What is there to stop Stella from attempting to dispose of a PC she deems a detriment to her mission? Maybe she plans to go further than the PCs are willing to go in their activities against CEGA figures. As CEGA officials the PCs may be delayed in their arrival, saving them from a cruel death. Since not all CEGA officials are stereotypical tyrants, PCs could have a hard time understanding why someone would want them dead. It could provide the impetus to become a hardened tyrant or a crusader for change.

2.5.2

end of section 2.5 point of departure: sabotage



ORDNANCE AND ARMOR

P ♋ ☉ ♁ ♃ ♄ ♂ ⊕ ♁ ♀ ♀



CHAPTER THREE: ORDNANCE AND ARMOR

RANGED WEAPONS ◀

Pistols and rifles are the most common form of ranged weaponry used in the solar system in the 23rd century. From the simple, reliable slugthrower to advanced laser and gauss weapons, these weapons are still used side-by-side with warships, exo-armors and fighters as the solar nations come into conflict. This section of *Ordnance and Armor* concentrates on advanced personal ranged weaponry. For those Player Characters who prefer a slugthrower as a personal weapon, low tech options available through the use of *Special Ammunition* (page 28) can provide flexibility and function equivalents to any high-tech solution.

While personal sidearms are not as strictly regulated as more powerful rifles and heavy weapons, the general public associates weapons (of any type) with either law enforcement and the military, or with criminals and mercenaries. The public trusts that law enforcement and military personnel are properly trained to minimize damage and show restraint in their use of firearms; however, the same cannot be said for anyone else. Unless a character is clearly identifiable as acting for a law enforcement agency or the military, the public will go to great lengths to avoid people carrying weapons, and will report them to law enforcement officials at the first safe opportunity. Life in space is dangerous enough already.

JOVIAN OPTICS PULSAR LASER WEAPONRY ◇

The Jovian Optics Pulsar-Alpha Laser Pistol is a pulse laser weapon. To achieve a higher rate of fire, two standard power cells are used to balance the heat generated by the rapid power drain; each power cell alternates feeding power to the lasing chamber. Each Damage Multiplier listed in the table consumes 2, 4 or 8 energy units, respectively; against non-reflec armor, halve the armor's normal Armor Rating. The Pulsar-Alpha is restricted to the first two Damage Multipliers listed when fired in pulse mode to conserve energy.

The Jovian Optics Pulsar-Delta Laser Rifle is the big brother of the Pulsar-Alpha. The Delta uses the same alternating power method to achieve a higher rate of fire, except that it uses a special dual-sectioned power cell. Each Damage Multiplier listed in the table consumes 4, 8 or 16 energy units, respectively; against non-reflec armor, halve the armor's normal Armor Rating. The Pulsar-Delta is restricted to the first two Damage Multipliers listed when fired in pulse mode to conserve energy.

"The accurate and deadly quality of a laser combined with a rate of fire normally reserved for chemical guns makes the Pulsar the premier laser weapon system in the Solar System" — Jovian Optics Sales Material

NAKIMA H4 HEAVY LASER PISTOL ◇

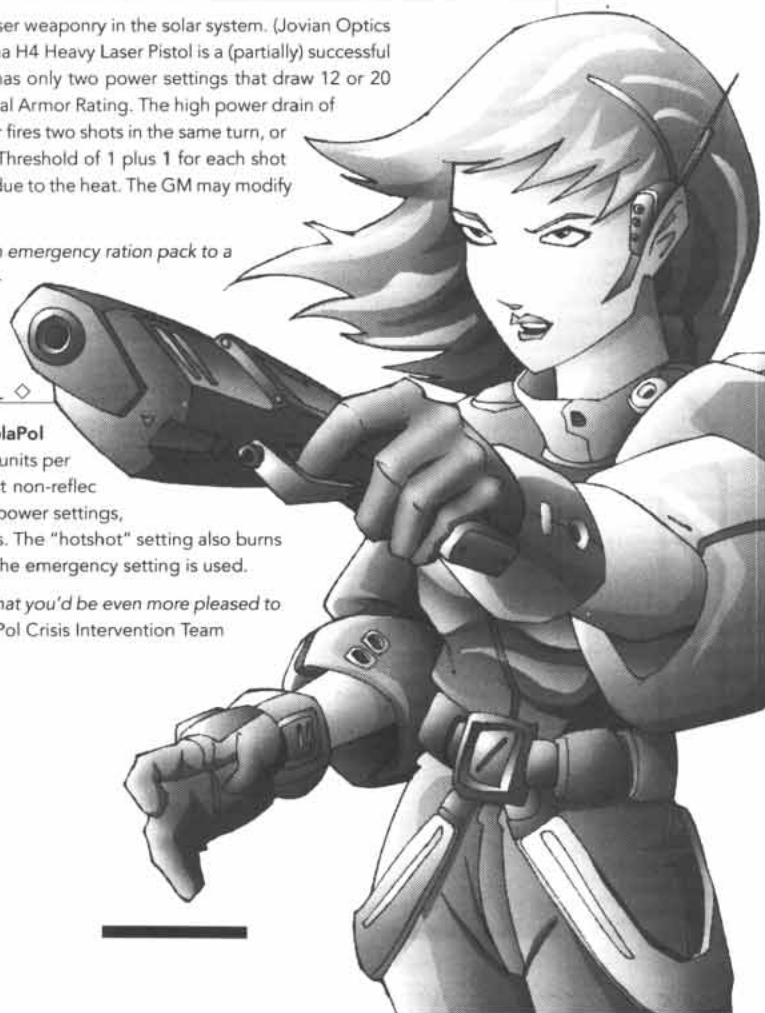
Nakima is a Venusian company, and one of the leading manufacturers of laser weaponry in the solar system. (Jovian Optics would say that is only because Nakima has stolen their designs.) The Nakima H4 Heavy Laser Pistol is a (partially) successful attempt to build a laser pistol that can inflict laser rifle damage. The H4 has only two power settings that draw 12 or 20 energy units, respectively; against non-reflec armor, halve the armor's normal Armor Rating. The high power drain of the H4 means the power clip and pistol can become very hot. If the attacker fires two shots in the same turn, or fires single shots for two or more consecutive rounds, a WIL test versus a Threshold of 1 plus 1 for each shot after the second is made. A failed roll means the character drops the pistol due to the heat. The GM may modify or ignore this roll if the character has something protecting their hands.

"When they say it can get a little warm, they mean warm enough to heat an emergency ration pack to a palatable temperature. Mind you, the person on the receiving end isn't exactly expecting to be quite so thoroughly cooked by a mere pistol either."
— Anonymous Weapons Dealer

DESSA HOTSHOT-5 LASER PISTOL ◇

The Hotshot-5 is a scaled down version of the Hotshot-3 assault laser rifle (*SolaPol Sourcebook*, p.115). The three primary power settings use 3, 6 or 9 energy units per shot, corresponding to the Damage Multipliers listed in the table; against non-reflec armor, halve the armor's normal Armor Rating. In addition to three normal power settings, the emergency "hotshot" anti-armor setting (x80) consumes 25 power units. The "hotshot" setting also burns out the pistols quickly, reducing the Accuracy and DMs by one each time the emergency setting is used.

"If you've ever had the pleasure of using the Hotshot-3, let me assure you that you'd be even more pleased to have the Hotshot-5 to back it up." — Field Agent Laurence Williams, SolaPol Crisis Intervention Team



E 1 E



◇ ARES WAFFENFABRIK AR-4 GYROC ASSAULT RIFLE

Building on the success of their A-4 gyro autopistol, Ares Waffenfabrik created a larger assault rifle version: the AR-4. The negligible recoil of the AR-4 makes this weapon increasingly popular with law enforcement, marine units, and, unfortunately, pirates. The weapon uses a bullpup configuration to keep the weapon compact without sacrificing accuracy to a shortened barrel. Waffenfabrik has also redesigned the AR-4 rounds for increased effectiveness versus armor by using an explosive-driven penetrator. This reduces the Armor Rating of the target's armor by 10 points. The first (lower) Damage Multiplier is used against targets at Short range.

◇ AREA WAFFENFABRIK GS-1 SNIPER GYROC RIFLE

Building on their expertise in gyro weapons, the engineers at Ares Waffenfabrik continue to create unique applications for gyro weaponry. The GS-1 Sniper Gyroc Rifle uses a shortened bullpup configuration with targeting scope and UV targeting laser. The shell uses two-stages to increase the rifle's range over a standard gyro. The shell is also equipped with a semi-active guidance system to home in on a target painted with the laser. In game terms, the shooter must make two To-Hit rolls against the target. The first To-Hit roll is to ensure the targeting laser (+1 Accuracy; ranges as listed in table) is on target when the gyro round is fired; apply Aiming bonuses to this roll. After the laser To-Hit roll is made, immediately roll to hit with the gyro round. If the targeting laser roll was successful, the guidance system in the gyro acquires the laser, and the shooter gains an additional +1 bonus for the gyro round; apply Aiming bonuses to this roll also.

If the shooter is careful not to move the aim point too radically, the shell can actually be steered around obstacles with a fair degree of success. One clever assassin used this feature to his advantage by making the round strike from an angle that led security personnel to descend on an adjacent building, thus gaining enough time to make good his escape. Pressure by law and government agencies has forced Ares Waffenfabrik to restrict the production and sale of the GS-1 to law enforcement and military personnel only.

"The GS-1 is so simple to use a ten-year-old kid could make a living as an assassin." — Pietr Hoffman, Former Ares Waffenfabrik Sales Manager (quoted shortly before his termination from the company.)

◇ HOLT EXTERMINATOR PISTOL

The Holt Exterminator Pistol fires a large caliber, hypervelocity round. While the term "hand cannon" has described numerous large caliber handguns since the 20th century, the Exterminator has owned the title since the mid-22nd century. Truly unsuitable for use in space, the Exterminator has a fearsome reputation that goes beyond the 15 millimeter short round it fires. The Exterminator was, and still is, the favored sidearm of CEGA assault troops on Earth, whose acts of barbarism shocked both enemies and allies. The large muzzle diameter, top-mounted box magazine, and side-mounted ring sights make the Exterminator easily identifiable, especially when it is pointed at you.

"If you think the view from the business end of this pistol is intimidating, you should see the guys that carry them. I mean, you need to be that big just to carry the thing." — Anonymous

◇ WALTER-STROMM POLICE SPECIAL SIDEARM

The Walter-Stromm Police Special Sidearm is the standard sidearm of many patrol officers in colony cylinders and other contained environments. The Police Special Sidearm is an over-under sonic stunner-laser combination that uses a common power cell. The accuracy of the laser decreases the chances of stray shots that can damage important structures and, more importantly, innocent bystanders. The integrated sonic stunner also provides the option for non-violent apprehension. The power cell connection is just in front of the trigger guard. The cell itself carries a larger charge than a normal laser or stunner cell, and lays along the underside of the laser barrel.

The laser has two energy settings of 2 and 5 power units; against non-reflec armor, the Armor Rating is halved. The sonic stunner has power settings of 1 to 10, each draining the corresponding amount of units. The victim of a sonic stunner must succeed in a BLD roll against the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned (-2 modifier to all rolls) for a number of rounds equal to the Margin of Failure. On a Fumble, the victim is knocked unconscious for a number of minutes equal to the MoF; a Health test is rolled against the MoF to avoid a permanent -1 PER.

"The PSS is real friend to have as a police officer. It's a little nose-heavy with the power cell up front, but it's easy to overcome by modifying your grip and stance slightly. The accuracy and dual response in a single weapon makes it my favorite." — Constable Craig Harriman, Orbital Settlement Police Officer

◇ COLT-SILVER 9MM MACHINE PISTOL

The Colt-Silver 9mm Machine Pistol is a larger version of their 9mm autopistol design with larger magazine capacity and higher rate of fire. The high rate of fire in a small package effectively gives the machine pistol the operation of a submachine gun. Serious military personnel scorn the lightweight weapon, but it has found favour with criminal elements that are looking for easily concealed firepower.

ANACHRONISM WEAPONRY CROSSBOW ◇

Anachronism Weaponry is a Mercurian manufacturer of low technology weapons with high technology materials. The Anachronism Weaponry crossbow is a marvel in its use of technology. The materials for the stock are lightweight. The bow is constructed of piezo-electric material that not only provides excellent range and penetration of the bolt, but also incorporates an automatic draw-and-cock mechanism for easy reloading.

RANGED WEAPONS STATS □

Weapon	ACC	DM	Range	RoF	Ammo	Cost	Wt.
Jovian Optics Pulsar-Alpha Laser Pistol	+1	x8/14/20	8/16/32/64	+1	60	1100/20	1
Jovian Optics Pulsar-Delta Laser Rifle	+1	x13/22/35	100/200/400/800	+2	180	1900/25	3
Nakima H4 Heavy Laser Pistol	+1	x22/35	6/12/24/48	0	60	1500/20	1
Dessa Hotshot-5 Laser Pistol	+1	x10/16/22	8/16/32/64	0	60	1400/10	1
Ares Waffenfabrik AR-4 Gyroc Assault Rifle	+1	x20/30	40/80/160/320	+1	30	1500/40	3.5
Ares Waffenfabrik GS-1 Sniper Gyroc Rifle	+1*	x25/45	200/400/800/1600	0	4	1500/100	5.5
Walter-Stromm Police Special Sidearm (Laser)	+1	x6/14	8/16/32/64	0	60*	850/15	1.5
(Sonic Stunner)	+1	spec.	4/8/16/32	0	60*	-	-
Holt Exterminator Pistol	0	x40	6/12/24/48	0	4	500/15	2
Colt-Silver 9mm Machine Pistol	0	x15	12/24/48/96	+2	50	600/30	2.5
Anachronism Weaponry Crossbow	+1	x18	8/16/32/64	0/2	1	500	2

* See weapon description for special rules.

RANGED WEAPON AVAILABILITY AND LEGALITY □

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Jovian Optics Pulsar-Alpha Laser Pistol	6-B2	7-B2	9-B3	7-B3	8-B3	7-B2	6-B2	6-B2	5-B2	7-B2
Jovian Optics Pulsar-Delta Laser Rifle	6-B3	7-B3	9-B4	7-B4	8-B4	7-B3	6-B3	6-B3	5-B3	7-B3
Nakima H4 Heavy Laser Pistol	7-B3	5-B2	7-B2	6-B2	6-B2	6-B2	6-B2	8-B3	7-B2	10-B2
Dessa Hotshot-5 Laser Pistol	5-B3	6-B3	7-B4	6-B4	6-B4	6-B3	6-B3	8-B3	6-B3	9-B3
Ares Waffenfabrik AR-4 Gyroc Assault Rifle	6-B3	6-B3	6-B3	6-B3	6-B3	6-B3	5-B3	4-B3	6-B3	9-B3
Ares Waffenfabrik GS-1 Sniper Gyroc Rifle	9-A5	9-A5	8-A5	9-A5	9-A5	8-A4	7-A4	10-A5	9-A5	11-A5
Walter-Stromm Police Special Sidearm	4-C2	4-C2	8-C2	4-C2	4-C2	6-C2	6-C2	5-C2	4-C2	8-C2
Holt Exterminator Pistol	8-B3	8-B3	5-B2	7-B3	8-B3	6-B2	7-B2	10-B3	9-B3	10-B3
Colt-Silver 9mm Machine Pistol	7-C2	7-C2	4-C2	6-C2	7-C2	5-C2	6-C2	8-C2	7-C2	10-C2

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn





► MELEE WEAPONS

In the high tech universe of **Jovian Chronicles**, it would seem unusual to include melee-type weapons when there are much cleaner weapons like lasers available. It is often the case that melee weapons are less restricted and easier to obtain given their simple nature. Indeed, the close confines of ships, and some places in cylinders and surface habitats, make melee weapons the favored choice for combat in confined spaces, being that they are less clumsy, or random, as lasers.

◇ BASIC WEAPONS

The naginata is an ancient Japanese spear with a short blade attached at the end of a seven foot shaft. The naginata is a weapon favored by the Venusians. A Hummer version — draining one power unit per full minute of combat — is also available. The HummerAx is favoured by marines since it gives them some exo-suit capabilities when wearing armored space suits. It drains one power unit per full minute of combat.

◇ SNAP BLADES

Snap blades are short, spring-loaded blades that are attached to the back of the forearm. When they are released, the blade remains attached to the arm. People that use snap blades often wear gloves with armored backs to protect the hand; many snap blade models have spring-deployed cross guards. A Hummer version — draining one power unit per full minute of combat — is also available.

"These things give me nightmares. Anyone with a loose, long-sleeved shirt becomes a possible threat." — Field Agent Emily Fuhito, SolaPol Executive Protection Bureau

◇ ASP

An asp is a metal telescopic nightstick. A quick flick of the wrist extends the asp from a collapsed length of 20 centimeters to more than 60 centimeters. A simple friction mechanism keeps the asp extended until the end is pushed back into the grip. An asp may not be electrified.

"Don't dismiss this — it's small but easy to hide, and it hits a lot harder than just bare fists." — Field Agent Emily Fuhito

◇ STUN BATON

Stun batons use a combination of sonics and electricity to consistently achieve a long duration stunned or unconscious state when a target is hit, without permanent injury. The stun baton has power settings of 1 through 10, each draining the corresponding number of energy units. The victim of a stun baton must succeed in a BLD roll against two plus the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned (-2 modifier to all rolls) for a number of rounds equal to the Margin of Failure. If the victims MoF is greater than five, or on a Fumble, the victim is knocked unconscious outright for a number of minutes equal to the MoF.

"An effective crowd control tool, but one the bad guys aren't afraid to use either. Tap some lone person with a baton, and it's easy pickings." — Officer Dorothy Remy, Joshua Station Police

◇ TELESCOPIC STAFF

The telescopic staff is a collapsible, composite quarterstaff. The collapsed staff has a diameter of six centimeters and a length of 50 centimeters; fully extended, the staff is two meters long. Two recessed catches lock each end of the staff into its collapsed or extended position. The end sections are weighted to give the staff extra momentum when it is swung extended. A telescopic staff may not be electrified.

"Instant combat staff, just add water. At least that's the joke around here. If you have ever faced anyone with a modicum of martial art training wielding one of these, though, you may find it less funny." — Anonymous

◇ RAPIER

Updated to the 23rd century, rapiers are manufactured with incredibly strong materials that allow them to penetrate most armor. Rapiers are considered to be Armor Piercing (which reduces the effectiveness of armor by half, rounded up.) A skilled duelist (Melee Skill Level 3 or higher) gains a +1 bonus to Accuracy because of their increased control over the tip of the blade. Rapiers are not available in Hummer versions since they lack a cutting edge.

Because rapiers are thrusting weapon, a laser rapier exists: the blade is hollowed to accommodate a fiber optic channel with the laser mechanism in the rapier's grip. The impact of a successful thrust activates the laser, which increases the rapier's effectiveness against armor even further (reduces the Armor Rating by half again, unless it is reflex armor). Each successful attack drains one power unit. The laser rapier is manufactured by Anachronism Weaponry.

THROWING WEAPONS ◇

A throwing star is a flat piece of hard material, usually metal, that is shaped into a star with sharpened edges. Because of their construction, throwing stars may only be thrown. Throwing knives are specially balanced for throwing. They are often manufactured from a single piece of material since it is easier to balance the knife. Because of their construction, throwing knives have an Accuracy of -1 when handheld — since they cannot be gripped properly — and +1 when thrown.

MELEE WEAPONS STATS ▢

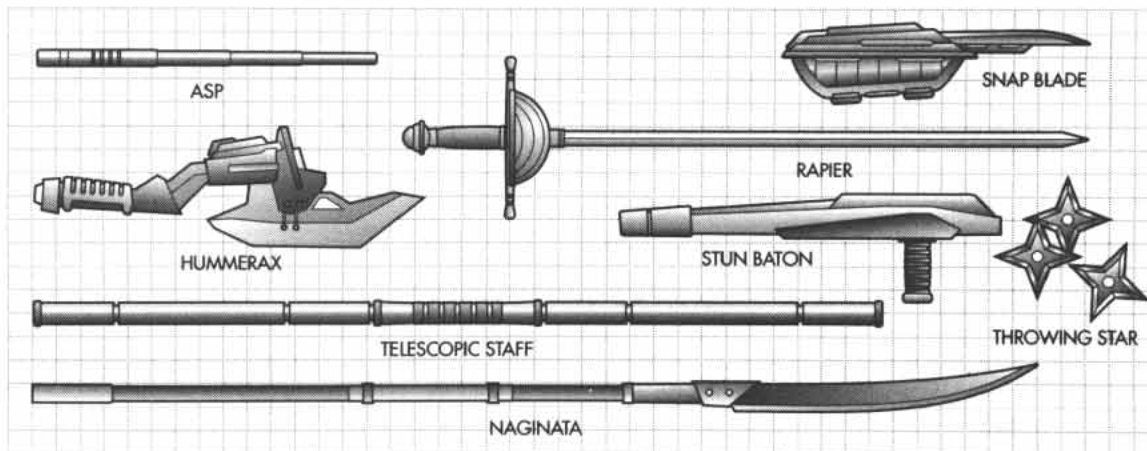
Weapon	ACC	DM	Range	RoF	Ammo	Cost	Wt
Naginata	-1	AD+12	close combat	n/a	n/a	100	3
Snap Blade	+1	AD+7	close combat	n/a	n/a	50	1
HummerAx	0	AD+18	close combat	n/a	30	450/10	2.5
HummerNaginata	-1	AD+19	close combat	n/a	30	800/10	3.5
HummerSnap Blade	+1	AD+13	close combat	n/a	30	400/10	1.5
Asp	0	AD+3	close combat	n/a	n/a	15	0.5
Stun Baton	0	AD+4/stun	close combat	n/a	30	50/10	2
Telescopic Staff	0	AD+9	close combat	n/a	n/a	65	3.5
Rapier	0	AD+6	close combat	n/a	n/a	200	1.5
Laser Rapier*	0	AD+6	close combat	n/a	30	750	1.5
Throwing Knife	-1/+1*	AD+3	Throw	0	n/a	5	0.1
Throwing Star	+1*	AD+2	Throw	0	n/a	3	0.1

* See the description of the weapon for special rules.

MELEE WEAPON AVAILABILITY AND LEGALITY ▢

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Naginata	6-D2	5-D2	7-D2	7-D2	7-D2	8-D2	8-D2	8-D2	9-D2	10-D2
Snap Blade	7-D3	7-D3	6-D2	6-D3	7-D3	7-D3	7-D3	9-D3	7-D3	10-D3
HummerAx	6-B2	6-B2	5-B2	6-B2	6-B2	6-B2	5-B2	8-B2	6-B2	10-B2
HummerNaginata	6-B2	5-B2	7-B2	7-B2	7-B2	8-B2	8-B2	8-B2	9-B2	10-B2
HummerSnap Blade	7-B3	7-B3	6-B2	6-B3	7-B3	7-B3	7-B3	9-B3	7-B3	10-B3
Asp	4-D1	4-D1	3-D1	4-D1	4-D1	4-D1	4-D1	5-D1	4-D1	8-D1
Stun Baton	5-C1	5-C1	4-C1	5-C1	5-C1	5-C1	5-C1	6-C1	5-C1	8-C1
Telescopic Staff	5-D1	5-D1	7-D1	5-D1	6-D1	6-D1	5-D1	7-D1	5-D1	9-D1
Rapier	6-D1	6-D1	7-D1	6-D1	6-D1	6-D1	6-D1	8-D1	6-D1	9-D1
Laser Rapier	6-C2	6-C2	8-C2	6-C2	7-C2	6-C2	6-C2	5-D2	6-C2	8-C2
Throwing Knife	5-D2	5-D2	4-D2	5-D2	5-D2	5-D2	5-D2	6-D2	5-D2	8-D2
Throwing Star	5-D2	5-D2	4-D2	5-D2	5-D2	5-D2	5-D2	6-D2	5-D2	8-D2

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn





► HEAVY WEAPONS

The proliferation of exo-suits and exo-armors requires that infantry and exo-suit forces carry heavy weapons. Not all heavy weapons can threaten exo-armor, but there are weapons that will make an exo pilot very cautious. Heavy weaponry is still widely deployed in the classic infantry support role of suppression, but advances in armor technologies means that anti-armor capabilities are also desirable. All heavy weapons are classified as military equipment for their exclusive use, though a limited number of these weapons are available to ESWAT units. The highly destructive nature of these weapons means that unless the weapon is in a proper transportation and storage case, and it remains there, Player Characters can expect problems not only from law enforcement officials, but anyone who knows they have a heavy weapon in their possession. (For example, ship captains will worry about a number of things, including hijacking and punctured hulls.)

◇ NAKIMA ALX-2 ASSAULT LASER

The Nakima ALX-2 Assault Laser is a shoulder-fired, anti-armor laser weapon. The ALX-2 is a single shot laser that is two parts: the emitter (a focusing and control unit) and the laser cartridge (a power pack and laser pulse generator). The laser cartridge is attached to the end of the emitter.

The power transfer to the laser pulse generator happens extremely quickly when the weapon is fired. This completely burns out the laser cartridge, but generates a very powerful laser pulse. Firing the weapon is also hard on the focusing mechanisms, so the emitter is only good for about a dozen shots before it requires refurbishment. The range is kept quite short to maximize the laser's power over the entire effective range of the ALX-2. At roleplaying scale against non-reflex armor, halve the armor's normal Armor Rating. At tactical scale, the ALX-2 is considered a HEAT weapon with a DM of x15.

"Even as a one-shot wonder, you can't do much better without an exo-suit. This means you have to mother your shots since you only get a few before the emitter wears out, and it's a slow reload. Even then there's nothing better to have on a boarding action." — Private Tan Riko, JAF Marine

◇ JOVIAN OPTICS PULSAR-OMEGA LASER CANNON

The Jovian Optics Pulsar-Omega Laser Cannon is the equivalent of a laser machinegun. To achieve this level of performance, the Pulsar-Omega uses a variation on the technology that made the Alpha and Delta possible. To minimize heat generated by the high power requirements, power is drawn from a special quad-sectioned power cell. The Omega uses two focusing mechanism-lasing chambers in combination to alternate the firing cycle, offering a further increase in the Omega's rate of fire. Two sections of the cell power feed to each lasing chamber.

The Pulsar-Omega has two standard damage settings, and a third special setting; against non-reflex armor, halve the armor's normal Armor Rating. The first two settings drain 4 and 8 power units, respectively, and both settings are available at high rates of fire, though the second setting rapidly drains the non-standard power cell. The third Omega power setting is a "hotshot" setting that fires both chambers simultaneously. The "omega" setting has a Damage Modifier of x100 and drains 20 power units. Because the burst is split between the two lasing chambers-focusing mechanisms, it doesn't suffer the same performance degradation as the Dessa Hotshot-3. This feature has led to a legal battle between Dessa and Jovian Optics over the "hotshot" option.

◇ HADES NEMESIS MAN-PORTABLE PARTICLE CANNON

Hades Weaponry is an Earth-based company that managed to flourish in the conflicts of the Fall, and the reunification efforts of CEGA. Hades remains CEGA's primary suppliers of heavy weaponry to the Army. The Nemesis Man-Portable Particle Cannon (MPPC) is named for the ancient Greek god of revenge. Though man-portable particle weapons have some significant drawbacks, the benefits of low recoil and haywire effects balance the negatives.

The biggest drawback is the massive power requirements of the Nemesis. The weapon itself carries a fast charging/dis-charging capacitor to actually fire the weapon. To charge the capacitor, the user carries a backpack mounted microturbine generator that runs in a standby mode until the weapon is fired. The microturbine recharges the capacitor as quickly as possible. In game terms, this means the Nemesis MPPC can only be fired once every three turns. The generator carries sufficient fuel to fully charge the capacitor 12 times. If an exo-suit is available, technicians will mount the microturbine generator on the suit with an additional fuel reserve.

In addition to normal damage, the victim also suffers an Intensity 12 electrical attack plus the attacker's Margin of Success; against vehicles, this is equivalent to the Haywire characteristic. Energy dissipation effects increase at Long and Extreme ranges, reducing the Damage Modifier by 5 and 10 points respectively.

"It is difficult to conceive of a stronger moral indictment of CEGA than to simply point out their association with, and support of, the manufacturers of such lethal and barbaric weapons as were used to such murderous ends less than twenty-four hours ago." — Press release from the Agora following a terrorist incident that involved the use of Nemesis MPPC against an ESWAT team

ARES WAFFENFABRIK GAC-2 GYROC CANNON ◊

Ares Waffenfabrik has invested large amounts of resources in gyroco weapons research. In addition to new gyroco autopistol and assault rifles, Ares has improved upon a poorly received version of an anti-armor gyroco cannon. A larger round, and more powerful propellant, give the gyroco cannon decided advantages over the 24mm anti-armor gun, including low recoil and greater range. The GAC-2 uses a 20 round drum magazine of two-stage gyroco projectiles.

HADES WEAPONRY 30MM ROCKET LAUNCHER ◊

The Hades Weaponry 30mm rocket launcher is a poor man's missile. The hypervelocity, unguided, folded-fin rockets are loaded into five round magazines. Because the rockets are unguided, a longer launch tube is needed to ensure a certain level of accuracy. So the length of the weapon doesn't hinder movement and storage, the forward section of the launch tube telescopes into a shorter storage and transport position that reduces the length to two-thirds of its two meter length.

HADES WEAPONRY HA-IX "ARMAGEDDON GUN" ◊

The Hades Weaponry HA-IX (Heavy Assault) "Armageddon Gun" is a very heavy squad assault weapon. The HA-IX is an over-and-under 7.5mm machinegun and 40mm grenade launcher combination. The user must wear an exo-suit/skeleton or be exceptionally strong (BLD and STR +1 or greater) The weapons ammunition is carried in a pack-mounted magazine that carries both bullets and grenades. The rounds are linked together and feed to the weapon via a motorized feed mechanism. A special assault grenade round is carried for the launcher; a more powerful explosive in an improved shell (8/20 blast radius) provides increased effectiveness against hardened targets. This weapon is another favorite of CEGA assault troops.

"I can see why they call it the Armageddon Gun. I was watching from a ridge above this town when there was a skirmish between CEGA troops and a group of NAS mercenaries. The guys toting the AGs could have done the job single-handedly. What a slaughter." — Comments made by Toby Friza to the media before his disappearance.

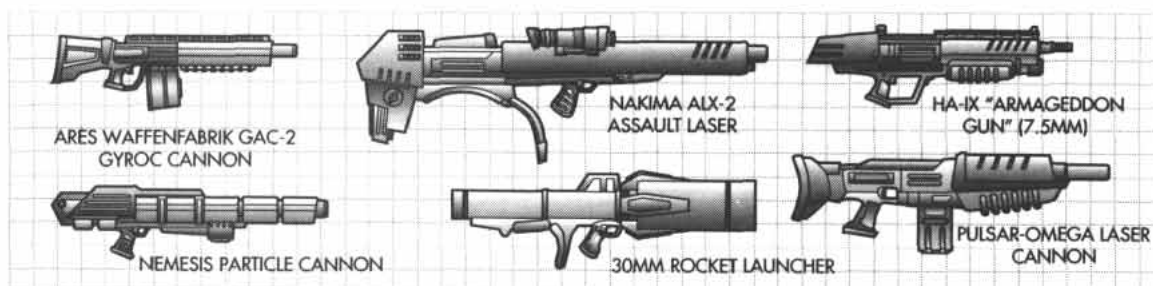
HEAVY WEAPONS STATS ◻

Weapon	ACC	DM	Range	RoF	Ammo	Cost	Wt
Nakima ALX-2 Assault Laser	+1	x150	60/120/240/480	0/2	1	8000/100	7
Jovian Optics Pulsar-Omega Laser Cannon	+1	x25/35	75/150/300/600	+3	300	7500/100	12
Hades Weaponry Nemesis Particle Cannon	+1	x60+elec.	100/200/400/800	0/+3	15	15,000/100	25
Ares Waffenfabrik GAC-2 Gyroc Cannon	+1	x50/80	170/340/680/1360	0	20	12,000/150	14
Hades Weaponry 30mm Rocket Launcher	0	x80	50/100/200/400	0	5	4000/150	10
Hades Weaponry HA-IX "Armageddon Gun" (7.5mm)	0	x32	125/250/500/1000	+3	500	4500/100	19
(Grenade Launcher)	0	x48/25	40/80/160/320	+1	40	-/800	

HEAVY WEAPON AVAILABILITY AND LEGALITY ◻

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Nakima ALX-2 Assault Laser Cannon	6-B4	6-B4	8-B4	7-B4	7-B4	6-B4	6-B4	8-B4	6-B4	8-B4
Jovian Optics Pulsar-Omega Laser Cannon	5-B4	6-B4	8-B4	8-B4	8-B4	7-B4	6-B4	7-B4	5-B4	8-B4
Hades Weaponry Nemesis MPPC	6-B4	6-B4	6-B4	6-B4	6-B4	6-B4	7-B4	9-B4	9-B5	9-B4
Ares Waffenfabrik GAC-2 Gyroc Cannon	6-B4	7-B4	6-B4	6-B4	6-B4	5-B4	5-B4	7-B4	6-B4	9-B4
Hades Weaponry 30mm Rocket Launcher	7-B4	7-B4	4-B4	6-B4	6-B4	6-B4	6-B4	9-B4	8-B4	10-B4
Hades Weaponry HA-IX "Armageddon Gun"	7-B4	7-B4	5-B4	6-B4	6-B4	6-B4	5-B4	9-B4	8-B4	10-B4

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn





► SPECIAL AMMUNITION

Special ammunition is only available for ballistic-type weapons, with a single exception for energy weapons. While slugthrowers have some severe disadvantages compared to their high tech equivalents, special ammunition types can only partially overcome some of those flaws. For the sake of simplicity, a clip should only carry a single type of ammunition.

◇ ARMOR PIERCING

Armor piercing rounds are specially designed to penetrate armor by one of two means: discarded sabot round or sub-round. Sabot rounds are a high-density dart with a collar that falls away once the round leaves the weapon's barrel. Sub-rounds look like normal rounds except that the casing is a soft material that surrounds a penetrator rod; in this manner, the penetrator continues to travel into the target while the soft casing is shed on the armor's surface. Armor protects with only half of its normal Armor Rating against AP rounds. Armor piercing rounds are only available for chemical slugthrowers.

◇ BOOSTED AMMUNITION

There are two types of boosted ammunition: range and damage. Range boosted ammunition combines a lighter bullet or a more powerful propellant, or both, to increase the range of the round. Damage boosted ammunition is manufactured using one of two methods: increasing the round's density or using a shaped explosive charge. Either method provides a significant increase in the round's damage potential. Boosted ammunition is only available for chemical slugthrowers.

◇ CASELESS

Caseless ammunition increases the number of rounds carried in a magazine or clip by eliminating bulky metal casings. Technological advances have reduced the chances of misfires due to propellant deterioration, heat sensitivity, or moisture. Caseless ammunition increases the effective magazine size by 25% (multiply listed Ammo by 1.25). Caseless ammunition is only available for chemical slugthrowers.

◇ ENERGY-HOMING

Energy-homing rounds are guided by the strong energy emissions of enemy communication and electronic warfare equipment. If the target made an Active Sensor roll, used communications or has any kind of ECM or ECCM active during the combat round when the energy-homing round is fired, the weapon gains a +1 to-hit. Energy-homing rounds are available for missiles and mortars only.

◇ FLECHETTE

Flechette rounds are an alternate ammunition for shotguns. Instead of pellets, a cloud of hardened metal darts is fired. The protective value of body armor is not doubled against flechette rounds (as it normally is against pellets). Only shotguns may fire flechette rounds.

◇ GUIDED

Guided ammunition has the ability to home in on targets "tagged" by a friendly unit. This allows the round to correct its course to the target mid-flight. Once the target is "tagged" by a friendly target designator, the round gains a +2 to-hit modifier. Guided ammunition is available for missiles and mortars only.

◇ HIGH-CAPACITY POWER CELLS

High-capacity power cells are available for most energy weapons; however, they are heavily restricted. They increase normal power cell energy units by 50%, and they are twice the normal cost. On a Fumble, there is a chance the cell will surge, destroying the cell and possibly shorting out the weapon. (Roll 1d6: a result of 6 means the weapon shorts out, rendering it useless. GM's discretion if it can be repaired.) High capacity power cells are only available for energy weapons.

◇ INCENDIARY

Incendiary rounds carry a chemical component that ignites upon impact. In addition to normal impact damage, the target also suffers an Intensity 6 fire attack that burns for two rounds; missiles and mortars attack at Intensity 10 for 5 rounds, but have their Damage Multiplier halved. Incendiary rounds are available for all ballistic weapons.

◇ LOW-VELOCITY

Low-velocity ammunition uses a less powerful propellant charge to decrease the power of the round. This reduces both its killing power and its penetration. Low-velocity rounds are only available for chemical slugthrowers.



▶ WEAPON ACCESSORIES

For those people that are not completely satisfied with a weapon's base characteristics, certain accessories can make a weapon that special something to the owner. Most accessories listed here are performance-oriented, since most other changes are either a case of aesthetics or personal preference in ergonomics.

◇ SILENCERS

Silencers are specifically designed to quiet the loud retort of chemical slugthrowers, and are available for pistols and rifles. Silencers are available in two varieties: physical and electronic. The physical silencer is a baffled tube that is attached to the muzzle of the weapon, and has the added advantage of hiding the slugthrower's muzzle flash. Electronic silencers mount an omni-directional speaker that broadcasts black noise to cancel the noise of the weapon, but they do not block muzzle flash. In both cases, the noise is reduced to the level of a quiet finger-snap.

◇ MIRAGE ELECTRO-OPTICAL SIGHTS

Visionary Systems produces the Mirage Electro-Optical sight system for personal and military weapons. The basic Mirage is a telescopic sight that uses lenses grown in zero gravity to ensure optimal clarity and zero defects. In addition to the basic optical sight, three separate vision options, or any combination thereof, are available for added functionality: low light, ultraviolet, and infrared. In each case, the only visible addition to the basic telescopic sight is a narrow rectangular-shape on the top of the sight. Mirage EO sights are designated with the first letter of their added capability, to differentiate the different models. For example the Mirage-U is an ultraviolet sight, while the Mirage-ILU has all three sight options. In all cases, the sight system adds a +1 modifier to hit at Long and Extreme range.

Visionary Systems electro-optical sight systems use a special "flicker" mirror to allow direct vision, but at the same time they are directing the full light spectrum into the processing unit mounted on the top of the sight. The electronics process the image, according to the vision option they are designed for, before projecting a transparent false-color image onto the rear lens with a laser. Both the ultraviolet and infrared sight are equipped with a broad-beam laser — of the appropriate type — to increase the natural illumination for increased clarity. This does have its drawbacks, since it can be used to locate the sight's user via a passive UV or IR sight.

◇ MAELSTROM PINPOINT LASER SIGHT

The Maelstrom Electronics Pinpoint Laser Sight is a small tube that mounts on the top of a pistol. The sight provides a +1 to-hit modifier at Short and Medium ranges. The ballistics of slugthrower pistols make the sight useless for longer-range shooting. Since laser pistols already benefit from a built-in system (the laser at low power), they cannot gain an additional bonus with the Pinpoint Laser Sight.

◇ MAELSTROM TRUE-SIGHT™ SMART SIGHT

A smart sight combines a processor with a microwave rangefinder/motion sensor and several small gyroscopes to account for changing range and the motion of the attacker and target. Low light and infrared vision are also part of the system. The True-Sight uses a small display screen to show a magnified and enhanced view of the target. Range and relative target motion are displayed with a point that shows where the round will strike when the weapon is fired. The True-Sight makes a weapon as close to point and shot as ever was possible.

The sight's ability grants the attacker a +2 bonus per round of aiming instead of the normal +1 bonus; however, the weapon must be sighted properly beforehand to ensure its accuracy. Before a character can use the +2 bonus, he must spend two hours at a range to adjust the sight. After spending these two hours, the character must make a Small Arms test against a Threshold of 4. If the test is failed, the character uses the normal +1 aiming bonus; if the test is fumbled, the character loses all aiming bonuses until the sight is readjusted. Any hard jolt, weapon modification, or lack of use requires the True-Sight to be readjusted. Maelstrom Electronic's True-Sight™ Smart Targeter was the first smart sight produced. Since then a number of inner system companies have produced their own copies with various degrees of success.

◇ STABILIZERS

Stabilizers are designed to compensate for weapon recoil and movement. The simplest chemical slugthrower stabilizer is the muzzle brake. Vents are added to the end of the barrel to redirect some of the firing gases. Gas recoil stabilizers effectively reduce the weapons recoil by directing firing gases into a cylinder. Both methods effectively reduce the slugthrower's recoil by half, making it much easier to handle.

Gyroscopic stabilizers effectively reduce all horizontal and vertical forces acting on the gun. While it does cancel out much of the weapons motion, it means that rapidly moving the weapon up/down or left/right while firing is near impossible. The wielder cannot use Walking Fire unless the gyro stabilizer is turned off. When a burst is used against a relatively stationary target (walking or slower), the attacker receives a +1 modifier to hit. The gyroscopic stabilizer is attached to the underside of the barrel of any rifle-sized weapon or larger.

SIDEARM HOLSTERS ◇

The ubiquitous holster for carrying a sidearm comes in numerous varieties, depending on the individual's need for accessibility or concealability. Ankle holsters carry the weapon around the ankle. Waist holsters carry the weapon at the lower back. Hip holsters are carried at the hip. Wrist holsters carry small pistols (one kilogram or less) at the wrist. Quickdraw holsters are carried low on the thigh. Shoulder holsters are carried under the arm along the side of the chest. There are also a couple of interesting holster variations.

The forward draw holster is a low hip holster that allows the weapon to be drawn out of the front of the holster. Carried with the weapon's grip at arm's length down the thigh, the forward draw holster allows the user to bring the weapon, and the arm, into a firing position with one quick motion. (There is no need to lift it out of the holster.) Since the front of the holster is 'open,' a safety strap keeps the weapon secure in the holster until released. Once the strap is released, the holster, custom fitted to the weapon, uses friction to keep the weapon in its place until drawn.

Snap draw holsters attach to the lower arm, and are activated by a quick muscle action. The motion releases a spring-loaded mechanism to extend the attached small pistol into a position easy to grasp. This requires the user to wear loose clothing around the wrist and forearm to accommodate the use of the holster. Snap draw holsters are named for the distinct snapping sound they make when extending.

HARNESS SYSTEM ◇

Harness systems are a step-down from the heavy weapon exo-skeleton (below). The system consists of the torso harness (a composite vest that supports the weapon's weight) and weapon support arm (which transfers the weight to the torso). The support arm uses a feedback system and actuators to assist the user in moving the attached weapon. With the weight of the weapon carried by the torso, the user can effectively move the weapon as though it has zero mass. Ammunition can be attached to the back of the torso harness. The harness also has several gyroscopes to help keep the user balanced.

HEAVY WEAPON EXO-SKELETON ◇

In most of the solar system, the expense of a full exo-suit, and the training that is required to use it, is the domain of special operations, space-based marines, and ESWAT teams. Standard tactical doctrine still requires some heavy weapon support for infantry. The heavy weapon exo-skeleton is issued to regular infantry units to provide increased stability and mobility for the user of the squad's heavy weapon. The exo-skeleton is semi-enclosed to protect the user since he cannot wear standard body armor. To get into the exo-skeleton, the wearer steps back into the suit while placing their arms in to the skeleton's arms and gauntlets. The front panels are then closed along the outside edge of the skeleton.

In game terms, the exo-skeleton is effectively Maneuver 0 and Fire Control 0. It does not increase the wearer's movement rate, but it gives the wearer an effective Strength of +2. (If the character has a STR of 2 or higher, they gain no benefit to their STR.) Because of the ablative-coated plate armor, the exo-skeleton has an effective Armor Rating of 30.



WEAPON ACCESSORIES □

Accessory	Wt	Cost	Code
Silencer, Pistol	0.5	50	6-C4
Silencer, Rifle	1	75	6-B4
Visionary Systems Mirage EO Sight	0.5	750	5-C3
Infrared	-	+250	-
Low Light	-	+150	-
Ultraviolet	-	+250	-
Maelstrom Electronics Pinpoint Laser Sight	0.2	200	5-D3
Maelstrom Electronics True-Sight(TM) Smart Sight	1	1500	6-B3
Muzzle Brake	0.1	30	5-C2
Gas Recoil Cylinder	1	80	6-C2
Gyro Stabilizer	1	150	6-C2
Holster, Hip	0.25	15	4-D0
Holster, Waist	0.25	15	4-D0
Holster, Shoulder	0.5	25	4-D1
Holster, Quickdraw	0.5	20	5-D0
Holster, Forward Draw	0.5	30	5-D0
Holster, Snap Draw	0.5	50	5-C2
Harness System	14	1500	6-B2
Heavy Weapon Exo-Skeleton	40	3500	6-B3

end of section 3.5 weapon accessories



► EXPLOSIVES

With the exception of Earth, where explosives are used to clear rubble left from the devastation of the Fall and skirmishes, explosives used in space are limited to weapons, mining, and some underground construction. Explosives remain an inexpensive choice for moving or loosening large volumes of rock and surface material. All legally manufactured commercial and military explosives include taggants — microscopic particles that are coded with a manufacturer identification code and lot number. When explosives do go missing, SolaPol and other intelligence agencies make tracking down the missing explosives a priority.

For safety reasons, all commercial explosives are immune to accidental detonation with exposure to flame — not always true of improvised or home-made types — to a minimum temperature (Fire Intensity 8) at which point they merely disintegrate. Commercial explosives are also subject to minimum safe specifications for impact (100 points or greater Personal Scale Damage) and electrical (Electricity Intensity 4) sources.

▼ STANDARD EXPLOSIVES AND SHAPED CHARGES

Compared to a normal explosive charge, shaped explosive charges have two distinct areas of effect: a primary and a secondary. In both cases, the distance from the explosion the area of effect covers is the same; however, the shape of the two areas of effect are different. Whereas the normal charge affects a 360 degrees area around the explosion, the shaped charge's primary area of effect covers a small portion of that area (less than 45 degrees), while the shaped charge's secondary area of effect covers the remainder of the area.

Explosives that can be shaped have two Damage Multipliers listed. The first DM is for the direction of a shaped charge's primary area of effect. The second DM is for a shaped charge's secondary area of effect or the explosive as an unshaped charge. The first number listed for area is the radius of the shaped charge's primary and secondary area of effect. The second area of effect is for a normal charge. The area of effect multiplier for large shaped charges is half of the normal multiplier.

◇ COMPOUND C5

Compound C5 is a descendant of C4, a plastic explosive used during the late 20th and early 21st century. This explosive is used extensively in demolition work since it can be easily shaped to fit the application. Since C5 is more easily available for commercial sale, it has also become the explosive of choice for terrorist organizations.

◇ DYNAMITE AND DYNAMITE-II

Dynamite is still a the workhorse of commercial explosives, but in its reincarnation as Dynamite-II. Advances in chemistry have increased the detonating force and stability of Dynamite-II through various means. Dynamite's primary use is in mining and construction. The relative ease with which the original dynamite can be manufactured means it is one of the explosives more commonly used by "poor" terrorist organizations.

◇ DETONATING CORD

Detonating cord is a high velocity explosive in the form of a half centimeter diameter cord. Called det cord for short, it is used for initiating large explosive loads, and as a cutting or breaching charge for low density materials. It is available in spools 100 meters long. Detonating cord is made by a number of companies in the solar system. The statistics listed under the *Explosives and Grenades* table are per meter length of cord.

◇ HOME-MADE EXPLOSIVES

Home-made explosives are easily manufactured with simple to moderately sophisticated chemical synthesis equipment that can often be put together using life support equipment spare parts. The chemicals required for most stable explosives are strictly regulated and sold only to approved and licensed buyers that require them for other lawful purposes. Less powerful explosives can be manufactured with more common and unregulated chemicals, however. Disappearances of chemistry equipment and chemicals are always promptly reported by companies due to the threat an explosion in space represents, and almost universal laws that require the reporting of any theft of, or missing, chemicals or equipment that may be used to manufacture explosives.

In either case, there is always a chance that something will not work properly — explosive material can be very unstable, especially when manipulated by improperly trained personnel with cobbled-together equipment. The proper reactions may not occur, rendering the explosives useless, or may go off prematurely, with devastating consequences. Without the right chemical processing equipment, uncontrolled reactions and side reactions are a very real danger.

MASER GRENADE ◇

Maser grenades use a microwave pulse, instead of explosives and shrapnel, to inflict damage. When the maser grenade impacts, it uses the weighted bottom (the high-density power cell) and a tiny gyroscope to orientate the microwave emitter into a vertical position. The emitter covers a spherical area within a ten-meter radius to within a few centimeters of ground level. Their main advantage is that they bypass most types of armor; polymer or composite-based armor protect with only half of their value. Against metallic armor, the damage of the maser grenade is transformed into an electrical attack whose Intensity is equal to half of the grenade's Damage Multiplier plus the attacker's Margin of Success.

NIGHT GLUE GRENADE ◇

The night glue grenade is a non-lethal grenade that with an interesting effect — everything gets stuck together. The glue is a black contact adhesive that contains a strong irritant and blocks a broad range of the visible and non-visible light spectrum, hence the "night" designation. Everything coated by the glue is turned black and deprived of sight. This means equipment and optics are rendered useless, and people that move or touch anything become stuck. The irritant is meant to ensure that persons react to it and become stuck as they attempt to remove the compound. Trying to clean the glue off of equipment achieves similar results.

Police or military personnel entering the scene spray a release solvent as they move to avoid sticking to things. People are released by selective spraying of the solvent. Trying to unstick glued flesh is not advisable, but it is possible. A successful Strength Test against a Threshold of 5 will free the person, but also inflicts an automatic Flesh Wound as skin is torn from the body. Regular clothing that is stuck will likely tear first, and armor isn't damaged by pulling it apart, but the chances are that whatever is freed will get stuck to something else. Exo-suits have the strength and protection to simply pull themselves free, but any sensors will be fouled by the glue, leaving the exo-suit blind.

RIFLE GRENADES ◇

Rifle grenades are the poor man's grenade launcher. Using blank rounds in a chemical slugthrower rifle, the firing gases propel the rifle grenade off a special adapter attached to the barrel. The damage and area of effect are equivalent to the grenade type. The rifle grenade's range is equal to half of the rifle's normal range values. A standard grenade cannot be launched from a rifle adapter.

SATCHEL CHARGES ◇

Satchel charges are designed for demolitions and sapping. They carry a shaped charge to be placed against the target, moving or still. When properly placed with the shaped charge facing the target, a satchel charge has a Damage Modifier of x150 (x15 vehicle scale). Improper placement, or anything on the opposite side from the shaped charge's direction of effect, is attacked with an effective Damage Modifier of x75 (x7 vehicle scale).

XDX ◇

XDX is the standard explosive charge used in military missile warheads. While quite powerful as a normal charge, XDX exhibits premier explosive properties when cast in a shaped charge, which makes it very attractive to the military. These properties also make it highly sought after by mercenaries and terrorists. While SolaPol is ever vigilant in tracking down stolen or missing explosive stores, the fact XDX is an exclusively military explosive means XDX can be recovered from combat salvage or unexploded missiles for sale on the black market. The price list under the Explosives and Grenades table is the black market value of one kilogram of XDX.

EXPLOSIVES AND GRENADES □

Type	ACC	DM	Range	Area	Cost	Wt	Code
Compound C5	-	x70/x40	-	2/5	75	1	6-C4
Dynamite	-	x28	-	2	20	1	7-C3
Dynamite-II	-	x36	-	3	30	1	6-C4
Detonating Cord	-	x25	-	1	10	0.1	6-C4
Maser Grenade	0	x20	Throw	10	30	1	6-B3
Night Glue Grenade	0	-	Throw	10	20	1	4-C2
Glue Solvent	-	-	-	-	5	0.5	4-C1
Satchel Charge	-	x150/x70	-	2/-	1500	3	6-B4
XDX	-	x100/x55	-	4/6	?	1	7-B5
Rifle Grenade	-1	+	+	+	x1.5	1	6-B3

+ DM and Area of Effect equal to Grenade type. Base Range equals half weapon's Base Range.



EXPLOSIVES IN QUANTITY

Damage from large explosions comes as much from secondary effects like the seismic disturbance and sympathetic reactions. Flying glass and debris from an explosion is often just as deadly as the explosive itself. A building that loses a supporting wall can drag itself down under the weight of unsupported floors and their contents. Loose power cables spark, setting fire to flammable materials. Gamemasters should be sure to take into consideration the location of any explosion.

Explosives inflict damage because of the shockwave the explosion produces. By detonating more explosives, it is possible to increase both the force of the shockwave, and the range it can carry. For each power of two increase in the amount of explosive, multiply the area of effect by the power of two. There is also a small increase in the damage inflicted by a large explosion. The Margin of Success for a large explosion is increased by one for every threefold increase (divided by three, round toward zero) in the area of effect. For example, 150 kg bomb of C5 (see below) is detonated by a terrorist organization. The area of effect is multiplied by seven (bomb mass closest to $2^7 = 128$), so the everything within 35 meters is attacked. The terrorist Margin of Success is increased by 2 ($7 / 3 = 2.333$, rounded toward zero). Anything up to double the modified area of affect suffers half damage.

EXPLOSIVES DISPOSAL

Bomb disposal suits are heavy and bulky to wear; however, the hands are left completely free to perform fine manipulations. This imposes a -3 penalty on any "physical" activities with the exception of any task that uses the hands. The suit has a frontal Armor Rating of 100, a rear Armor Rating of 10, and comes with a helmet. A bomb disposal suit costs 4000 credits, and its Code is 9-C2.

Bomb disposal tanks are large metal and composite spheres that are designed to absorb the force of an explosion. The interior of the sphere is a special polymer and ceramic material that pulverizes to absorb the force of an explosion. The exterior metal and composite casing is designed to absorb further energy and contain the explosion without fragmenting into lethal shrapnel.

EXPLOSIVES KIT

An explosives kit contains everything needed to setup and detonate, or deactivate, an explosive device: detonators, blasting caps, tools, timers, switches, batteries, fuses, wire, primer, and boosters. Any attempt to set or deactivate an explosive charge without the proper explosives kit imposes a -2 modifier.

BOMB DISPOSAL ROBOT

Most bomb squads will leave handling explosives to "Boom," the Bomb Disposal Robot. A variety of models are manufactured by a small number of companies, but they all have similar equipment and performances. The normal procedure is to blast the suspected bomb with the water cannon to disable it, or have the robot place it in a bomb disposal tank. "Boom" can work using its internal knowledge (usually a Demolition Module with two dice), or a human operator can direct the robot through the 500-meter tether.

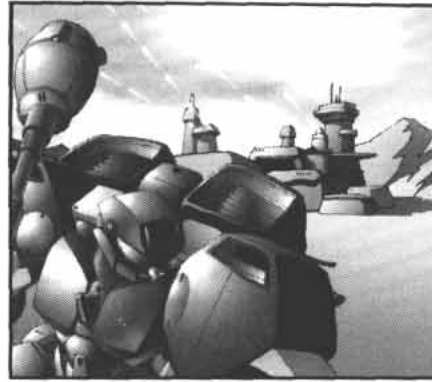
BOMB DISPOSAL ROBOT STATS

Threat Value:	26 (13,000 credits, Limited)	Crew:	0 (1 action)				
Size:	1.2	Armor:	1				
MOVEMENT DATA							
Movement Mode	Combat Speed	Top Speed	Maneuver				
Walker	2 (12 kph)	3 (18 kph)	-1				
Deployment Range:	25 km						
ELECTRONICS DATA							
Sensors:	0/1 km	Communications:	-2/1 km				
Fire Control:	0						
PERKS & FLAWS DATA							
Name	Rating	Game Effect					
Autopilot	-	Acts as Level 1 pilot					
Computer	2	PP 2, CRE -2, KNO -2					
Manipulator: Arm x 2	1	For detail work; cannot punch					
Exposed Auxiliary Systems	-	"Aux" hits one step worse					
OFFENSIVE & DEFENSIVE SYSTEMS DATA							
Qty	Name	Arc	Acc	DM	BR	Ammo	Special
1	Water Cannon	FF	0	x3	M	3	-

DEFENSIVE SYSTEMS ◀

These systems are employed almost exclusively on Earth and Mars. Since they are the only locations involving "active" ground warfare, these systems are used at key points in a defensive line or to defend important facilities. Because of their cost and weight, these systems protect fixed installations and defensive positions from attack.

While all colony cylinders, stations and commercial vessels are equipped with basic screens and point defense system for protection from space debris and particles, these units are sometimes mounted externally to provide additional protection against aggression. With the increasing number of conflicts between solar powers and an increased threat from pirates and privateers, many independent captains are installing anti-missile systems on their ship's hull for protection against missile attack and boarding parties. Colony cylinders and stations are mounting both of these systems for the same reasons.



3.7

ANTI-MISSILE SYSTEM ◊

Available as a ballistic or laser system, the semi-portable anti-missile system is used to protect defensive positions from missile attacks. Operating either version of the system is easy. The controller does not actually choose targets or give the order to fire. He holds onto two "deadman" switches. While even one switch is held, the system is safed. The threat of attack is indicated on the control panel, and the person holding the switches releases them. The system automatically begins to engage any incoming targets according to its fire control algorithms.

The laser system uses lidar for targeting, while the ballistic system uses Doppler microwave radar. Only targets moving toward the system are targeted, so return missile fire by friendly units is not shot down. The laser anti-missile system is usually employed where it can plug into a larger power supply.

ANTI-LASER AEROSOL ◊

Anti-laser aerosol systems are relatively uncommon on the ground since it is far cheaper to employ ballistic weapons on Earth and Mars. The central anti-laser system is a reactive defense system that launches canisters of anti-laser gases from a central location. Detectors placed within the system's effective radius determine the direction of the attack and fire a pattern of canisters to intercept the beams.

The perimeter version uses multiple detectors along a webbed layout of tubes equipped to spray jets of pressurized aerosol into the path of a laser. The system is very low profile, and can be easily camouflaged; however, it is very vulnerable to damage by ground vehicles and artillery attacks.

DEFENSIVE SYSTEMS □

System *	Arc	DM	Range	ACC	ROF	Ammo	Special	Wt	Cost	TV
Ballistic Anti-Missile	T	x2	1/2/4/8	0	+6	600	AM, Defensive, Smart2	1200	120,000	350
Laser Anti-Missile	T	x2	1/2/4/8	+1	+4	400	AM, Defensive, HEAT, Smart2	800	160,000	350
Central Anti-Laser	T	0	0/1/2/4	-1	+3	150	AED, Aerosol, Defensive, Smart2	500	250,000	40
Perimeter Anti-Laser	T	0	0/0/0/0	0	0	50	AE1, Aerosol, Defensive, Smart2	400	200,000	40

*Note: These systems were created with the *Silhouette Vehicle Construction System*. To convert to human scale suitable for roleplaying, multiply the Damage Multiplier by 10 and the ranges by 50.

DEFENSIVE SYSTEM AVAILABILITY AND LEGALITY □

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Anti-Missile System	10-B4	10-B4	5-B3	10-B4	10-B4	5-B3	5-B3	12-B4	10-B4	12-B4
Anti-Laser Aerosol	9-B3	9-B3	6-B3	9-B3	8-B3	6-B3	6-B3	12-B4	9-B3	12-B3

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn

end of section 3.7 defensive systems

▶ ARMOR

When people become engaged in violent activities, people get hurt. Armor, of some form, has become the normal means of protecting one's person from that violence. Some advanced forms of armor are available, and there are some methods which allow for greater utility of existing armor types. In each case, personal preference and money are the deciding factor to determine just how safe a person can be when violence erupts.

◇ PROTECH INC. CLOTHING

ProTech Inc. is based in the Orbitals, and manufacturing protective clothing is their primary business. The clothing carries inserts of Duraweave and ablative reflc. Duraweave is the same material in duraplast mail and shell armors formed in strands, and then woven into flexible plates that are less bulky than mail or shell duraplast. Ablative reflc is a flexible, polymer-like material, coated to the outer side of the duraweave, that vaporizes under laser fire to dissipate and diffuse the laser energy. ProTech clothing is an exception to the armor stacking rules in the **Jovian Chronicles Rulebook**. The clothing is, essentially, meant to be layered to increase its protective value. The only exception is wearing a ProTech long coat over a ProTech jacket, which imposes a -1 Encumbrance penalty to the wearer.

ProTech clothing is often worn by law enforcement officers on patrol. SolaPol's Executive Protection Bureau agents often wear ProTech clothing, and they have been known to make their charges wear it too (they always ask nicely.) VIPs from across the solar system are regular customers of ProTech, as is anyone concerned about their personal safety with the credits to spend. The upper and lower body suits are custom-fitted to wear beneath regular clothing.

Custom clothing incorporating duraweave and ablative reflc is also available from ProTech in the latest fashions from top designers. Incorporating the duraweave and ablative reflect into existing clothing costs three times the listed ProTech clothing equivalent piece. For example, a tuxedo refit is the equivalent of a ProTech jacket and pants. So the final refit cost is three times a ProTech jacket and pants, plus the tuxedo.

◇ HELMETS

The armor listed in the **Jovian Chronicles Rulebook** are considered complete suits, but they don't include helmets. To purchase a helmet for the corresponding type of armor, multiply the Armor Rating and cost of the armor type by the modifier list in the Armor table. The Code for the helmet is the same as the armor type. It is possible to wear a helmet of a different type than the body armor.

◇ PARTIAL ARMOR

It is possible to buy some armor as partial sets, and sometimes that is all that is available. Depending on the type of armor, the level and cost of protection will vary. To find the level of protection, multiply the Armor Rating of the full armor suit by the indicated multiplier in the Armor table below. The same method is used to determine the weight and cost. If the character wears only the armor torso, or torso and arms, of any armor type with encumbrance, reduce the encumbrance by one. The method described here is rather simplistic, so Players and GMs can decide if they want to create a more complex system. The Code for any partial armor lowers the Availability Threshold by one or two points for the armor type.

◇ ASSAULT SHIELD

Assault shields are used to provide cover for advances and perform tasks while under fire. The shield is wide enough, and tall enough, to provide 100% cover to two people shoulder-to-shoulder, and more people if the attacker is within a narrow arc to the front of the shield. An armored viewing strip is located at head height so the users can see where they are going. There is an armored hatch at thigh level so the users can access a doorway, fire a weapon, or plant an explosive charge. Assault shields are commonly used by law enforcement to protect SWAT teams as they move into position.

An assault shield provides full coverage against ranged attacks for the two, or possibly more, people behind the shield. Ranged attacks against the assault shield count as being against a stationary target, but have a maximum MoS of 1 and the shield's Armor counts as armor for the defender. Because it is so large and heavy, moving the assault shield requires two people, and they may not move any faster than a walk.

◇ PROTECTIVE CASE

A protective case looks like a regular attache case. A thumb-released lock causes the case to spring open to reveal a series of connected armor plates covering a one hundred centimeter by fifty centimeter area. The panels are reflc coated, and some are even equipped with interference screens. Protective cases are often carried by bodyguards; at the first sign of trouble, the bodyguards release the lock and use the protective case to shield their charge. These shields are a favorite of protective services across the solar system.

STUN SHIELD ◇

Stun shields are riot shields with a built-in stun discharge system. The front of the transparent polymer shield has thin wires imbedded in it. When the activation stud is depressed on the handle, the wires are charged, and any person touching the shield is shocked. The power cell and controls are mounted below the shield grip.

The shield has power settings of 1 to 10, each draining the corresponding amount of energy units. The victim of a stun shield must succeed in a BLD roll against the weapon's power setting plus the attacker's Margin of Success. A failed roll means the victim is stunned (-2 Modifier) for a number of rounds equal to the Margin of Failure. On a fumble, the victim is knocked unconscious for a number of minutes equal to the MoF.



ARMOR □

Armor	Armor Rating	Encumbrance	Concealable	Mass	Cost	Code
ProTech Clothing						
Long Coat	8	0	yes*	2.5	400	5-D1
Jacket	6	0	yes*	1.5	300	6-D1
Vest	4	0	yes*	1	200	4-D1
Pants	4	0	yes*	1.5	250	5-D1
Upper Body	6	0	yes	1.5	500	6-D1
Lower Body	4	0	yes	1.5	500	6-D1
Custom Item	+	+	yes*	+	+	7-D1
Helmets	x0.2	0	no	1	x0.3	+
Partial Armor						
Torso	x0.5	+	+	x0.5	x0.5	+
Arms	x0.25	+	+	x0.25	x0.25	+
Legs	x0.25	+	+	x0.25	x0.25	+

* The clothing itself is obvious, but the nature of the fabric is not.

+ See description

SHIELDS □

Shield	ACC	DM	Parry	Armor Rating	Encumbrance	Wt	Cost	Code
Protective Case	-3	AD	+1	25	-1	3	150	4-D1
Assault Shield	-5	AD-3	0	60	-3	12	500	6-C1
Stun Shield	-2	AD+5/stun	+3	20	0	2.5	300	5-C1

ARMOR OPTIONS ▼

Generally, most armor suits come with few extras since they are already quite expensive when purchased in quantity. Since most buyers of armor are government funded — the military and law enforcement — the extra cost outweighs any benefits that might be gained from accessories. (Either they buy the additional armor they need, or they have fewer armor suits with accessories that only limited personnel have the training to use.) Most private users do not care about the cost, or believe the cost is worth it.

Armor accessories fall under two categories: electronics and stealth. The electronics additions are added to helmets, since the two most important senses in combat situations are sight and sound. Stealth armor is not widely available, being used most commonly by elite law enforcement units and military special forces units. Possession of stealthed armor outside these units requires special permits from law enforcement agencies, a task involving mountains of paperwork and personal interviews.

ELECTRONICS ◇

One of the most common modifications to any helmet is vision enhancement technology. Infrared and low-light are two of the systems available for helmets. Using systems similar to those mounted in space suit helmets, a 2D heads-up display is available. By adding microcameras around the helmet perimeter, a 360 degrees HUD compresses the surrounding image into a strip at the top of the users field of vision.

Normally, helmets don't allow for unimpeded hearing of sounds around the wearer. An optional external sound pickup can overcome this problem by providing three dimensional sound to the wearer. As a precaution against damaging the wearer's hearing, any extremely loud noise is automatically reduced to 80 decibels.

Internally mounted communicators are another common option. This is commonly done by refitting existing communication technology to the helmet. This increases the cost of the communicator being installed by 25%.

E.A.P.E



◇ STEALTH ARMOR

Stealth armor features numerous modifications to hide the wearer from prying eyes. Stealth armor is available at three levels of sophistication; each adds the indicated bonus to any Stealth Skill Test. Stealth +1 uses a camouflage pattern, sound absorbing materials and thermal signature isolation. Stealth +2 adds to this with greater thermal signature and sound reduction, but it also adds a special coating to absorb active EM radiation for sensors. Stealth +3 offers complete sound and thermal signature suppression and an enhanced coating that also features limited mimetic abilities.

Stealth armor is only available in full suits; partial stealth suits have no effect. It is possible to refit existing armor for limited stealth (equivalent to Stealth +1), but anything more complex requires the armor suit be manufactured with stealth capabilities. Advanced stealth armor is less effective without a helmet. To reflect this, reduce the Stealth bonus by one if the wearer does not use a helmet.

◇ STEALTHED ACCESSORIES

Stealth armor is only as effective as what you carry. Certainly, carrying a chrome-plated autopistol looks cool, but it is hardly complementary to the capabilities of a top-of-the-line suit of stealth armor. All stealthed armor comes equipped with numerous pockets and storage spots for items so they do not degrade the performance of the stealth capabilities. A forty to fifty liter volume integral storage pack is a common accessory that is included with stealth armor. (Stealth space suits carry a mission pack instead.)

Some weapons and other items are available with stealth capabilities comperable to each level of function. These items possess the same Code, and use the same cost multiplier. For obvious reasons, energy weapons are the preferred choice for stealth. To avoid the high cost and lack of availability, stealth-capable bags of various sizes and capabilities are available to hide non-stealth items until they are needed. Prices range from 500 credits for a 10 liter Stealth +1 bag to over 10,000 credits for a 100 liter Stealth +3 duffle bag.

▣ ARMOR ACCESSORIES

Accessory	Wt	Cost	Code
Stealth +1	+1	x2	7-C3
Stealth +2	+2	x8	8-B3
Stealth +3	+4	x32	8-B4
Helmets Electronics			
Infrared	0.5	200	5-C1
Low Light	0.5	150	5-C1
2D Heads-Up Display	-	350	5-C1
360° Heads-Up Display	-	500	6-C2
HUD Video Input Jack	-	+20	5-E0
External Audio Pickup	0.01	75	6-C1
Internal Communicator	*	*	*

▼ OPTIONAL RULE: ARMOR DAMAGE AND REPAIR

Any time a person is hit by an attack, and the location is protected by armor, the armor protection may be degraded. Depending on the type of attack, divide the weapon's base Damage Multiplier by the indicated modifier (rounding off). This value is subtracted from the armor's Armor Rating.

The difficulty of repairing armor is widely dependant on the type of armor material and the extent of the damage. As a guideline, the greater the damage to the armor is, the harder it is to repair. Player Characters with the Tinker skill can attempt to repair the armor if they have the necessary replacement materials and tools. Since armor suits are formed from several pieces, the simplest method of repair is to purchase a replacement piece for the damage section. Characters with the Tinker skill can easily replace the damaged section with the new section. Armor that is reduced to less that 25% of its original Armor Rating is considered unsalvageable.

▣ DAMAGE TO ARMOR

Attacked by:	Damage to Armor
Heavy Weapon, Explosives	DM / 5
Melee (hacking & slashing), Chemical Slugthrower	DM / 10 (min. 1)
Melee (piercing), Laser, Gauss	DM / 20 (min. 1)
Incendiary	Add half of the Intensity to the above
Electricity, Stun, Meser	No damage

POINT OF DEPARTURE: CLOSE QUARTERS ◀

Drake's feet uncoiled against the Jovian's corpse, propelling him across the corridor to a firm handhold. His squad was moving ahead of him now, making the final turn into the Jovian engineering room. With the bridge already in the hands of Malik's squad, the engineering room was victory's last prerequisite.

His lead soldier, Sofie, had hardly come about the corner when she twisted under the impact of multiple laser hits. The gaping hole in her faceplate telegraphed her fate. His squad reacted like an animal, recoiling to defensive positions. Lou Welch raised a fragmentation grenade, looking to Drake.

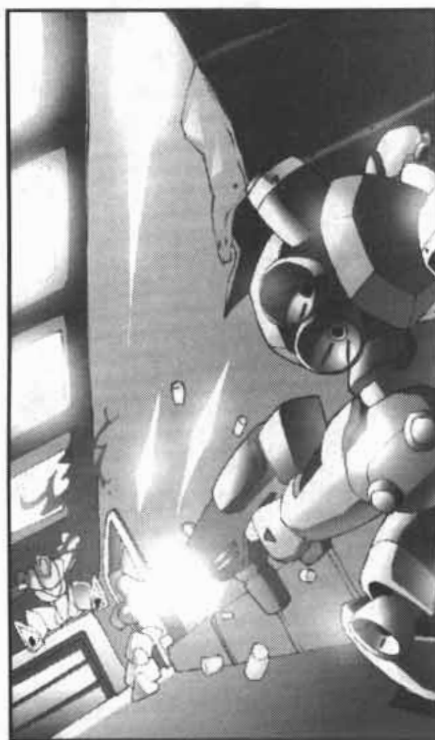
"No can do Private, we need the controls intact. The ship must be moving ASAP. Give me another way, people."

Kershin struck the bulkhead with a gauntlet-clad fist. "Look at this stuff, boss; I bet it'd make a mighty fine shield."

Drake took only a moment. "Do it. Welch, give him your hummer."

Welch and Kershin huddled together against the bulkhead, slowly carving out a chunk of the lightweight, yet ultra-strong composite. Drake glanced over his squad's position, looking for improvements he could make. There were depressingly few. The best he could do was to tap into the battlespace information system, making certain that all the decks behind his squad's back were held by friendlies.

Someone reached out with the butt of their rifle, looking to recover Sofie's corpse. All they managed to do was set the body tumbling again. The hummer knife was still making slow but steady progress. Sofie must have drawn some attention: a Jovian grenade came ricocheting down the corridor. This was going to be tougher than Drake had first thought.



E.9

BACKGROUND ▼

The two primary targets of a boarding action are the bridge and engineering. The bridge controls and coordinates the ship's actions, while engineering controls power and propulsion. Taking both locations is critical to effectively removing a boarded vessel from a battle. Since military vessels operate in vacuum conditions during combat, and the crew wear space suits, life support systems are a minor concern.

Obviously, since these locations are so vital they will be the best defended. A lot of ships are built with reinforced bulkheads around the bridge and engineering sections so force attackers to come from a known direction, generally the access corridors. These have defensive positions built into them in the form of small alcoves or hinged armor panels, providing minor but vital protection to the entrenched defenders and providing them with what they need most, time.

E.9.1

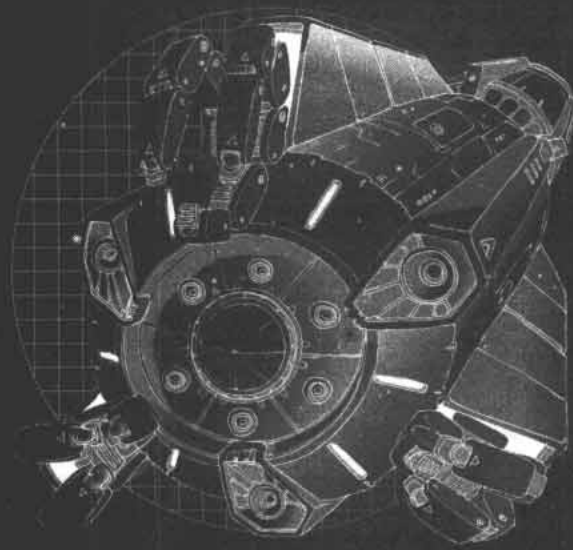
SUGGESTIONS ▼

Whether the Player Characters are part of the boarding party or ship crew trying to repel boarders, they have a good chance a PC will die if they do anything stupid. Whether this is making themselves appear to be a threat if they are not actively resisting, or charging around a corner without checking, the chances of being killed increase dramatically. In need be, Gamemasters can remind players of the seriousness of the situation by violently removing unthinking Non-Player Characters in plain sight of Player Characters. Casualties on both sides are likely to be at least moderate.

As the boarding party, resistance is likely to vary from heavy to light depending on where they board the enemy vessel in respect to their targets. Danger lurks behind every hatch and around every corner when you are the boarding party. Fragmentation grenades don't do much damage to solid bulkheads, but they are dangerous to people in space suits. A defending crew member can easily pop open a hatch long enough to toss out a grenade before anyone can respond. Getting into a barricaded room is extremely difficult, so getting bogged down trying to take an objective is a commander's nightmare. Since boarding parties are usually outnumbered — though generally better equipped on average — getting stuck means getting surrounded, which will be exactly what the defenders will try.

E.9.2

end of section 3.9 point of departure: close quarters



CHAPTER FOUR:
EMERGENCY EQUIPMENT

"Was that a good 'oops' or a bad 'oops'?"

EVACUATION ◀

Emergencies under the non-Earth conditions that exist throughout the majority of the solar system precludes the use of 'normal' evacuations. People require a safe haven in the case of emergency, and there are a number of options available depending on the location of the emergency. The following are the most commonly used evacuation methods in the solar system.

While there are numerous methods for saving lives in an emergency, the fragile nature of humans and the potential for minor damage to inflict major casualties means that no safety system can be one hundred percent effective in preventing the loss of life. Panic and fear are powerful emotions that must be overcome to survive an emergency beyond Earth's atmosphere. Military personnel, and anyone else who practices emergency drills on a regular basis, have a much higher chance of surviving an emergency in space than the average person. Unfortunately, the time and resources necessary to ensure an entire population receives adequate training in emergency procedures means that there will always be a high number of casualties.



4-1

SELF-CONTAINED EMERGENCY SHELTER ◇

The self-contained emergency shelter is for surface evacuations, and comes in two models: interior and exterior. The interior model features an extremely thick blast door. When an emergency alarm is activated, the blast doors to the shelter open and then are closed by the people inside or the independent emergency computer. The exterior model has a four person quick-cycle airlock that vents most of the airlock gas outside (the airlock has a dedicated air reserve for this purpose.)

In both cases, up to 24 people — most exterior shelters accommodate 16 people at most — can survive for a week in the shelter. Food, water and sanitation supplies are provided in several storage lockers that can be used as sleeping areas when emptied. Until some supplies are used or moved, there are folding bunks for half of the occupants. Interior shelter control systems are hardwired to connections at habitat external entrances where rescue crews can communicate and assess the situation inside the habitat and shelters. Exterior shelters are buried for insulation and radiation protection. On the Moon, well traveled routes have shelters placed along their length in case of emergencies like mechanical failure or solar flares.

DEPLOYABLE EMERGENCY SHELTER ◇

The deployable emergency shelter is a container that includes a reinforced, aluminized polymer habitat, atmospheric gas and recycler, emergency rations and water supply. These shelters are meant to be temporary since they can only support six people for 24 hours. The frame is inflated using a chemical reaction to generate gas. Once the survivors enter the shelter, the entrance is sealed and the atmospheric system activated. The entrance cannot be reopened without refilling the shelter atmosphere. At least two deployable shelters are located in exterior lockers by surface habitat airlock doors. Deployable shelters are used on Mars almost exclusively. Some vessels also carry them in case of emergencies. In this case, the shelter is deployed in a large common area.

MOBILE EMERGENCY SHELTER ◇

The mobile emergency shelter is a self-contained emergency shelter on wheels or tracks that moves the shelter a safe distance away from a habitat emergency. Mobile shelters are located at the outer perimeter of a habitat. On Venus, mobile shelters are lowered to the ground on winches from the lower surface, and around the edges, of the arcologies. The Moon and Mars have mobile shelters located along the perimeter of surface habitats.

ESCAPE TUBE ◇

The escape tube is used to transfer people between two ships with functional airlocks. The escape tube is made from an opaque, high-tensile polymer with reinforcing composite mesh, so it is extremely strong and flexible for its appearance. The escape tube can stretch up to fifty meters between two vessels, and is capable of being pressurized to a standard ship's atmosphere (five psi). Each end has a hard seal ring that is large enough to cover any standard-size airlock door. The inside of the tube has several lines for a person to pull themselves through the tube.

Escape tubes can be dangerous if the situation is not entirely stable and static. In one case, a small deviation in ship vectors lead to the detachment of one end of a tube. The slow drift apart stretched the tube until the ring could not maintain the seal. Two people in the airlock at the detached end and three people in the tube were blown into space.



◇ SURVIVAL BUBBLE

The survival bubble is a single-person environment for emergencies. Equipped with a four-hour oxygen supply, a person in a space suit can carry the bubble to a safe place on the ship or a rescue vessel. A single radio flare is included inside the bubble to signal rescuers if the bubble was pressure ejected from an airlock. Survival bubbles are located in or near airlocks in small lockers.

To get into a survival bubble, a person removes the locker cover and pulls the bubble out of the locker by the two handles. If the vessel is under gravity conditions, the person can step into the bag, kneel, and then seal the bubble by making a semi-circular motion with the arms over their head. In zero gravity, the bubble is pulled over the head while the legs are pulled into a fetal position, then sealing the bubble by the same motion under the legs. Once the bubble is sealed properly a glow light will activate inside, beside the oxygen mask which can now be placed over the head. Exhaled carbon dioxide is bled into the bubble atmosphere. In outer orbits, this helps to keep the bubble's occupant warm. In orbits closer to the Sun, bubble atmosphere is vented by an automatic valve to keep the occupant cool.

◇ EVACUATION SUITS

An evacuation suit, or evac suit, is an evolution of the emergency space suit. A stored evac suit is slightly larger than an emergency space suit, so it is easy to tell if a ship is equipped with evac suits (the storage container extends about ten centimeters beyond the emergency space suit compartment.)

One of the keys to improved functionality is the partial atmosphere — only the upper torso and head are "inflated." A pair of grips located on the chest (just below the shoulders) simultaneously seal the upper torso and start the oxygen flow when pulled. Numerous straps and elastic panels are then adjusted to keep the fabric snug to the body, thereby improving the suit's articulation. The partial atmosphere increases the suit's duration to 60 minutes. (Rescue crews often refer to emergency space suits as "body bags" since panicked wearers use their air supply very rapidly.)

The remainder of the evac suit design is similar to an emergency space suit. Exhaled atmosphere is used to warm the rest of the suit, especially the hands and feet, before being bled off. This system does keep the air somewhat warmer than what is considered comfortable. A reflective coating and tear resistant material make up the skin of the evac suit. An emergency patch, can of dual spray, tether line and radio flare are included in a small pouch.

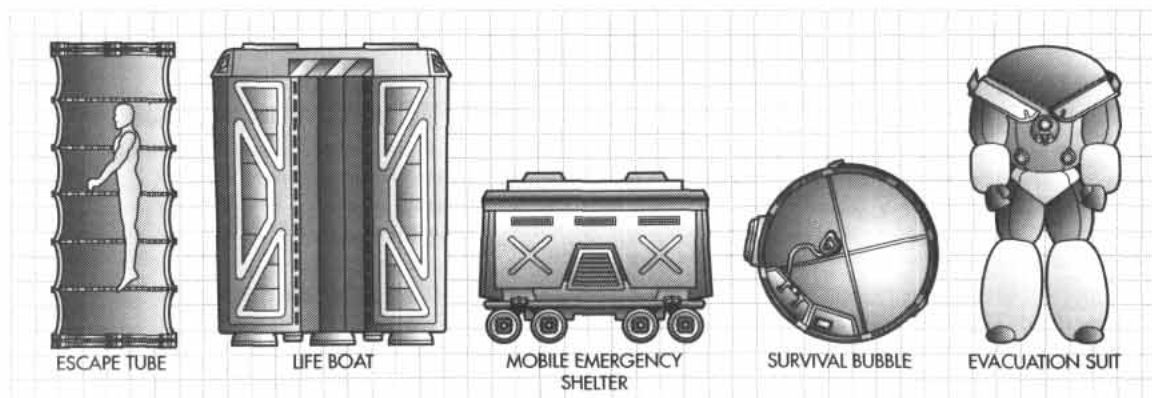
A military version of the evac suit is available for ship crewmembers that are caught without their duty space suit during emergency situations. The military evac suit has a recharge port that allows the suit to be resupplied.

The number of 6-second combat rounds needed to get into an evacuation suit is equal to 5 minus the result of a Survival: Space Skill test. A minimum of one round is always required. A Fumble wastes an additional 1d6 rounds. Any physical action is at -1 while wearing the suit.

◇ LIFE BOAT

A life boat is a much larger version of the escape pod, with three man-days of consumables per occupant. Life boats range in size from 24 persons to the huge 112-person boats on CEGA's Constantinople-class ships. Accessed through one or more hatches in the ship's interior, the last person through the hatch hits the launch switch and gets strapped into a simple acceleration couch. Ten seconds after the hatch is closed a booster rocket pushes the life boat away from the ship.

Each life boat has an independent maneuvering system to control its velocity. It is also equipped with at least two airlocks and docking collars to connect with other boats and escape pods. This arrangement means increased survivability and resources. Their independent mobility means life boats are the first to begin rescue operations. It is common practice to bring aboard injured from escape pods so they are more effectively cared for.



DAMAGE CONTROL ◀

The emptiness of space, and the sometimes long travel times, requires a spaceship to be relatively self-sufficient in the event that it suffers damage. Since help could be weeks away, a ship must be able to contain and repair damage so that it does not threaten the safety of the ship and its crew, passengers, or cargo. Many years of space travel has taught humankind a great deal about ensuring the safety of the ship.

2.1

DAMAGE CONTROL SUIT ◇

Damage control suits are specially modified augmented hard suits for damage control crews. The most noticeable change is the smaller mission pack with a six hour air supply and larger power supply. The increased power supply allows the suit to continuously power rescue equipment for about two hours. The suit has a crew station socket and a recharge port. The suit is also fitted with a beacon for a damage control M-bot (described below) to follow.

The suit's outer layers are replaced with a fire resistant material (half Fire Intensity). A high-power radiation screen (10,000 rad/hr) is included for damage control in propulsion areas or under adverse solar conditions. An integrated damage control sensor suite incorporates all aspects of environmental monitoring. The two most commonly used feature are the temperature probe (to check for bulkhead and hatch hot spots) and a sensor that checks for ungrounded electrical connections. Gravity boots are also included to make moving in low gravity easier.

DAMAGE CONTROL M-BOT ◇

A damage control M-bot carries additional damage control supplies and equipment for crews. The M-bot follows a damage control crew using its thrusters or spider-like legs, which also stabilize the M-bot in zero gravity. It also carries a dedicated power source for emergency equipment. The M-bot is loaded with a detailed layout of the ship or installation for navigation, and follows the beacon of its assigned damage control team. The M-bot carries the following standard items: twelve foam bombs, twelve sealant bombs, two one meter expansion columns, numerous lengths of reinforcing beams, four square meters of sealing sheet and sheet tool (below), a kit of bonding adaptive adhesive and glue gun, a plasma torch, a saw opener and powered shears (page 45).

M-BOT STATS ▢

Size:	1.4 (150kg)	Armor:	2
Movement:		Maneuver:	
Space	2 (0.2 g)	4 (0.4 g)	0
Walker	2 (12 kph)	3 (18 kph)	-1
Deployment:	6 hrs	Reaction Mass:	30 BP
Communication:	-2/1km	Sensor:	-2/1km
Perks & Flaws: Autopilot, Cargo Bay (0.25m ²), Computer (PP 2, CRE -2, KND -2), Fire Resistant, HEP: Radiation (4), HEP: Vacuum, Fragile Chassis, Sensor Dependent			

FIRE FIGHTING ▼

Ideally, fires on ships are fought by evacuating the atmosphere from the section where the fire is. (Indeed, military ships remove all atmosphere to combat fires and explosive decompression.) However, smaller fires, or fires in heavily occupied sections that cannot be evacuated quickly, still require alternate methods of control and suppression.

4.2.1

FOAM BOMB ◇

Foam bombs are a common fire fighting tool. Foam bombs are spherical shape with recessed grips for handling. They can be set to explode the pressurized fire retarding foam on contact, when exposed to high heat, or on a timer. The ability to deliver fire retardant by indirect methods decreases the crew exposure to a dangerous fire. A crewmember can temporarily open a fire blocking door, toss in a couple foam bombs, and close the door again without risking injury or spreading the fire. Foam residue starts to break down within a few hours, leaving a powder film that is easy to clean up.

FIRE EXTINGUISHERS ◇

Chemical spray extinguishers are located along corridors to deal with small spot fires caused by electrical shorts and other causes. Most extinguisher chemicals are designed to be non-conductive, or form non-conductive residues, to inhibit further electrical fires. Extinguishers are colored red. Inert gas and chemical fire containment systems are common equipment throughout military ships; inert gas systems flood the affected room to smother the fire or dilute combustible gases. Chemical systems commonly use fire retardant foam, though traditional dry or wet chemicals are also available. Civilian vessels feature similar systems in vital areas like engine compartments and fuel storage, or anywhere flammable materials are stored.

▼ STRUCTURAL REPAIR

Sometimes the damage suffered by a ship is structural in nature, and it must be repaired, reinforced, or even patched, to allow the ship to conduct the minimum required operations to reach a dock to conduct more permanent repairs. These are some of the most common methods and items for conducting temporary structural repairs on damaged space structures.

◇ SEALANTS

Leaks of all kinds occur on a regular basis. Rapid hardening polymer **sealant sprays** are used by crews to temporarily seal atmosphere leaks in about five seconds. Most sealants are stored in varying sizes of extinguisher-shaped containers, which are colored green to avoid confusion with an extinguisher. A handheld irradiation unit is available to increase the sealant's setting rate, up to a second.

Sealant bombs are similar to foam bombs. Capable of sealing a small room (25 cubic meters), a sealant bomb is an inelegant, but quick, method of sealing any breaches in the room. Sealant bombs are spherical in shape with recessed grips for handling. They can be set to explode the sealant on contact or on a timer. Shortly after the sealant explodes, covering everything in the room, a flash irradiation unit in the bomb's center sets the sealant in about a second. This gives crews the ability to seal a room still undergoing decompression.

People trapped by a sealant bomb need to be cut free, or a spray solvent can dissolve the material. After the breach is repaired, the solvent is applied to remove the sealant. Non-essential items trapped in the sealant are left until the repairs are completed.

Sealing sheet is a metallized polymer sheet that is spread across a hull breach. Sealing sheet is more durable than polymer sealants, and is capable of temporarily sealing breaches up to one meter by one meter. The sheet can be cut with a special sheet tool to fit the breach. The sheet can then be unrolled, or placed, across the breach; beams can be laid across larger holes to support multiple sealing sheets. The special sheet tool also includes a contact welder that flash welds the sheet to the hull and beams. When sealing sheet and a hard polymer sealant are used in combination, a unpressurized section can be repressurized until more permanent repairs are made. Some foolish, and cash poor, civilian crews have even used laminates of sealants and sealing sheet to make "permanent" repairs.

◇ EXPANSION COLUMNS

Expansion columns are self-contained hydraulic cylinders powered by a damage control suit or M-bot. The columns are used to reinforce deformed hull sections and structural members that are under stress. They are placed to relieve enough of the load so that further damage is not incurred. Each end of the column is equipped with special configurable grips to keep it from slipping out of position. Misplacing a column can have dire consequences, such as punctured bulkheads and crushed crewmen if the column slips. Expansion columns come in three lengths — one, two and four meters — that exert up to five tons of pressure. Each column can extend to three times its length. To correctly place an expansion column, a character rolls a Mechanics Test against a Threshold of 4. A failure or fumble results in further damage, and possibly injury of the personnel using the column.

◇ REINFORCING BEAM

Reinforcing beams are simple metal or composite rods that are wedged or welded into position. Compared to the expansion column, reinforcing beams are an inelegant solution, but simplicity works. The beams are easily cut by powered shears to fit into any location. They are easy to weld or glue into place, and can be used in different orientations. Welding several beams into simple structures increases their strength and functionality beyond a simple rod of metal or composite.

▣ DAMAGE CONTROL EQUIPMENT

Equipment	Wt	Cost	Code
Damage Control Suit	28	12,000	5-D2
Damage Control M-Bot	150	210,000	5-D2
Foam Bomb	4	50	4-E1
Fire Extinguisher	2	15	2-E1
Sealant Spray	2	20	3-E1
Sealant Irradiation Unit	1	25	3-E1
Sealant Bomb	4	50	4-E1
Sealing Sheet (1x1m)	1	30	4-E0
Expansion Column (1m)	20	350	4-E1
Expansion Column (2m)	35	600	5-E1
Expansion Column (4m)	55	1100	5-E1
Reinforcing Beams	2-10	15-75	3-E1

SEARCH AND RESCUE ◀

Trying to find a ship in distress within the Solar System is a monumental undertaking to begin with, akin to finding the proverbial needle in a haystack. Those who undertake such a task, however, never give up hope that they will make it on time. Once a ship in distress is located, and its crew and passengers are found to still be alive, they must be evacuated immediately if it is not safe for them to remain onboard. This task is a common one for military vessels, especially given the current tensions and skirmishes between the Jovian Armed Forces and CEGA Navy.

HUMMER RESCUE SAW ◇

The Hummer rescue saw has a special 30 centimeter diameter blade for cutting through nearly any material. Combining a regular circular saw with Hummer weapon technology allows the user to quickly cut through doors, bulkheads, and debris. The rescue saw uses a standard power cell and drains two power units per minute of operation. The saw can be used as a clumsy weapon (Acc -2, DM AD+8).

SAS OPENER ◇

The sas opener is used for forcing open locked or jammed doors and airlocks. It has a powerful motor and transmission coupled with a set of lockjaws. It takes 1d6 turns to set up properly, and will open the door or airlock with two turns. The power source has ten energy units. Opening a door with standard resistance takes one energy unit, while heavy resistance requires two energy units. A door that is intentionally welded or pinned will drain five energy units.

POWERED SHEARS ◇

Powered shears are a large pair of hyper-tough alloy scissors used for cutting through almost anything. Once the actuators are engaged, it takes about 1d6 minutes to finish cutting. The blades close too slowly, and the shears too cumbersome, to be used as a weapon. The shears have enough power for ten minutes of operation.

RESCUE JAWS ◇

Rescue jaws, referred to as the "jaws of life" by SAR techs, are combination sas openers and powered shears. This tool is capable of opening and closing its metal jaws with enough force to open jammed doors and snap beams. Use the same rules for the sas opener and powered shears. Beams require one energy unit per minute of operation. Rescue jaws have a large power supply of 15 energy units.

CATHIODE ELECTRONICS S&R SENSOR ◇

The Cathiodes Electronics Search and Rescue sensor is a combination of several sensor classes. (See *Portable Sensors* on page 72 for stats and more about sensors.) The major function of the SAR sensor is environmental monitoring — atmosphere, hazardous materials and radiation. The most important function is the heartbeat detector. The human heart produces a distinctive electromagnetic (EM) field that is used by SAR teams to locate survivors. When the sensor is placed against a door or bulkhead, it detects the faint signal caused by a beating heart while sophisticated algorithms remove any strong or weak artificial EM fields. (See *Portable Sensors*, for further information.)

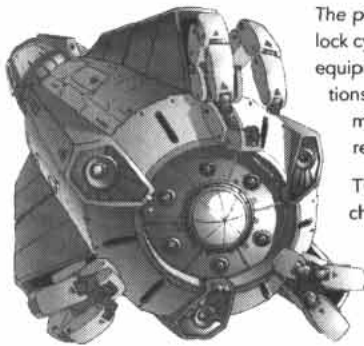
EMERGENCY ATMOSPHERE BUBBLE ◇

An emergency atmosphere bubble is an opaque polymer bag and a small oxygen bottle. The bubble is placed over the head of a victim without oxygen, and secured with a special polymer seal. The bubble's low-pressure oxygen supply lasts for about five minutes, and contains a mild analgesic and sedative (Potency 8, Onset Time 30 seconds) to keep the user calm. The inside of the bag is coated with an agent that traps exhaled carbon dioxide. This is usually sufficient to provide the rescuers a few more precious seconds to free a trapped person otherwise lacking oxygen.

EMERGENCY ATMOSPHERE GENERATOR ◇

Emergency atmosphere generators are complex biochemical reactors that produce oxygen for emergency purposes. An initial oxygen-nitrogen reserve is used to quickly repressurize a small volume (less than 20 cubic meters.) The atmosphere is then circulated through a biochemical filter of genetically engineered bacteria and chemical scrubbers to convert carbon dioxide into oxygen that is returned to the atmosphere. The unit has an operating lifespan of six hours. In habitats and ships where individual rooms and corridors can be sealed, an atmosphere generator is usually stored with other emergency supplies. This allows the area to be used as a temporary shelter in an emergency. The unit is composed of a gas cylinder and the rectangular scrubber unit with a carrying handle attached.

◇ PORTABLE AIRLOCK



The portable airlock is a container that includes a reinforced polymer airlock, atmospheric gas, and lock cycling machinery. The airlock is often used as a temporary replacement when the normal airlock equipment suffers failure. They are also used for gaining access to depressurized ship or station sections that cannot be accessed by a proper airlock. A portable airlock can be set up in under two minutes by personnel trained in its use. With regular replacement of lost gases and power system recharge, it is possible to operate the unit until it fails completely, albeit at reduced safety levels.

The airlock frame is formed by inflating cells in the polymer material with gas produced from a chemical reaction. The end of the airlock that is the inner door has polymer skirt that is attached to the access point with a spray adhesive. Both airlock doors use a special electrohesive zipper system to create an airtight seal. The airlock is large enough for two people to use each time it cycles. Since the airlock machinery is located inside the airlock, a remote control panel is secured outside each door. Depending on the airlock's pressure status, and whether personnel are entering or exiting, the airlock does not disengage the zipper system seal until it is safe to do so.

◇ OXY-LIFE

Oxy-Life is a slow release agent that provides oxygen directly to the blood stream while increasing the body's ability to use and retain oxygen in the blood. A small module (about 5 cm x 5 cm by 1 cm) is attached to the patient's chest, by an adhesive pad, above the heart. Unfortunately, Oxy-Life is only effective for about five minutes before it becomes harmful. Applying additional modules will keep the victim alive without breathable atmosphere, but each module after the first inflicts a Flesh Wound. If the patient's blood is not purified within an hour of application, the patient suffers a Flesh Wound each hour until their blood is purified. Blood purification is only available with proper medical facilities onboard ship, on colonies, or with a portable hospital unit.

▣ SEARCH AND RESCUE EQUIPMENT

Equipment	Wt	Cost	Code
Hummer Rescue Saw	10	1000	5-E1
Sas Opener	15	1000	5-E1
Powered Shears	15	1000	5-E1
Rescue Jaws	20	1500	5-E1
Emergency Atmosphere Bubble	1	100	5-E1
Emergency Atmosphere Generator	10	400	4-E1
Portable Airlock	20	2000	5-E1
Oxy-Life	0.1	100	5-D2

◇ SEARCH AND RESCUE POD

Add:	Lab: Space Survival (RD), Detachable airlock), Lab: Medical (RD), +300 BP
Remove:	Plasma Cutter
Change:	Size to 5 (3.1 tons), Deployment Range to 20 hours, Increase Passenger Seating to 15
Modified TV:	950 (950,000 credits, Mass Produced)

Search and Rescue pods look like Piranha assault pods (*Jovian Chronicles Companion*, page 95), but with exactly the opposite intent: saving lives. An extra section is welded into the middle of an assault pod to increase the internal space and make room for more reaction mass tanks. A detachable, hard seal airlock replaces the plasma cutters, allowing access at non-standard points on the hull. Basic emergency medical equipment is installed to ensure safe transport of injured survivors. The SAR pod also allows the transportation of victims without requiring emergency bubbles and EVAs.

POINT OF DEPARTURE: INFERNO ◀

Brittany was already breathing heavy and sweating inside her suit. She hauled herself hand over hand down the corridor, lit by her helmet lights. The ship lurched as another volley slammed into it, causing her to smack her shoulder against the wall, "Oww!"

B-9... B-8... B-7..., tracking corridor sections in her head, *B-6... B-5... B-4.*

"Bridge, Delta Charlie Three at section Bravo Four. Section power offline."

"Delta Charlie Three, Bridge. Confirm assessment and commence repairs."

"Roger."

Setting the damage control m-bot that followed her on standby, she began an inspection of the corridor panels, taking temperatures with the suit's sensors. The m-bot began to set its legs into position to stabilize itself in the corridor. She felt it before she even saw it. The ship shuddered, a tearing vibration, then... THUMP! and the corridor lit up in orange and blue, the impact of something against her side sending her careening down the corridor.

Regaining her bearings, Brittany saw the reason for the violent shove, and was awed for a moment as she watched the life support systems venting a flame of oxygen. The M-bot was crushed against the opposite corridor wall by the panels blown out by the explosion. She shook her head realizing she was lucky to be alive, before her training took over.

"Bridge, Delta Charlie Three. Fire in section Bravo Four," she reported calmly as she reached for the fire fighting equipment attached to her suit. It wasn't as good as the gear in the crushed m-bot, but hopefully it would be enough.



4.4

BACKGROUND ▼

Damage control is dangerous work; a situation can easily get worse before it gets better. Secondary explosions and sudden material and equipment failures will account for the greater part of the danger. Flying debris may puncture a suit, and ragged, sharp edges are everywhere (a crewmember once noted that performing emergency DC work is like "trying to do surgery wearing an inflated balloon in a room full of razorblades"). If the ship is in combat, further damage due to continued attacks make the work of the repair crews even tougher.

Most damage control teams consist of at least two people with a specialized M-bot in tow, though single person and 'bot team may be assigned to take care of relatively minor repairs if there is a shortage of manpower. The first task on the list is always containment; malfunctioning systems must be turned off, backup systems must be brought online, ruptured tubing and power lines isolated, etc. Unless the crew has been caught unprepared and out of their suits (in which cases emergency patching obviously has a Code-1 priority), hull and bulkhead punctures are generally a secondary concern.

4.4.1

SUGGESTIONS ▼

For obvious reasons, ships in combat have the most need for specialists in damage control and repairs, most often the bosuns. Civilian ships are not immune to suffering damage from stray shots to freak accidents. Sabotage can cause a great deal of damage. Whatever the cause of the damage, there is a solution that ranges from a simple repair to evacuating the ship. Each piece of damage control equipment is meant for a specific situation, so all that is required for adventure is the cause of the damage.

In space, every minute that passes before damage is contained, and a repair made, could be the vessel's last. Time is always a factor, and it can be stressed by the pace of the game. Player Characters need to react to the situation and make their decisions. Players are not Player Characters, so if Players must think for a moment, think for a moment and no more. A word of caution to Gamemasters: don't throw too much at the Players all at once.

4.4.2

end of section 4.4 point of departure: inferno



ELECTRONICS

P Ψ ♂ ♀ ♂ ⊕ ♀ ♀



CHAPTER FIVE: ELECTRONICS

COMPUTERS ◀

Computers are everywhere. They are in restaurant tables, advertising signs and behind the scenes, running the colony cylinders and arcologies that are home to humanity's spaceborne population. The three parameters that define computer capabilities each reflect certain specific facets of computing hardware in the twenty-third century. The KNO Attribute represents the sophistication of the computer's classical processor (how well it handles integer and floating point operations) that determines how well it performs simple linear algorithms. CRE reflects a different faculty altogether: the ability to use fuzzy logic and neural nets to develop new approaches to problems. Most civilian computers use the same processor for both KNO and CRE operations, and as a result few civilian machines have a CRE score above -2. Military machines, and some premium civilian models use a separate processor, one optimized for the more complicated computations represented by CRE, and any value may be assigned proportionate to price. Processing Power (PP) represents how much data the computer can process at any given time. As a general rule the sum of a computer's Attributes does not exceed its Processing Power.



T-5

TERMINALS ▼

While people are constantly in the midst of computers, the machines that they most explicitly interact with are terminals. Terminals are the aspect of computing technologies most associated with the term 'computer.' Many of these terminals are datapads — slave terminals designed as a point of access to the local PAN. They are still powerful resources; between the SysInstruum and the control of distant peripherals, a PAN connection opens many options. Other machines are true computing devices in and of themselves, capable of running software Modules and making sophisticated decisions. Only the very poor do not own a terminal of their own, and it is not uncommon for the typical person to own up to half a dozen.

S-1.1.1

XP-400/800 ◇

The XP line is a popular personal terminal brand manufactured in the stations above Mercury. It has followed the Merchant Guild wherever they have gone and become a system-wide standard in economy computing. The 400 model is a glorified datapad with above average input/output options but little in the way of advanced computing capability. The 800 is far more powerful, possessing a basic optronic processor for running simple programs. The 400 and 800 models of the XP line are both manufactured by several Mercurian firms, lending a generic feel to the ubiquitous machines.

DATASTORM SERVER ◇

DataStorm Information Systems burst onto the Jovian computer scene in 2189 by being the first to take advantage of the stability of the Olympian communications network — selling servers that they did not deliver to the customer. Instead, the machine was hosted at one of several central locations. The customer could request that it be delivered at any time, but the round the clock technical support and expert system administration kept most customers happy with the initial arrangement. Confidence in DataStorm's services has recently been shaken: a team of unknown commandos broke into the Elysée node and stole the machines of several important clients whole.

BLOCH PROLINE ◇

Bloch Computing caters to an extremely small client base of power users. Fewer than one in every twenty thousand computer owners has a Bloch, and the ProLine is even rarer than that. Only the most intensive of applications require the immense power of the ProLine, and more often than not it is the under-utilized tool of the very rich. There are those who do make full use of the machine are usually professionals in demanding areas such as VR production or those engaged in complicated physical or chemical simulations. The average person could no more dream of using the power of a ProLine than they could find the money to purchase one. Orbital-based Bloch has been remarkably successful in selling to this niche market, it has achieved better than fifty percent market share system-wide.

TERMINAL PRICING AND AVAILABILITY □

Model	PP	KNO	CRE	Price(credits)	Mass(kg)	Availability Code
XP 400	N/A	N/A	N/A	400	1	2-E0
XP 800	1	-1	-3	800	3	3-E0
DataStorm Server	4	0	-2	17,500	50	5-E2
Bloch ProLine	4	1	0	24,000	20	8-E2



▼ PERIPHERALS

Most personal terminals come with a limited array of built-in peripherals, but there are also many peripherals that may be purchased to enhance or add new functions to the machine. Nearly all peripherals are controlled through the computer's PAN adapter, leaving the few physical hardpoints on the average machine free for use by bandwidth hungry devices, such as memocard slots and digital video tools.

Modern computer displays are all in the form of high-definition flat screens. Most computer displays (and other video formats) have standardized around a 1.66:1 width to height aspect ratio. Color reproduction is uniformly excellent; only the particularly talented can consciously perceive the difference between the tens of millions of colors used by an inexpensive display, and the billions of RealTone™ VR display. This is not to say that the eye does not know the difference. Just as people can unconsciously detect the shifting frames of a moving image to a point far below their conscious flicker-fusion threshold, color depth has a similar effect of encouraging unconscious acceptance of a given image.

◇ SELECRON 60-D MULTIPURPOSE DISPLAY

The Selecron is an extremely successful Lunar export. It is light enough to be manufactured in central locations on the Moon, and still be reasonably priced after shipping to the rest of the solar system. Mars imports a large number of Selecons of varying models each year. Selecons use a high-resolution LCD screen embedded in a case of lightweight foamed plastic. The 60-D model is so named for its sixty-centimeter diagonal measure.

"The Selecron name was the first word I saw every morning for eleven years, right until the case split apart and crumbled on me. I'd get a new one, but even without the case — and more than a decade old — it still works fine." — Norma Watkins, Nomad asteroid miner

◇ MOBI COMPACT DISPLAY

The Mobi was once the latest and greatest from the Jovian peripherals firm Hashimi. Now, fifteen years after its introduction, it is just one among many names competing in the foldable ultraflat market. Named after the whale pursued by Ahab, it is reportedly the end result of a decade-long research campaign on the part of CEO Kathleen Hashimi. Company engineers like to claim that, for all the money spent researching the folding screen technology, the real break in the Mobi's development came when an advanced military prototype was accidentally delivered to a Hashimi employee's home. Just a millimeter thick, it can be folded or rolled with impunity to a minimum radius of a half centimeter. The device is 24 centimeters on a side, the lower ten of which converts into a compact touch-sensitive keyboard when one is unavailable.

◇ OBSIQUA EVERWRITE

The Obsiqua is a common Venusian printer, and designs almost indistinguishable from it are sold throughout the solar system. Print quality is the industry standard 500 dots per centimeter, in vivid color. The main sheet feeder can take polysheet stock up to forty centimeters in width, and it can accurately feed up to a meter in length. The Obsiqua, and other printers using a similar business model, achieve their remarkably low price by way of a tamper-proof speaker that quietly intones advertising slogans whenever the printer is in operation.

◇ KELLER IMAGO

The Keller Imago is a multipurpose digital imaging tool. Combining a standard CCD imager, a bank of precise ranging lasers, and an inertial orientation system, it is capable of creating a three-dimensional model of any object. The Imago can act as a still camera, a videocamera, or a full-fledged scanning modeller, but the true capabilities of the machine can only be seen where the three modes join. When used in 'snapshot' mode, the Imago retains both the image at the selected moment, and degraded data for ten seconds before and after. Combined with a Visual Art Module, this data can be used to accurately rebuild the still, placing the point-of-view at a new and more dramatic angle. The Imago has become the standard tool of still photojournalists, quickly replacing the low-end Newsman A/V recorder. Reputable organizations like ZONet will only accept retouched photography from an Imago; less discerning organizations will simply retouch any image to their liking without regard to physical accuracy.

◇ ARCHIVE CRYSTAL

When vast quantities of data need to be archived, secure from both data theft and hardware failure, archive crystals are used. They are very specialized items; the average person is unlikely to ever encounter one. Each is ten centimeters square by twenty long. A special peripheral (3500 credits) is needed to read/write to an archive crystal. Each archive crystal can hold up to 100 dice in Modules, but Modules must be transferred to regular memory before they can be run.

PERIPHERAL PRICING AND AVAILABILITY ▢

Model Name	Price (credits)	Mass (kilograms)	Availability Code
Selscron 60-D	60	2	3-E0
Mobi LE	200	.2	5-E0
Oblique EverWrite	80	7	3-E0
Keller Imago	2500	2	5-E1
Archive Crystal	30,000	.5	6-E0

ENCRYPTION ▼

Encryption is at the heart of both personal privacy and institutional secrecy. Encryption has remained a strong bulwark against data piracy in large measure due to the Edicts, which have banned the use of the quantum computers that would render large-key cryptography nearly useless. Despite the Edicts, it is believed that all the solar governments maintain quantum computing devices for intelligence purposes, and to secure the most important of diplomatic messages. Solapal overlooks these violations as a matter of USN policy; so long as the situation does not explode into a cryptographic arms race it is believed that a modest level of espionage actually promotes interplanetary trust.

In less exotic cases, large-key integer encryption has maintained its position as the strongest freely available form of encryption. Key size has been steadily growing as long as the method has been in use, and modern keys are truly massive. No matter how large keys grow, it will always remain possible to attempt to break them. Encryption is rated on a six-point scale; the lowest level, one, is inherent in all computer communications. The next three levels are available to ordinary citizens at will, and provide increasingly good protection against all but the most dedicated of snoops. Levels five and six are only possible with the resources of governments or, possibly, very large corporations. Decryption checks do not require a specific module; the check is considered to be KNO-based and is rolled with however many dice have been allocated to the task since the decryption attempt began. There are no bonuses for machines attempting to decrypt in parallel, but each machine is allowed a separate decryption check. When attempting to decrypt information, the initial Threshold is always 12 and drops by three with every check. The Threshold can never fall below three. The table below determines the time between decryption checks.

DECRYPTION TIMETABLE ▢

Encryption Level	Typical Use	Time Between Decryption Checks
1	unsecured communications	6 hours
2	typical casual encryption	3 days
3	paranoid personal/typical corporate encryption	12 days
4	paranoid corporate/typical military encryption	60 days
5	paranoid military/diplomatic encryption	1 year
6	state secrets	3 years

SPECIALIZED MODULES ▼

The Modules listed in the **Jovian Chronicles Rulebook** and **Companion** are generic programs. Specialized versions of these Modules are available. This means their area of knowledge is more limited, but the gains in performance and narrow focus are beneficial. Treat specialized Modules like Skill specializations: choose a specific specialization for the Module. The Module gains a +1 bonus in the area of specialization, but suffers a -1 penalty in all other areas of the base competency. For example, a specialized Physical Sciences: Solar Physics module gains a +1 in solar physics, but a -1 to all other Physical Sciences. Specialized Modules cost three times the normal price per die. A Module can have multiple specializations, but the price doubles with each additional specialization. Where applicable, refer to the corresponding Skill for possible Module Specializations. Academic Modules are the most often specialized.

Modules should not be treated as generic and faceless servants. While hardware and vehicular Modules will be largely transparent to the character using them, academic Modules will usually be very commercial products with a widespread reputation. Specializations are a good way of differentiating between the products of competing companies and assigning them their own particular character.

PLUG-INS ◇

Third parties often issue plug-ins for some of the more common Modules. These software assistants act in concert with the original program, and provide benefits similar to those of a specialization without the penalty to the base competency. Each plug-in program takes up one die that can not be rolled, but provides a +1 to any roll in its area of expertise. The type and number of plug-ins to be run must be chosen when a Module is loaded, and cannot be changed until it is reloaded. Plug-ins cost double the price of the original Module at one die.

5.1.3

5.1.4



▼ PROGRAMMING MODULES

At its most basic level programming is simply a matter of asking a program, known as a compiler, to create an application with a set of look-up tables and basic algorithms for accepting requests and finding an answer, or an algorithmic method for finding one. These Modules can be programmed by anyone, but are subject to limitations. Such Modules must be Academic KNO-based programs. They are limited to one die and take no benefit from a positive KNO score. It takes approximately six hours to prepare such a Module.

More involved programming requires actual knowledge of computer algorithms and protocols. This is represented by the Computer Skill. A typical professional programmer could be expected to have the Computer Skill at level 2, with a specialization in Programming. Programming a typical application (PP1, no specialization) has a default Threshold of 3. A successful skill test in this case means a six-month development cycle before the project is complete. For each additional Module die one is added to the Threshold, and three months are added to the development time. In the event of a failed Skill test, each point of MoF converts to two weeks of wasted effort before the programmer realizes they need to start anew.

Programming for Academic Modules is simple; most of the formulae, equations and display utilities needed are available in the public expert systems. It is far more important with Academic modules that the programmer develops the nature of the answers that they seek. Hardware and Vehicular Modules are somewhat more challenging to program; they require at least some knowledge of the machine for which the program is being developed. If no copy of the relevant hardware is available for test, one die must be used to simulate the machine and its environment for development purposes; this die is removed from the pool available to the Computer Module for assisting in the programming

The databases from which look-up tables are compiled are very sophisticated. Most of them are actually government maintained expert systems that passively solicit new information from all their users. After a brief screening to verify the data, it is added to the system for anyone to reference. Of course, there are significant incentives not to disclose cutting edge information without compensation, and as a result there are also parallel expert systems that charge for consultation, in order to fund the payment of those who submit new and up-to-date information. These systems vary in completeness across the solar nations; almost all strongly restrict information about weapons and explosives with more oppressive governments enforcing even harsher restrictions. For example, the Martian Federation's expert systems, public and private, contain very little information on advanced electronics as part of the Federation's wish to maintain control over the means of communication. Expert systems can provide two benefits to any programming effort, represented by a Skill modifier, and a time modifier. The time modifier subtracts its rating multiplied by the level of the Module being programmed from the default development time in months.

▣ EXPERT SYSTEM RATES

System Rating	Charge per Level of Module	Skill Modifier	Time Modifier
Public Access	Free	0	0
General Interest Commercial	2000	+1	0
Specialist Commercial	5000	+1	1
Military Access	Free*	+2	2

* User must be authorized to access the expert system.

▼ NETWORKS AND PARALLEL COMPUTERS

Computers are universally networked; the thought of using a machine that could not interface with the local PAN, and through that to the SysInstruum, is near unthinkable. Distributed computing is now the norm, and has merged with classical parallel processing to form a new paradigm for supercomputing. Modern supercomputers are little more than mainframes networked at the most basic level, capable of accessing information from the next processor as fast as they can access their own.

Supercomputers are often physically distributed and redundant. The computers that control colony cylinders are a good example. Each and every one is unique, assembled to the desired specifications by one of the major construction contractors. Between ten and one hundred computing nodes are distributed throughout the entirety of the cylinder, linked by special high-bandwidth lines. While designed to work in concert, each node is capable of running the primary functions of the cylinder should another be disabled.

▣ DOWNLOADS/NODE TRANSFERS

Connection	Module Dice Per Minute
Wireless PAN	2
Domestic Hardlink	4
Institutional Hardlink	8
Distributed Supercomputer	72

ADVANCED COMPUTER SECURITY ▼

The solar system is alive with the flow of information, and it is just as alive with information crime. These rules for advanced computer security build upon those presented in the *Jovian Chronicles Companion* (pp.140-141). The basics of computer operation and security do not change. In essence, advanced computer security is treated as an analog of 'real' actions.

It is strongly suggested that the Gamemaster make all rolls and keep the exact results secret. (Player Characters are unlikely to be aware of exactly what is happening until the computer has finished its task.) The PCs may get some indication of what is happening, like a progress bar or seeing data file names being listed. The GM can reveal what happened exactly after the computer is finished through the details of the computer's activity logs.

DEFEATING COMPUTER SECURITY ◇

Each computer "combat" round, called a Pulse, is one second long. This means the operator may make a Skill Test to assist the computer only every sixth Pulse. To account for the lag between the computer's actions and the operator's actions, the operator should provide the GM with a list of what the computer will do, and the order in which the actions are carried out. Since the operator gets to act every sixth Pulse, a new set of instructions can be given to the computer when the operator acts. (The computer will report which tasks it has, or has not, completed.)

Second, a computer is considered the Attacker if it succeeds in defeating the other computer on any Opposed Roll. This means that if the Attacker fails to defeat the Defender's security Module, the next round the Defender becomes the Attacker and may now make an attack of its own. For example, if Yukia's computer doesn't defeat the Defender's Labyrinth Module with its Battering Ram Module, the next round the Defender can attack with its Trace Module, or another Module, until Yukia turns off her computer or her computer defeats the Trace Module.

Third, the Attacker may load new Modules, or reallocate Dice for existing Modules, at the beginning of each Pulse. Any loaded Modules do not take effect until next Pulse. (See *Performing Actions*, below, for more details.) The Defender can only use Modules existing in memory, and it may not reallocate any dice between Modules.

Finally, in conjunction with the second and third distinctions, the Defender is considered to be unaware of the intrusion by the Attacker if it loses the Opposed Roll. The Attacker has a number of rounds equal to its Margin of Success to perform actions (see below) in the Defender's computer system before the defense Module can attempt another Opposed Roll to detect the Attacker.

PERFORMING ACTIONS ◇

There are a number of actions that an attacking computer can perform once it has gained access to the target system. Each action takes one Pulse to perform.

Find Data searches for files that meet the requirements (20 words or less) the operator provides prior to the attack. A feasible Find Data search requirement could be, "Find any files referring to secret genetic research projects." The GM sets a Difficulty Threshold for locating the data, if it exists. The attacking computer uses the dice allocated to attacking Module to make a KNO test against the Threshold. Success indicates the specified files have been found. A failure does not locate the requested files, but a Fumble alerts the Defender to a possible intrusion; immediately make an Opposed Roll between the Attacker and Defender using their security Modules.

The Upload and Download actions transfer data between the two computers. The GM should decide how many Pulses this requires, dependent on the volume of data. If the Defender has a chance to detect the Attacker before the transfer is completed, make the normal Opposed roll during the required round. If the Attacker succeeds, the transfer continues uninterrupted. If the Defender succeeds, any remaining data is not transferred.

The Modify and Delete actions are very similar. In both cases, the Attacker and Defender make a normal Opposed Roll. If the Attacker succeeds, the appropriate data is modified or deleted. If the Defender succeeds, the Attacker is detected and another Opposed Roll is made to see if the Defender can lock out the intrusion.

ACTIONS SUMMARY □

Action	Description
Reallocate Dice	The Attacker may exchange the number of dice in any Module it is currently running.
Load Module	The Attacker loads a new Module into active memory. The Player must designate how many dice are being allocated to the new Module, and from which active Modules the dice are coming.
Use Module	The Attacker uses a Module (running on the Defender's or Attacker's computer) to perform an action.
Find Data	The Attacker computer searches for information fitting a predefined set of requirements.
Download Data	The Attacker copies data files from the Defender's computer to its own computer.
Upload Data	The Attacker copies data files to the Defender's computer.
Modify Data	The Attacker modifies data files in the Defender's computer.
Delete Data	The Attacker deletes data files in the Defender's computer.



◇ ADVANCED COMPUTER SECURITY EXAMPLE

Grissick is on the run from the law and needs a new identity to get off the station safely. Luckily, he still has his favorite hacking computer with him. Grissick's computer is a powerful PP6, CRE+4, KNO +3 machine, and he has the Battering Ram and Forgery Modules loaded with 5 dice and 1 die, respectively. The Customs & Immigration computer is also a PP6, CRE +2, KNO +4 machine (it's more dedicated to record keeping and retrieval), and has the Virtual System and Administration Modules running with 3 dice each.

Grissick determines he wants to get into the computer, use his Forgery Module to create a new identity, delete his old identity, and then upload the new identity into the C&I computer. Each operator rolls for their bonus to assist their computer; Grissick gets an MoS of 3 and the C&I operator gets an MoS of 1. Making the Opposed Roll, Grissick achieves a MoS of 4, so his computer has four rounds to get things done. Lots of time.

First, Grissick's computer creates the forged identity (Use Module action). The dice allocated to the Forgery Module are rolled with a result of four. (The GM notes the result to see if the customs official will notice the forgery.) The second round Grissick's computer tries to delete the old identity (Delete Data action) on the C&I computer. Grissick's computer barely wins the roll, but successfully deletes the file. Finally, Grissick's computer needs to upload the new identity (Upload File action). It will only take one round. (It's a small file.) Grissick's computer wins another opposed roll, the file is uploaded. Time for Grissick to shutdown and get off the station.

◇ DATA SPIKE

A data spike is a single-use, artificial intelligence computer that *mutates* (rewrites) itself to escape detection and lock out by defending computer security Modules. Its sole purpose is to find and retrieve data. The data spike is a computer with PP 7, CRE +6, KNO +4, but is also considered to be the Module, always using the full Processing Power, and its own operator.

The data spike requires a direct hardlink (i.e. physically connected) to the target computer to function properly. Before it is connected, the data spike is given a detailed set of requirements for a data search and retrieval (which should be written down, maximum 25 words.) The Gamemaster must decide upon a Retrieval Threshold for the data spike to find and retrieve the specified data. If there are multiple search requirements, the GM may impose multiple thresholds with the lowest threshold data being retrieved first.

When the data spike is activated, use the normal Opposed Roll to determine if data spike can access the target computer. If the security Module wins the Opposed Roll, the data spike mutates to escape the security Module (the Defender cannot counterattack next turn) and attempts another attack next round. Each mutation reduces the data spike's Processing Power and Willpower by one. All other aspects of the data spike conform the *Advanced Computer Security* rules above, except that it can only perform Find Data and Download Data actions.

While the data spike is working, a single blinking red light indicates it is active. A green light indicates it is finished. A steady red light means the spike has been defeated without retrieving all the data. A data spike will cost at least 500,000 credits with Code 10-A5. It cannot be used more than once under any circumstances. A standard PAN connection allows the download of retrieved data to another computer.

▼ MODULES

These new Modules are for skill areas not previously covered, and to allow for the greater flexibility and options of the *Advanced Computer Security* rules. A complete listing of all published Modules is included with the table at the end of the new Module descriptions. Along with the Module options presented in this section, the electronic toolbox of Player Characters, and Non-Player Characters, is considerably larger.

◇ COMPUTER (KNO)

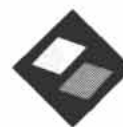


Type:	Academic
Frequency of roll:	On request
Cost:	2500 per die

The Computer Module consists of a suite of related applications; typically, a program compiler and a pair of hardware and software diagnostics are minimum. Both diagnostic programs are actually sophisticated expert systems in their own right. Premium programs offer even more assistance, in the form of specialized applications tailored to specific hardware configurations. At the upper end of the spectrum (PP4 and above) the program can attempt to fix hardware faults in any computer other than the one it is running on, if given access to the appropriate robotic manipulator peripheral.

FORGERY (KNO) ◇

Type:	Academic/Hardware
Frequency of roll:	On request
Cost:	12,000 per die



More often sold by the euphemistic name 'Document Enhancer,' the Forgery Module is a sophisticated program designed to add the needed authenticity to fake documents. In addition to the tools needed to create documents, the Forgery Module also possesses the software needed to run complex printing hardware (5000+ credits) needed to mimic some of the most basic anti-forgery techniques.

MUSIC (CRE) ◇

Type:	Academic/Hardware
Frequency of roll:	On request
Cost:	1500 per die



Music Modules are more than just sheet music generators; they are as much an assistant orchestrator as anything else. A typical program contains a diverse library of musical samples, and extensive synthetic sound capabilities. Using vast aesthetic databases they can critique compositions and offer alternatives, but they are not capable of true creativity.

VISUAL ART (CRE) ◇

Type:	Academic/Hardware
Frequency of roll:	On request
Cost:	2000 per die



The unending growth of the digital medium has led to a blending of artistic modes. No longer is it possible to adequately separate painting and sculpture. This has been reflected in the software aides for visual artists. All the major suites for this market combine powerful vector and bitmap graphic programs as well as full-featured three-dimensional modellers.

RECON (KNO) ◇

Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	6000 per die



The Recon (short for reconnaissance) program simply monitors the target computer's activity. If the attack succeeds, the nature of any action by the target computer is relayed to the user of the attacking computer. Specifically, the attacker is told the how many dice are in each active Module and the total PP of the target computer. No attributes are revealed.

VIRTUAL SYSTEM (CRE OR WIL) ◇

Type:	Computer Security, Defense
Frequency of roll:	Event-driven
Cost:	5000 per die



The Virtual System security Module analyzes the intruder's access attempts, and then leads it into an image of the target areas. This essentially creates a false copy that the intruder can access without affecting the operations of the real system. If the intruder doesn't distinguish the copy from an actual system, the host system has additional time to track down the intruder and alert authorities. (Defender has MoS Pulses to perform actions.) Virtual System Modules can be set to mirror the contents of files, or to fill them only with garbage. The former option is more convincing to intruders, but provides no security for sensitive information. Most corporations keep an edited version of the machine's file system available for ghosting, so as to avoid this dilemma.

CORRUPT (CRE OR WIL) ◇

Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	10,000 per die



The Corrupt Module attacks active Modules in the Host computer. The Attacker MoS is subtracted from the target Module's dice. If the target Module's dice falls to zero or below, the target module is completely corrupted and unable to function.

◇ FEEDBACK (CRE OR WIL)



Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	10,000 per die

Once an intruder is detected in the system, the Feedback security program starts to shovel garbage data at the intruder connection, attempting to force the intruder to shutdown. If the Attacker roll succeeds, the Defender crashes. If the Defender is running the Backup Systems Module, add the Attacker's MoS to the Threshold for maintaining processes. If the Defender fumbles, or the Attacker's MoS is greater than the defending computer's Processing Power, the Defender's system suffers a major failure, and is rendered inoperative. The GM determines the nature of the failure, either hardware or software, or both.

◇ TRACE (CRE OR WIL)



Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	30,000 per die

The Trace Module is used to track down attacking computers; a successful trace gives the location, both physical and informational, of the attacking machine as well as any information known to the network. Such information typically includes affiliation, and a five minute history of activity. The Trace Module is really a function of the network itself, designed to allow the duly authorized to report the origin of an intrusion to the authorities.

These heavily restricted programs are specially coded with an identifier tag to interact with communications systems. Ideally this means that the governments and corporations authorized to run trace routines can be held accountable for each and every trace that they perform. In practice it has only meant that a particular organization is blamed for the use of trace routines operating under cracked identifier tags. Despite the concerns of many privacy advocates system-wide, only the Martian Free Republic has disabled the trace system in their networks. The going black market rate for a copy of trace software and a set of five cracked identifier keys is 75,000 credits per die.

◇ PIGGYBACK (CRE OR WIL)



Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	7500 per die

The Piggyback Module uses any pre-existing datalink to establish a point-of-entry into a target system. This allows a hacker to gain entry to machines that do not otherwise announce their presence on the network. Datalinks that may be piggybacked include any public data broadcast, the attempted use of attack Modules, and standard communication links. The Gamemaster should assign a Threshold difficulty for the attempt based on the target's stealth, skill and resources. A successful Piggyback attack gives the Attacker the ability to find the Defender until such time as the Defender closes its current PAN connection and opens an unrelated one. Unlike Trace, the Piggyback Module does not inform the user of any information other than the route through the network to the target.

◇ DOPPELGANGER (CRE OR WIL)

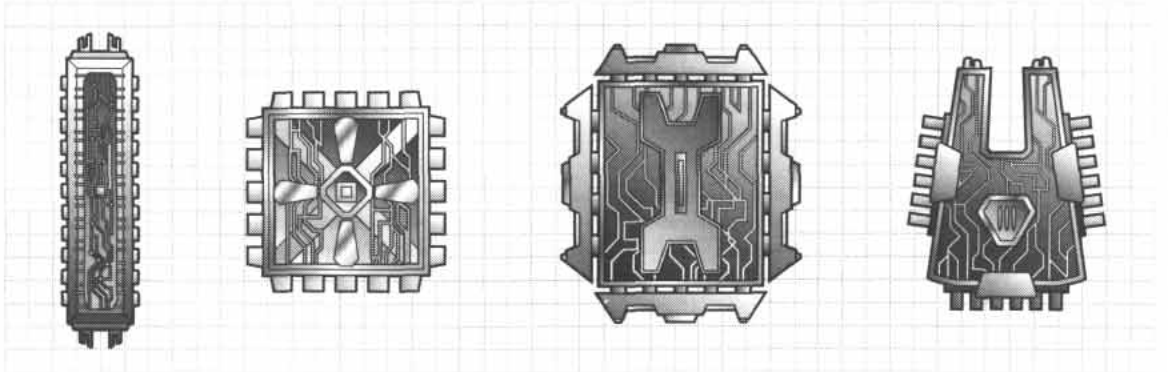


Type:	Computer Security, Attack
Frequency of roll:	Event-driven
Cost:	12,000 per die

The Doppelganger Module is a sophisticated program designed to forge the headers of data blocks, bypassing the security Modules that watch over the input to the target computer. The Module has two modes: penetrate and capture. The penetrate mode forges the header to allow the attacking computer access to the target computer's data. The capture mode intercepts data traffic destined for the target machine, captures the data blocks with the desired information (passing on everything else), and forges new headers and data blocks for the stolen data blocks that it then passes onto the target computer. This Module is especially effective when used in combination with the Recon Module.

MODULES

Module	Attribute	Type	Frequency	Cost	Specialized?	Availability Code
▼ New Modules						
Music	CRE	Academic/Hardware	Request	1500	Y	3-E0
Visual Art	CRE	Academic/Hardware	Request	2000	Y	3-E0
Forgery	KNO	Academic/Hardware	Request	12,000	Y	10-A4
Recco	CRE/WIL	Attack	Event	6000	N	8-C4
Corrupt	CRE/WIL	Attack	Event	10,000	N	8-B5
Virtual System	CRE/WIL	Defense	Event	5000	N	8-D2
Feedback	CRE/WIL	Attack	Event	10,000	N	8-B4
Trace	CRE/WIL	Attack	Event	30,000	N	10-C4
Piggyback	CRE/WIL	Attack	Event	7500	N	5-C3
Doppelganger	CRE/WIL	Attack	Event	12,000	N	8-B4
▼ JC Rulebook Modules						
Autopilot	CRE	Vehicular	Event	2000	Y	6-D3
Communications	KNO	Academic/Hardware	Hourly	1000	Y	3-E2
Defense Systems	CRE	Academic/Vehicular	Request/Event	2250	Y	6-C4
Earth Sciences	KNO	Academic/Hardware	Request/Daily	1500	Y	3-E0
Electronics	KNO	Academic	Request	900	Y	3-E2
Electronic Warfare	KNO	Academic/Hardware	Request/Event	1500	Y	6-D3
Fire Control	CRE	Academic/Hardware	Request/Event	1500	Y	6-C4
Foreign Language	KNO	Academic	Request/Event	100 to 4500	Y	3-E0
Life Sciences	KNO	Academic	Request	1500	Y	3-D3
Mechanics	KNO	Academic	Request	1250	Y	3-E2
Medicine	KNO	Academic	Request	3000	Y	4-D4
Space Navigation	KNO	Academic/Vehicular	Event	2500	Y	4-D3
Physical Sciences	KNO	Academic	Request	1400	Y	3-E0
Sensors	KNO	Academic/Hardware	Request/Event	2000	Y	3-E2
Surveillance	KNO	Hardware	Event	1000	Y	3-C3
▼ JC Companion Modules						
Administration	KNO	Academic	Request/Quarterly	500	Y	3-E2
Law	KNO	Academic	Request	1500	Y	3-E1
Naval Navigation	KNO	Academic/Vehicular	Event	1900	N	4-D2
Social Sciences	KNO	Academic	Request	1200	Y	3-E1
Backup Systems	CRE	Special	Event	500	N	5-D0
Demolitions	CRE	Special	Request	1700	Y	4-B4
Guest	CRE	Vehicular	Special	5000	N	3-C4
Investigation	CRE	Academic	Request	3000	Y	3-C3
Manipulator	CRE	Hardware	Event	900	N	3-E1
Psychology	CRE	Academic	Request	5000	Y	3-E1
Tactics	CRE	Academic	Request	2000	Y	4-B3
Battering Ram	CRE/WIL	Attack	Event	2800	N	4-B4
Labyrinth	CRE/WIL	Defense	Event	1500	N	4-D2





► COMMUNICATIONS

Communications and regular exchanges of information are crucial to the continued well-being of any technological civilization. They are also the most practical means of keeping the human family together over the immense distances of the Solar System. Communications equipment in the 23rd century varies from small, simple links to large, expensive communication networks. Since many comm units fall under common and distinct categories of performance and quality, there are also various options available to modify and improve a comm unit's base performance.

Emitters are given a basic range that is used on the ground and other unobstructed areas, such as the surface of a planetoid. Raising the emitter above ground, such as taking it aboard a plane or climbing a tall mountain, will increase the range ten-fold. In space, where there is nothing to impede the propagation of the signal, the basic range is increased a hundred-fold.

◇ MASUO C-LINK

The Masuo C-Link is the civilian version of its military M-Link. The two models are identical except for the civilian model's lack of an emergency burst mode and improved channel roaming for remote PAN connections. The C-Link retains the time report, multiple alarm, and audio message features. The C-Link establishes its position every five minutes by triangulating its position from PAN remote access nodes. The C-Link uses standard remote access protocols for communicating, so the user can set the C-Link to duplicate the user's existing communication identifier, or acquire a separate comm identifier for the C-Link.

◇ PUBLIC COMM TERMINAL

Vidphones are the most common home and public telecommunications device. A touchscreen and 2D-video camera with sound are combined into a single unit. Public comm terminals charge a small fee for use, so they have a money card slot. Public terminals also offer access to the SysInstruum, again, for a fee. The average public use rate is one credit per five minutes. The terminal also includes a port for a data pad or portable computer for remote access and data transfers. Public terminals are located around communication system nodes. Finding the terminals in a crowd is easy; simply look for the node's transmitter above people's heads. This arrangement simplifies maintenance and reduces the complexity of the system overall.

◇ TERRA ORBITAL LASER COMM

The Terra Orbital Laser Comm system is a line-of-sight/point-to-point laser system that allows for secure and undetectable short range communications. The system is a small fist-sized unit that encases the laser and comm system, and a subvocal microphone (see next page). It looks like a small pair of binoculars, and functions in a similar manner. Looking through the unit's eye piece, the user sees a dot at the point where their unit's laser will hit. The receiving unit, in position to receive, has a glowing circle — only visible with another Laser Comm unit — that indicates where to aim the dot. When both users have their opposite member "hit" (the dot in the circle), a secure connection is established.

◇ INTERLINK SYSTEMS HYDRA COMM NETWORK

The InterLink Systems Hydra Communications Network is an intelligent, military-grade communications system. The system is a broadband, encrypted, frequency-agile system. The system uses three distinct comm units as part of the network: a command unit, a platoon unit and a transmitter station. The command unit coordinates a section of the overall network. The command staff can selectively monitor any part of the network, or communicate directly with a single unit. Under the direction of the command unit, the transmitters within the network can triangulate the position of any friendly comm unit within range of the system. This feature is especially useful for commanders since they can instantly locate any contact with a hostile force by the reporting unit's transmission alone.

The transmitter station is a link in the communication chain. The station is both a retransmitter that extends the reach of the overall network, and a traffic controller that intelligently handles communication priority and volume. The optimal network setup requires each station to be capable of connecting to two or more other stations. If part of the network is ever disrupted, the transmitter stations redirect comm traffic around the disrupted section. Transmitter stations are only used in rear-areas and fixed deployment zones, though some units adapt them to vehicles for increased comm network stability for mobile actions.

The platoon unit is the smallest, a cylinder 40 centimeters long and 20 centimeters in diameter. The unit acts as a central node for squad/platoon level communications. The individual troops are issued military comm links keyed to this unit. The platoon unit is video uplink capable for providing command staff with realtime information. In the case of a mobile conflict, individual platoon units act as transmitter stations within the network, or connect directly with a command unit.

COMMUNICATION ACCESSORIES ▼

While some features are common to all communication devices, other features are not incorporated for reasons of expense, lack of demand, or regulatory restrictions. The following accessories are the most frequently used options for those who want or need expanded capabilities for their communication devices.

VOICE SCRAMBLER ◇

Voice scramblers are commercial versions of military "light" encryption systems that attach to existing non-military communicators. The scrambler takes normal speech, encrypts it, and then sends it out as "static" using the normal unencrypted communicator frequency. The person on the receiving end of the link also requires a voice scrambler to decrypt the static into normal speech. Each voice scrambler is capable of using one of several thousand encryption codes, so the people involved must agree on the code to use before the call is placed.

SIGNAL SCRAMBLER ◇

Many military communications contractors offer their equipment to the public as scaled down versions of the military system. Signal scramblers are small chips with the necessary encryption/decryption algorithms built-in. The chips are small enough to fit inside all but the smallest communicators. The truly paranoid often find methods for using the scrambler chips as additional encryption in their other "valuable" items. While it doesn't make blocking the transmission harder, it does make a significant difference in deciphering the encrypted transmissions over normal routines. The military does not like this practice, but there is little they can really do about it.

SIGNAL REPEATER ◇

Signal repeaters, placed at regular intervals, extend the range of radio frequency communications by re-transmitting the signals they receive. Some sophisticated versions of the repeater receive the radio signal and send a point-to-point laser to another repeater that broadcasts the received signal. Colonies and arcologies often use repeaters in areas with poor transmission and reception without the need to install a full communication node. Several communication companies — Nakumacom, Cello Technology, Commtronics — produce signal repeaters, while JVD Electronics and Terra Orbital produce top of the line laser repeaters.

SIGNAL BOOSTER ◇

Signal boosters are a power pack and antenna that increase the signal strength by broadcasting the signal through the improved transmitter. This means the range and quality are improved measurably. The signal booster is installed by hardwiring a connection to the communicator's antenna leads, though disconnecting the original antenna is not required. The communicator can still transmit using its normal antenna, activating the signal booster as required.

SUBVOCAL MICROPHONE ◇

Subvocal microphones allow a person to use a radio with barely a sound. Subvocalization is like whispering, except it is much quieter, with the sound barely passing a person's lips. The microphone rests against the person's throat and is activated by the person "speaking" or by a button on the unit. Subvocal microphones are meant for stealthy communications, so they are not something the public regularly uses.



5-2-1

COMMUNICATIONS □

Item	Rating	Range	Wt	Cost	Code
Masuo C-Link	-4	2km	0.1	90	3-E0
Public Comm Terminal	-	-	-	*	1-E1
Terra Orbital Laser Comm	+1	500m	0.25	250	6-B2
InterLink Systems Hydra Comm Network					
Command Unit	+1	150km	25	2500	7-B3
Transmitter Station	+1	150km	8	1500	6-B3
Platoon Unit	+1	15km	3	600	5-B2
Voice Scrambler	-	-	0.25	300	5-D2
Signal Scrambler	-	-	-	600	6-C2
Signal Repeater	-3	5km	2	75	4-D0
Laser Repeater	+1	10km	3	300	5-D1
Signal Booster	+1	+5km	0.5	150	5-D0
Subvocal Microphone	-	-	0.1	10	5-D1



▶ AUDIO-VISUAL

The size and power of audio-visual systems have reached a point where almost anything is possible — for a price. Anyone who can afford to has a wide selection of audio-visual options available to them; the close quarters of space life requires some time spent in *solitary diversions*.

Thumping bass was left behind on Earth; it is the only thing that the soundproofing systems of modern habitats have trouble dealing with, and there is no place in space for the *invasion of another's personal space*. Accordingly, most audio devices are designed as simple earphones for individual use. Music is sold exclusively through network outlets; there is no need to purchase it as a physical medium.

Cameras are available in digital and film models, with digital models making up the majority of the consumer market. A quality digital camera is far less expensive than its *film analog*. *Film grain* is still admired for the character it lends photography, but most artists choose to simulate the effect digitally. Those who disagree are very vocal and dedicated in their loyalty to film.

◇ BASIC EARPHONES AND PLAYERS

Earphones are simple wireless devices that use a PAN interface to communicate with a designated media player. A player is little more than a memocard-sized sleeve, usually with some kind of clip-on attachment, and a PAN interface. Each memocard can store ten times its rating of high-quality music. (A ten-minute memocard becomes a 100 minute audio memocard.) Users can place anchors anywhere in the music for quick reference to their favorite portions.

◇ SPEAKER SET

Sometimes a more encompassing audio solution is needed. Usually, this means a standard speaker set: a brace of a dozen or so small speakers, barely larger than earphones, that can be *mounted anywhere in a five meter radius* to provide a complete audio environment. For best performance the playing device must be set for the precise location of each speaker. The most powerful of these systems are usually found in workpods and small utility craft, giving them a 'trucker' image.

◇ TRENT 240X CAMERA

The Trent 240X is an entry-level camera for the casual user. It is very small and lightweight, measuring six by ten by two centimeters, and massing less than a tenth of a kilogram. Performance is satisfactory, though the advanced options of higher-end cameras are missing entirely.

◇ MICROCAMERA

Microcameras are produced by many companies to remarkably similar specifications. Nominally they are for use in other consumer products, like displays and headsets, which often have basic cameras built into them for video communications. When sold individually they are intended for use as replacement components. In fact, most such sales are to *private investigators*, or just plain unlicensed snoops, seeking to use them as a poor man's spy device. Microcameras are cylinders about a five millimeters long and two across. To be used as a spy device, a microcamera must be equipped with a recording peripheral or transmitter.

◇ VIRTUAL REALITY

The possibilities of virtual reality technologies have lead to the quick adoption of a wide variety of hardware, suited to the needs and affluence of varying demographic groups. Limited virtual reality still remains the most common, with immersive VR a distant second. The barrier for *immersion technology* is the vast expense of the feedback suit, which has proven prohibitive to all but the most dedicated VR fanatics. Much more common than the immersion suit is a simple set of trackers placed at key points on the body, that allow the user to move normally in the virtual environment, albeit without any tactile feedback. Most VR sets have enough interactivity to be used for mechanical telepresence over a short range, before speed-of-light communications lag makes it impractical.

◇ VR SUIT

The first thing a neophyte will notice when putting on a VR suit is the mass of the suit; the combination of sensors and feedback devices needed to provide a convincing tactile illusion are heavy. The item wears much more like a military flight suit than anything else. Each VR suit comes with a small onboard processor block that determines the suit's reactions to the environment. Suits that provide more than pressure and texture feedback are extremely rare, and more than ten times as expensive as the standard type. VR glasses are needed to complete the suit and cost an additional 150 credits.

SURVEILLANCE ◀

Information is a very valuable commodity in a technologically advanced society. Large amounts of information are exchanged every second as light, electrons, or sound. The ability to capture someone else's information can give a person or business an edge on a competitor, or destroy their reputation; it can also be used to protect innocent people from harm. Which ever way information is used, there are numerous means to gathering that information.

MICROPHONES ◇

Not all listening devices are minute packages planted in a fixed location. Advances in technology have improved surveillance microphone systems that can pick up sound vibrations through walls. Any microphone system only operates effectively at fairly short ranges; any distance further than 100 meters lessens the reception quality geometrically.

Directional microphones are strictly line-of-sight; any intervening object will block sound reception. Both microwave and laser microphone detect vibrations of sound against surfaces like external walls and windows. Windows are the favored target for these devices, since any wall thicker than ten centimeters greatly degrades the reception quality.

DATALINE TAPS ◇

Dataline taps require a physical connection to the dataline. This means placing the tap in the transceiver for a radio signal, into the fiber optic line, or rarely, the conductive wiring. In each case, the dataline tap uses a recorder or burst transmitter to relay the information collected, though the recorder requires the data be physically collected. Some systems — especially those on Earth — still use conductive wiring for datalines. The wire tap is connected to exposed wire or leads by clips to detect the pattern of electrical impulses.

The fiber optic tap is the most difficult to place since a data loss of more than a few microseconds will, at the least, alert the operator to a possible maintenance problem. Longer disruptions are viewed even more suspiciously. The unit fits around the target line, and once it is securely in place, a special optical blade cuts into the fiber optic line. The blade is a few microns thick, and is photo-sensitive, so each pulse of data is translated into a small electrical charge of the blade that the unit stores for collection or transmission.

The transceiver tap is actually a sophisticated transceiver of its own. The tap need only be connected to, or placed in close proximity to, the receiving or transmitting antenna. A uni-directional antenna ensures that burst transmissions by the tap don't interfere with the transmissions of the tapped antenna.

DISCRETION DEVICES ◇

Discretion devices are designed to disable listening devices and systems. They are usually quite small, and are often disguised as jewellery. There are three types of discretion devices for defeating different eavesdropping technologies. These devices are available individually, though some high quality designs do incorporate one or more of the devices. (Add together the cost of the devices included.)

White noise, or "static noise," generators are the most common discretion device. They emit sound that does not interfere with conversation, but does garble any attempt to listen to a conversation with a bug or microphone. The white noise effectively blankets the normal conversation, making it very difficult to sort out what is said. A variation on this device produces randomized vibration "static" in contact with a wall or window. The contact discretion device effectively masks the vibrations that conversations produce, thus defeating laser and microwave microphones.

Many listening devices broadcast the sound they pick up to another receiver close by. The radio frequency (RF) discretion device is a miniature radio static generator that covers a wide range of the RF band. Since the transmitting device doesn't use much power, the RF discretion device uses sufficiently low power that it does not interfere with normal broadcast RF traffic.

DATALINE SCANNERS ◇

A dataline scanner uses the cable's signal noise to detect a tap on the line. Dataline taps connected to conductive wiring can generate feedback that is detectable. The scanner sends out its own signal and analyzes how it changes. The most foolproof method to scan a dataline is visual inspection of the hardlines. The visual dataline scanner, or VDS, is actually a small, remotely controlled robot that can travel through dataline conduits looking for physical tampering. This is the only way to defeat a correctly placed fiber optic tap.

5.4





◇ LISTENING DEVICE SCANNER

Listening device, or "bug," scanners detect the minute transmissions and power signature of listening devices. The scanner is a wand antenna that is passed over a surface to detect any transmissions or the device's minute power signature. The system is not infallible, however, since some advanced listening devices include a sleep mode or remote activation. Even when a scanner doesn't detect a bug, it is still prudent to use discretion devices to ensure the privacy of any conversation.

▣ SURVEILLANCE EQUIPMENT

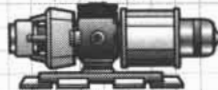
Equipment	Wt	Cost	Code
Directional Microphone	0.25	50	5-D2
Laser Microphone	0.5	75	6-C1
Microwave Microphone	0.5	75	6-C1
White Noise Generator	0.1	25	4-D1
RF Discretion Device	0.1	30	5-D1
Vibrational Discretion Device	0.1	30	5-D1
Fiber Optic Tap	0.1	200	7-B3
Transceiver Tap	0.1	150	6-B3
Wire Tap	0.1	75	4-C3
Listening Device Scanner	0.2	100	6-C0
Dataline Scanner	0.5	60	4-D1
Visual Dataline Scanner	0.1	150	6-D2

▣ AUDIO-VISUAL EQUIPMENT

Item	Price (credits)	Mass (kilograms)	Availability Code
Earphones	15	.02	2-E0
Audio Player	40	.05	2-E0
Speaker Set	90	1.2	3-E1
Trent 240X Camera	30	.75	4-E0
Microcamera	5	.005	4-E2
VR Suit	2500	5	6-E0
VR Glasses	150	.1	4-E0



VISUAL DATALINE
SCANNER



SIGNAL REPEATER



MICROPHONE



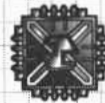
SIGNAL BOOSTER



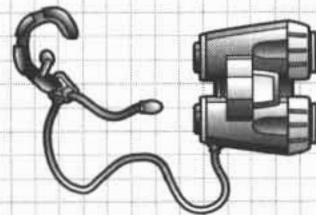
DATALINE TAP



DISCRETION JEWEL



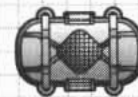
SIGNAL SCRAMBLER CHIP



TERRA ORBITAL LASER COMMUNICATOR



DISCRETION JEWEL



SUBVOCAL MICROPHONE

POINT OF DEPARTURE: TANGLED WEB ◀

Tanji glared at his ham-on-rye sandwich and sliced apple. The dish had earned his enmity on the very first day of the job, but it was still his most palatable option to blend in with the café clientele. His quarry sat five tables over — stunning as usual — rising to greet her dining companion. The latter was a small man with craggy features, the latest in a string of corporate suitors interested in the woman's bioengineering secrets. The last four had gone away empty-handed, or so Tanji presumed. According to his employer it wasn't his job to attempt to discern the real meaning of the technical code-words that were bandied about. Some corner of Tanji's mind was concerned that he might somehow learn too much, but he doubted this was that sort of assignment: the pay wasn't good enough.

The directional microphone Tanji had placed beneath his table fed mundane pleasantries into his ear. He struggled gamely to keep his eyes from glazing over; patience was not the virtue that had commended him to this job. Suppressing a grimace, the private eye grabbed his sandwich and took a delicate bite, trying his best to seem appreciative. The world of corporate espionage and bioengineering secrets was turning out to be interminably dull. Technically he didn't have to listen to what the two conspirators were saying, but he did so anyway to stave off boredom.

Tanji chewed thoughtfully. The conversation was unusually frank — perhaps this assignment was not far from over? His mouth was still full when a bear of a man sat opposite him, pushing an object across the table, right up underneath his nose. It was familiar from countless private eye vids: a SolaPol badge. Tanji sighed. He hated clichés.



5.5.5

BACKGROUND ▼

Information is a valuable commodity. This makes industrial espionage very lucrative, but not always; after all, the information remains valuable only as long as it remains a secret. For this reason, shadow plays and intrigues are common among the high technology corporations of the Solar System. They are playing a delicate balancing game between legitimate inquiries and illegal plagiarism.

In the above situation, the private investigator is actually following a company employee, turned SolaPol informant, who holds information about the corporate black projects she's been involved in. The company has hired the private investigator to find out who the informant is talking to and about what, to help them determine what type of action they need to take — legal or otherwise. The company is likely involved in something illegal, possibly even an Edicts violation.

5.5.1

SUGGESTIONS ▼

The key to this adventure is the level of tension. While things start out slowly, events rapidly pick up the pace to engulf the Players in a web of intrigue. The Player Characters could easily be SolaPol agents, or a team of private investigators, or even company employees. Whichever way, the Players will need to juggle many balls as they try to get the information they need to find out what is going on.

As SolaPol agents, the Players now have to deal with what the investigator knows and who he's working for. The PCs will need to interrogate the investigator about all these things. Depending on how the Gamemaster plays the investigator, this could be easy or difficult. There are many unknowns that the Players will need to find answers. If the investigator is freed, will he report to his boss? Is the informant's safety at risk?

As members of an investigative team, Players find themselves in hot water with SolaPol. They are on the receiving end of the SolaPol interrogation. Where do their loyalties, or sympathies, lie? The suit? The informant? How Players react to this situation will largely depend on how the GM plays the SolaPol NPCs, and how much information they already have or can get a hold of.

As company employees, the possibilities are endless. Maybe they are collaborating to stop, or promote, illegal activities. The Players could be the suits making the decisions that are likely to have deadly consequences. One major point to remember about this situation: the company is likely ready to kill to preserve its secrets. Violations of the Edicts have major consequences for the people involved in black projects, so they are quite willing to commit murder to keep their secrets.

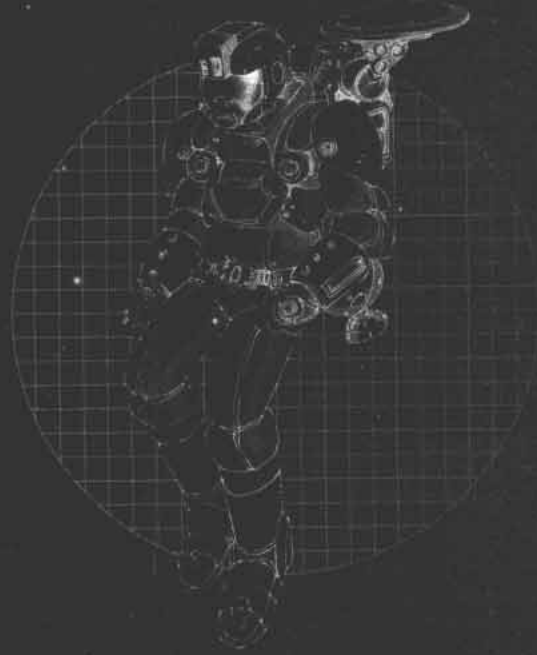
5.5.2

end of section 5.5 point of departure: tangled web

SPACE EQUIPMENT



☐ ♀ ♂ ♁ ♃ ♄ ♅ ♆ ♇ ♈

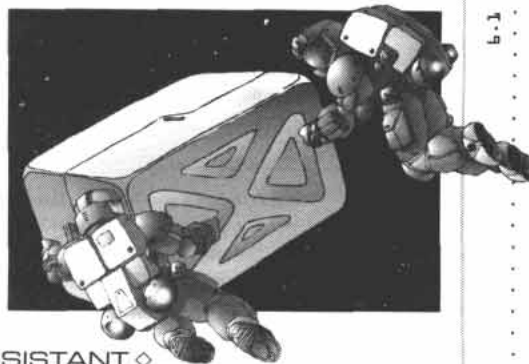


CHAPTER SIX: SPACE EQUIPMENT

PERSONAL EQUIPMENT ◀

People need certain tools to carry out their daily lives. Whether at home, work or play, individuals rely on certain items to make tasks easier, or allow them to do things quickly and efficiently. It is impossible to list every thing that a person could want or need, so Players and GMs must compromise on the level of detail they want to include in their game. These are some of the more common items available in the 23rd century Solar System.

These are some of the more common personal items available on the market. The items have been selected in regard to their usefulness to adventurers more than anything else; it is obvious they represent only a very small fraction of the tools that exist on the open market.



ABRAHAM MICROGRAVITY ASSISTANT ◊

When CEGA gained control over the Orbitals, the resultant influx of untrained personnel resulted in a pressing need for an efficient navigational aide for the less graceful immigrants. Abraham Microgravity Assistants are small drones intended to help people move about in low gravity environments. When a user signs up for Abraham service, they are issued a unit, the design of which changes whenever new specifications are issued or when the unit is returned to a dealership for quarterly servicing. Not content to simply let these devices serve as navigational assistants, the designers also incorporate increasing functionality with each new revision.

The latest revision of the Abraham is an eighteen-centimeter sphere with four small handgrips and six vectored air/cold-gas reaction fan-thrusters. Most people just use the Abraham to cushion their arrival at a far wall, or to get them moving again when air resistance has brought them to an unintended stop (+2 to Z-Gee Skill tests), but the device would have long ago passed into obscurity if that were all it was capable of. More than a simple utility device, the Abraham is now a cultural phenomenon. Many children grow up with one (which is usually painted in a brightly colored livery designed to keep the child's attention) that teaches them how to move in microgravity and rescue them when stranded. With the help of a small video screen, an Abraham unit can display short messages or animations, not to mention its whimsical, almost playful mode of interaction. Many children become attached to it, treating it as an immortal and ever-adaptable pet. Other versions of Abrahams can help perform a wide range of housekeeping chores. At least five per cent of the Orbital population has a well-loved Abraham unit, either in their quarters, or by their side.

BREATHING APPARATUS ◊

A respirator is a face mask that covers the nose and mouth to provide oxygen when a full suit is unnecessary. The respirator can use an independent air supply, or it can use filters and chemical scrubbers to provide clean air from the immediate environment. Short trips into the Martian atmosphere are possible with a respirator; however, proper clothing and goggles are required to prevent excessive UV radiation exposure.

Filter masks prevent dust and particles from entering the lungs. Filter masks do not provide air to breathe, they simply filter the indigenous atmosphere. The emergency breather is a full mask that covers the entire face and head. Slipping the breather over the head, the user seals the emergency breather around the face by several straps at the sides of the breather. A two hour air supply is included in a tank carried on a shoulder strap.

BEACONS ◊

The Rock Industries Claim Beacon is used to identify ownership and claim status of asteroids and geographic locations on moons and planets. The beacon is a simple radio transmitter that broadcasts a repeated message declaring ownership and claim file number, and the pertinent details related thereto. On more than one occasion disputes over the status of a valuable asteroid or area has arisen from the relocation or disabling of claim beacons. As a precaution, claimants usually place additional hidden and inactive beacon(s) to backup the original.

The Personal Emergency Locator Transceiver (PELT) is a compact version of a ship ELT. Combining a transmitter and receiver, a lost or injured person can be located by other party members or searchers with greater ease. The rescue beacon on a space suit is equivalent to a PELT. OzoneTech is the leading manufacturer of PELTs.

LIGHTING ◊

Sinclair GlowRods are a brighter, two-hour version of the company's glow stickers, packed five per box. Bending the polymer tube initiates the chemical reaction that produces the light. The Illuminator lamp is a vacuum-capable area light. Whether running on an internal or external power source, it provides bright light over a circular area with a 100 meter diameter. The lamp sits on top of a four-meter post connected to a base containing the power source and external connections. All flashlights and lamps can use special ultraviolet and infrared filters to provide alternate illumination options.



◇ CLIMBING GEAR

Climbing gear is used on planetary surfaces and to help move about on planetoids. The auto-piton is a climbing aid that fires a metal anchor into rock. It is easy to use with a single hand. The powered ascender is used to carry a person up any line or cable capable of handling the weight; it looks like a large flashlight with a slot down the side for inserting the line. A handle, with the ascender controls, and a long tether long enough to put around the foot, complete the unit.

◇ VISIONARY SYSTEMS IMAGER DEVICES

Laser imagers use multiple laser emitters and receivers to construct an accurate holographic representation of the area within a 90 degrees arc, up to 250 meters. The imager accepts standard memocards to save copies of the scans. Completing multiple scans from different points of view allows the imager to create and display a 3D representation on a holographic projector. The laser imager unit is 30 by 20 by 10 centimeter and comes with a stabilized tripod mount for accurate operation. A military version that uses microwaves to see through poor weather conditions and smoke is available.

Thermal imagers detect the differences in heat emitted by objects. The relative temperatures are displayed as a false-color image on the unit's display, or a video output connection can send the information to a screen. The imager looks like a large pair of binoculars with a small control pad attached. It accepts standard memocards to save copies of the scans.

◇ STORAGE AND TRANSPORTATION CASES

Storage and transport cases are smaller versions of their larger cousins, cargo containers. Storage cases have a volume of 0.25 cubic meters and small data panel for listing the inventory of the case. They have a lock that is opened by a numeric code, but the lock is not adequate to deter a serious thief (STR versus Threshold 4 to pry open). The secure storage case uses a thumbprint scan to open the lock (Electronics versus Threshold 5 to bypass), and the lock mechanism is much more durable (STR versus Threshold 9 to pry open). Transport cases are sealed against vacuum, and made of stronger materials. They have a large 0.5 cubic meter volume and the same data panel and lock system as a storage case. The secured version uses the same security system and lock as a secure storage case.

◇ RESTRAINTS

Rugged polymer sheets and nets feature multiple attachment points, varying sizes, plus options like camouflage patterns and reflective coatings, make them extremely useful. Smaller nets are often used to secure personal items in zero gravity conditions. Velcro is widely used in microgravity environments. Reusable and permanent adhesive backed strips and patches are available in a wide range of sizes and colors. Until the late 21st century, velcro was used to secure people to a ship's "floor". As the human occupation of space increased, and people adapted to the microgravity environment, this practice passed out of usefulness since the majority of the space population didn't require such "amateur methods" for moving about.

Elastic cords and arresting tethers are commonly used to keep a person stable in microgravity. An elastic cord will stretch to allow some freedom of movement, but moving too quickly without being prepared can lead a person or item to smack into a wall or console. Arresting tethers are a gentler solution to remaining relatively immobile. The special tether reel is set at a particular length by a switch. Any tension, while the switch is engaged, is countered with a geometric increase in the tethers resistance. If the tether becomes slack, the reel takes up the slack and then releases it until it reaches the set point.

Composite tape, a descendant of 20th century duct tape, is an indispensable tool with excellent adhesive qualities and composite reinforced backing. It is widely used for making temporary repairs and securing items. Composite tape is available in 20 meter rolls and comes in a wide variety of colors. It is manufactured almost exclusively by the RG Tape Company.

◇ SPORT TRANSPORTATION EQUIPMENT

Parafoils are a regular sight in colony cylinders. People not daring enough to fly the high speed, or muscle-powered, flyers will opt for the parafoil to experience flight. Parafoils are parachutes that are built with an airfoil profile. The leading edge of the parafoil is open, allowing air to fill the chambers that give the parafoil its lifting shape.

Bicycles are common personal transportation in colony cylinders and surface habitats. In many places, using a bicycle gains the user a small rebate on their housing fees. They are available in both single and double rider versions. Some bicycles come with an electric motor in a small housing over the rear wheel. When the rider isn't pedaling or applying the brakes, the motor takes over at the push of a throttle switch to drive the bike at a maximum speed of 30kph. When the rider pedals, the batteries are automatically recharged from the drive wheel in contact with the rear tire.

◇ MARS TENT

The Mars tent is a two-person shelter for use on Mars. The aluminized polymer tent is inflated by directly pumping Martian atmosphere into the frame and floor. The same system also pulls oxygen and nitrogen from the atmosphere into the tent, so an occupant can remove his Mars suit. The entire tent is extremely robust, and any malfunction triggers a loud alarm, giving the occupants plenty of time get into a suit. The system requires recharging after three nights of use.

PERSONAL EQUIPMENT □

Equipment	Wt	Cost	Code
Abraham Microgravity Assistant	4	150/quarter, 450/year	2-E0
Sinclair Glow Rods (box of 5)	0.5	10	3-E0
Illuminator Lamp	6	50	5-E0
Infrared Light Filter	-	5	5-D0
Ultraviolet Light Filter	-	5	5-D0
Visionary Systems Thermal Imager	1	300	6-C2
Visionary Systems Laser Imager	2	400	5-D2
Visionary Systems Microwave Imager	2	500	6-B2
Storage Case	3	20	3-E0
Secure Storage Case	3	35	4-E1
Transport Case	6	50	4-E0
Secured Transport Case	6	65	5-E1
Polymer Sheet (2x2m)	2	10	3-E0
Polymer Net (2x2m)	1.5	8	3-E0
Velcro Patch (Box of 5)	0.1	1	2-E0
Arresting Tether	0.5	10	3-E0
Elastic Cord (0.5m)	0.1	1	3-E0
Composite Tape	0.25	2	2-E0
Parafoil	8	100	4-E1
Personal ELT	0.25	80	4-E0
Auto-Piton	0.25	30	4-E0
Mars Tent	5	200	4-E0 (Mars only)
Powered Ascender	1	40	4-E0
Respirator	1	15	4-E1
Filter Mask	0.1	1	3-E0
Emergency Breather	1.5	40	5-E1
Bicycle (one person)	8	150	3-E1
Bicycle (two person)	14	250	3-E1
Bicycle (powered, one person)	11	200	4-E1
Bicycle (powered, two person)	18	300	4-E1
Rock Industries Claim Beacon	20	1000	5-D1

end of section 6.1 personal equipment

MANNED MANEUVERING UNITS ◀

Every movement in freefall is governed by Newton's Laws of Motion: "for every action there is an equal and opposite reaction." Spacers sometimes refer to the laws as "Newton's Curse" when running low on reaction mass and performing complex orbital maneuvers. For people involved in long duration extra-vehicular activities, the simple act of moving a tired arm brings about Newton's Curse as the body moves in the opposite direction to keep the center of gravity at rest. Manned Maneuvering Units (MMUs) are a tool to help EVA personnel perform their jobs quickly and efficiently while keeping control of their motion and position in space. From the simple to the complex, a variety of MMU models are available depending on the situation and the user's needs.

B.2

MMU OPERATIONS ◇

The controls for MMUs are standardized between every model of MMU manufactured in the Solar System. A programmable switch is tied to each of the six basic motions: rotation about the x-axis (roll), y-axis (pitch) and z-axis (yaw), and translation along the x-axis, y-axis and z-axis. By default, the left hand controls rotation, and the right hand controls translation; however, the user can reverse which movements are controlled by each hand. A failsafe switch built into the controls ensures that the MMU does not activate when a switch is unintentionally hit. The most common control used is a large rocker switch that releases a controlled burst of reaction mass (producing a small fraction of a gee acceleration) for a single activation. The switch must return to the neutral position before another command is activated. This method allows for great control since a single burst that starts a motion in one direction can be cancelled by a single burst in the opposite direction.

MMUs can also be operated by voice commands. The degree of control allowed by the MMU is dependent on whether it is equipped for standard or advanced commands. In both cases, the voice commands can be deactivated prior to use. The MMU Voice Commands table on the following page lists the voice commands usable with each level of control. Basic switch-activated MMU motions are also available for vocal hands-free operation on advanced models. Regardless of the control system used, the MMU's computer attempts to make the most efficient use of the available reaction mass.



MMU OPERATIONS (CONT.)

Voice commands are given in a specific sequence of commands with pauses, and no other sequence will activate the system. First, the voice command system is brought to an active state by the spoken word, "Move," informing the system that the movement command and parameters will follow. Since communication channels are normally opened by speaking, an active MMU voice command system temporarily routes all speech through an internal buffer that filters conversations to avoid accidental activations. The next word spoken is the actual command the MMU will perform. Some commands also require parameter information, following the command word, to function. The MMU Voice Command table summarizes each command and its parameters. Parameter options are divided by "/" to indicate the options available; commands with parameters will not function without the proper parameter information. In case a command is misspoken or incorrect, "Cancel" will clear the command sequence queue (i.e. the user must use the command "Move" before using another command.) Commands are executed one at a time in sequence. (i.e. The user can give another command while the MMU executes the first command sequence in the queue.)

The standard commands encompass a variety of MMU movement control issues that can be very hard to overcome without a great deal of practical experience. "Stabilize" provides the user with a quick and easy way to stop any rotation, and is the most common command used by personnel new to EVA operations. "Stop" is another useful command for rookies, allowing them to quickly cancel their motion. Users new to MMU operations are always strongly cautioned to only use the voice commands if they get into trouble controlling the MMU. Most organizations provide extensive training in a safe environment prior to actual EVA operation, and then rookies are always paired with a more experienced user.

In addition to all the standard commands, advanced voice commands allow for normal movements with precision control via an inertial navigation control system. Providing the motion command and a motion parameter, the navigation system moves the user as specified. "Translate" moves the user along one of the three axis that defines a direction relative to which direction the user is currently facing. Translation along the "X"-axis moves the user forward ("Plus") and back ("Minus"). Translation along the "Y"-axis moves the user right ("Plus") and left ("Minus"). Translation along the "Z"-axis moves the user up ("Plus") and down ("Minus"). "Rotate" turns the user about one of the three axis. Rotation about the "X"-axis turns the user on their side, turning to the right ("Plus") and left ("Minus"). Rotation about the "Y"-axis moves the user forward ("Plus") and backward ("Minus"). Rotation about the "Z"-axis moves the user right ("Plus") and left ("Minus"). The "Hold" command cancels any an rotation about, or translation along, a specified axis. The "Rapid" command is used in place of the "Move" command to specify the MMU carry out the maneuver at quickly as possible, thus consuming reaction mass at quadruple the normal rate (four BP per one MP).

MMU VOICE COMMANDS

Standard MMU Command	Action	Command Syntax
Move	Prepares system to receive commands	"Move."
Cancel	Clear command sequence queue	"Cancel."
Stabilize	Stops any rotation about axis	"Stabilize."
Stop	Zeroes relative motion along axis	"Stop."
Command	Turn voice command movement on/off	"Command. Activate/Standby/Deactivate."
Advanced MMU Command	Action	Command Syntax
Translate	Shift along an axis	"Translate. X/Y/Z. Plus/Minus (distance in meters)."
Rotate	Rotate a fixed arc about axis	"Rotate. X/Y/Z. Plus/Minus (number of degrees)."
Hold	Maintain absolute position	"Hold. Lock/Unlock."
Rapid	Perform high energy movement	"Rapid. (Command). (Parameters)."

MANEUVER ROD

Maneuver rods are simple devices for emergency movement in zero gravity. The rod is actually a cylinder of compressed gas with a special valve. Each time the valve's control is pressed, a controlled burst of gas is released. As the gas is released, the internal pressure decreases, leading to reduced thrust the more it is used. Two wrist straps are attached to the maneuver rod's exterior to ensure the user doesn't lose control of it. Effectively using the maneuver rod requires some training and practice. A character with the Survival (Space) skill can use a maneuver rod effectively. Untrained characters achieve less than consistent, and sometimes painful, results.

MOBILE SUIT SYSTEMS "BROOMSTICK"

The Mobile Suit Systems "Broomstick" is a long rod with a pair of foot holds and a pair of hand grips. At each end of the rod is a cluster of thrusters and reaction mass tanks. Each hand grip has three buttons to choose the thruster command, and twisting the grip activates the thrusters. The left grip controls yaw, pitch, and roll. The right grip controls translation along the x-, y-, and z-axis. Each time a button is selected, and the grip twisted, a controlled burst of gas is released. This allows easy control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

MOBILE SUIT SYSTEMS WANDERER MMU ◇

The Mobile Suit Systems Wanderer MMUs fit the mission pack of any standard space suit design. The MMU consists of an upper and lower set of thrusters and reaction mass, with a pair of side panels that secure the MMU to the mission pack and mount the controller arms. The thrusters are set into the ends of diagonal extensions at each corner of the MMU. The Wanderer Series uses heated nitrogen for reaction mass.

The MMU controller arms have a keypad at each end with the arms extending to the front of the user at waist height. A switch locks out keypad inputs to prevent accidental thruster bursts. The left keypad controls yaw, pitch, and roll. The right keypad controls translation along the x-, y-, and z-axis. Each time a key is pressed, a controlled burst of nitrogen is released. This allows easy control since a single burst that starts a motion in one direction is stopped by a single burst in the opposite direction.

MOBILE SUIT SYSTEMS EXTENDER SERIES ◇

The Mobile Suit Systems Extender MMU is a large unit that encompasses the entire mission pack of any standard space suit design. The MMU has a "socket" that fits a standard mission pack when the user backs into; lifting the controller arms into position at each waist locks the MMU onto the mission pack. Because the MMU is so large, the upper thrusters are simply placed in the corners, while the lower thrusters are placed on two extensions from bottom on the left and right side.

The MMU is operated in the same manner as the Wanderer; however, the Extender also connects to the resupply sockets on the mission pack. This increases the suit's effective endurance with additional power and air supplies carried by the Extender MMU. (Adds four hours to the suit's endurance.) This makes the Extender popular with construction companies since the individual modifications to the suit of every employee would be prohibitive (since they're not all working at the same time and can rotate the use of the MMU.)

ORBITAL SYSTEMS INC. CREW MANEUVERING UNIT ◇

The Orbital Systems Inc. crew maneuvering unit (CMU) is large scale version of the individual manned maneuvering unit. The CMU was designed to accommodate moving an EVA crew working on the same job or in close proximity without requiring multiple MMUs or more expensive means of transportation. Available in five and nine person models, the CMU has an open control position at the front of the unit, with controls similar to an MMU, but it also has additional docking points for additional people along a spine. Each person locks into a position a position, with the operator taking the forward position.

Instead of carrying passengers, the CMU can carry cargo, equipment or specialized modules in a crew position. Power supply and space suit recharge modules are the two most common modules available. A module carrying additional reaction mass for the CMU is a common inclusion for extended duration EVA due to time or distance requirements. Cargo modules have sufficient room for approximately one cubic meter of equipment and supplies, and do not sustain an independent atmosphere.

ADVANCED CONTROL OPTION ◇

Advanced MMUs are identical to a normal MMUs in every aspect except the degree of control. Advanced voice commands and inertial navigation allow the user greater flexibility and precision control of the MMU. Some of the commands available include precise rotation and lateral movements, stability and orientation correction (constant or specified), and moving at specific rates. Advanced MMU are only available to expert users since it is very easy to quickly deplete the onboard re-mass.

MANNED MANEUVERING UNITS ◇

MMU	Thrust	Re-Mass	Wt	Cost	Code
Mobile Suit Systems "Broomstick"	2	20	4	200	4-D1
Maneuver Rod	2	4	1	30	4-D1
Mobile Suit Systems Wanderer	3	40	10	400	4-D1
Mobile Suit Systems Extender	3	80	20	900	5-D1
Orbital Systems Inc. CMU					
Five Person	3	160	200	5000	6-D1
Nine Person	3	160	400	12,000	6-D1
Power Module	-	-	60	750	6-D1
Recharge Module	-	-	55	1200	6-D1
Cargo Module	-	-	15	100	5-D1
Remass Module	-	+80	50	500	6-D1
MMU Advanced Control Option	-	-	-	+500	-

end of section 6.2 manned maneuvering units



E.9

► CONSTRUCTION EQUIPMENT

Humankind is forever building things, from houses to monuments of human greatness; all of this building is accomplished with tools. While it could be argued that anything a person touches is a tool, these tools are specific to the construction and maintenance of the artificial environments required for people to live in the space. This section does not list the mundane tools that have existed since humans began the climb up the technology curve to its current position.

Most solar nations follow the Standardized Space Construction Codes (SSCC) for building colony cylinders, space stations, ships and surface habitats. The SSCC specifications for fasteners, life support and power systems, and construction methods minimize the number of tools while maximizing the number of repair and construction jobs that can be carried out with them. Since the SSCC pre-dates the Fall, the codes have been updated numerous times. Some friction has developed in how to maintain consistency, since the Fall led to several variations on the SSCC as the solar nations were left to fend for themselves. This has caused problems as the Jovian SSCC Committee members don't approve of CEGA recommendations, and the Mercurians are resistant to any Venusian standards. Of course, these feelings are reciprocated.

◇ ADAPTABLE ADHESIVES

Advances in chemistry that led to advanced polymers and composites has also led to a broad range of adhesives for just about any application. If a factory supplied formula with the required properties is unavailable, the technician can create a custom formula with specific properties by varying the proportions of common base components, or modifying an existing adhesive. Modern glue guns carry several types of adhesive in different cartridges for ready use. The most advanced adhesives form a molecular weld between two surfaces. These adhesives are quite expensive and available for only a few materials. Because of their very specific properties, molecular adhesives cannot be modified.

Adding a catalyst for varying an adhesive's setting time is the most common alteration made. Depending on the proportions, an adhesive can set upon contact, or it can take days to fully cure. The general rule is that the less time it takes to set, the weaker the bond is; applications that require a high strength bond are left for the longest period of time possible.

Another frequent property commonly adapted is the adhesive's internal strength. For applications that require a lot of flexibility, an adhesive can imitate various degrees of rubber-like qualities. Exo-armor technicians often use a combination that provides near weld-strength compression and tension properties for quick repairs when things are rushed or equipment is short. A catalyst for increasing the adhesive's volume is also available, though this tends to decrease the strength in proportion to the increase in volume.

With the proper mixture of "doping" agents, adhesives can adopt physical properties not normally associated with polymers and composites. Depending on the additives, adhesives can conduct electricity, or transmit light like a fiber optic cable. Temperature resistance is another common modification.

◇ POLYFOAM™ CONCRETE

PolyFoam Concrete is a polymer foam that hardens to the consistency of concrete. The material is applied under pressure by a specialized spray applicator. Prior to spraying, a catalyst is mixed with the PolyFoam that causes it to harden quickly. The time it takes to harden is proportional to the amount of catalyst used; it takes between two and twenty seconds to set. PolyFoam cures to concrete consistency in one hour. Special fillers also allow for additional hardness and strength.

Because of the spray application and variable set time, PolyFoam is extremely versatile. Spraying PolyFoam into molds allows numerous shapes and possibilities for use. Special applicators let the PolyFoam be extruded onto a surface with a smooth finish. After a sealant is applied to excavated passages and chambers, Nomads sometimes apply a layer of PolyFoam™ to their corridors for structural integrity and smooth finish. An extruder for laying surface building foundations and roadways is also available.

▼ EVA TOOLS

Tools used during extra-vehicular activities and in microgravity feature several modifications that make them easier to use. The first change is the addition of a small clip and tether system for attaching the tool to a tool harness. Second, any high-speed/high-torque rotational power tools are geared down to make them easier to handle, specifically drivers and drills. This modification involves a smart processor that regulates the gearing, or else the tool would quickly start the user spinning. Finally, the tools are designed to be multi-functional without being clumsy. This usually involves a special internal cartridge of bits and driver heads.

◇ POWER DRIVER

Power drivers are specifically designed for the space construction industry. A power supply base attaches to ship or station components with an electrohesive system. The actual driver unit, with its associated controls, is connected to the power supply with an articulated arm. The unit carries a set of standard bits internally that can be changed at the press of a button. The fasteners are fed into the unit in cartridges that make them easy to handle, and eliminates losing the fasteners, in microgravity.

E.9.1



▶ PORTABLE SENSORS

Portable sensors are used throughout the solar system for a multitude of tasks — scientific research and exploration being the two most common. Sensors are designed to collect and organize data for the user, and then present it in a useful manner. All portable sensors are equipped with a mem-card slot, or a computer connection, for data recording. The operating ranges of a sensor unit can vary from light-years (astronomical) to a few hundred meters (geological) to an internal analysis chamber (biological or chemical).

Portable sensors operate in a manner similar to computer Modules. The types of sensor systems are divided into functional classes that correspond to Character Skills; Earth Sciences, Electronic Design, Electronics, Life Sciences, Mechanical Design, Mechanics, Medicine, Physical Science, and Survival are the most common general use sensor classes available, though the Players and GM may agree to add more. Using a sensor unit, the Character can gain information about things related to the sensor's class that are not otherwise obvious or observable.

Each sensor unit has a Rating. When a Character uses a sensor to gain more information, the Gamemaster sets a Threshold appropriate to the type of information. The Player makes a Skill Test using their Electronic Warfare skill, or their skill related to the functional class (whichever is higher), using the sensor unit's Rating to modify the result. If the skill roll succeeds, the Character gains details pertinent to the information being sought. A failed test provides inconclusive data, but a fumble gives completely incorrect information. If appropriate to another task the Character is performing, the GM can use the MoS to modify a related Skill Test. The actual time to complete a sensor scan is left to the GM's discretion.

◇ ROCK INDUSTRIES MODEL 5A PROSPECTOR

The Rock Industries Model 5A Prospector is a geological sensor for conducting mineralogical surveys. It is capable of identifying samples, examining geological structures, stress testing, and measuring seismic activity, to name a few. The Prospector is often referred to as the "Rock" or "rock hound" by prospectors and miners.

◇ BENFORD ENGINEERING SERIES

Benford manufactures several models of sensors corresponding to the different engineering disciplines. They are commonly used for monitoring experiments, diagnosing problems, and detecting early signs of system failure. Benford sensors are representative of the standard engineering sensor.

◇ LIFETECH INDUSTRIES GENETIC SCANALYZER

The LifeTech Industries Genetic Scanalyzer is a standard piece of equipment for bio-genetic research and observation. The sensor can analyze and report preliminary findings about a DNA sample within minutes, with a complete deconstruction taking a few hours. A basic database of genetic identifiers can identify the DNA type, but more detailed information is only available in conjunction with a computer running a Life Sciences Module.

◇ CHEMLOGIC MARK IV CHEMICAL ANALYZER

The ChemLogic Mark IV Chemical Analyzer uses a variety of chromatography and spectroscopy tests to catalog and identify the chemical components of a sample. The Mark IV cannot provide data beyond the name and structure of a chemical, but it does provide a reference number for the Solar Chemical Reference Index. If the chemical cannot be identified by name, then the determined structure and test data are displayed.

▣ PORTABLE SENSORS

Model	Class	Rating	Wt	Cost	Code
Rock Industries Model 5A Prospector	Earth Science	0	3	1200	4-E0
Benford Series 131 Sensor	Electronic Design	0	4	4000	6-D1
Benford Series 223 Sensor	Electronics	0	2	600	4-E0
Benford Series 334 Sensor	Mechanical Design	0	6	5000	6-D1
Benford Series 419 Sensor	Mechanics	0	4	900	4-E0
LifeTech Industries Genetic Scanalyzer	Life Science	0	4	3500	5-B1
ChemLogic Mk IV Chemical Analyzer	Physical Science	0	2	2500	5-D1
Cathode Electronics Search and Rescue	Survival	+1	1	250	5-E1

POINT OF DEPARTURE: DIMMING PROSPECTS ◀

"Pay up Steve, the core profile is textbook M-type. Viable deposits of nickel and zinc at least."

"I'd love to, just tell me why the seismometer is doing a little dance."

"What? The coring?"

"No, this started up after; I don't think we destabilized anything. It looks like it's calming down now. Weird, though."

"OK, let's get this core out and packed and make for Ceres. We can register the claim and rest up there."

"It's always Ceres with you, isn't it? If I didn't know better I'd think that aide — Cindy isn't it? — at the Jovian consulate has caught your eye."

The prospectors started breaking the drilling gantry down, extracting the core directly into a vacuum-sealed case. Just as the entire apparatus was ready to carry back to the ship, a set of four figures in military-style hardsuits appeared on the local horizon, scarcely fifty meters away. Steve looked up, and clicked his helmet mic to a universal frequency.

"Hello folks, I've got good news and bad news. The good news is that I am a great mime, the bad is that this rock is mine."

"Correction," intoned one of the four suits, "this asteroid is the property of CEGA per the Naval Eminent Domain Act of 2196. You may discuss compensation with any CEGA consulate in the Solar System. Please be on your way."

Steve could feel his face flushing with anger, but the CEGA troops brandished their rifles, and the rock just didn't seem important anymore.



b.5.5

BACKGROUND ▼

With tensions rising between CEGA and Jovian Confederation, the need to secure the resources to fuel the arms race has brought the conflict in the Belt. Valuable asteroids are being "purchased" by military personal who offer prospectors a fraction of market value or "alternate forms" of payment. Many independents are finding themselves forced to choose sides at the end of a gun. Prospectors are becoming increasingly resentful as first one side, and then the other, bully their hard work from them. Unfortunately, they don't have the means to fight back, nor do they have the option to simply give their only means of support. Rarely do the powers that be protect their "independent" prospectors, but clashes over valuable resources are an increasingly common event.

The Nomads are too fragmented to mount an effective defense, but several of the larger clans will do their best to protect the livelihood of their members. In between appeals to the nearest embassies and secret deals with discrete mercenary groups, the far-off locations of the Belt are becoming a serious point of contention. No one, however, wants the frictions to snowball into anything bigger, like a full-fledged conflict — after all, there are plenty more rocks where the previous ones came from.

b.5.1

SUGGESTIONS ▼

The conflict between the Jovian Confederation and CEGA has repercussions beyond a shooting war. The increased presence of warships from both sides means that outright piracy has become a risky business. Privateering has increased with the granting of letters of marque to several pirate captains.

Players have a wide selection of character options under this scenario. As the prospectors, what are they going to do about armed people offering less than fair value for the asteroid? How to go about keeping the claim, or at least getting a better deal? As military personnel, how will they deal with the prospectors? While the Jovian Confederation is paying more, they are doing the same.

Friction between the militaries over a claim can present interesting problems. What happens when the Jovians come to collect an asteroid but CEGA is already mining it? Clashes between privateers and independent miners are also likely to have tensions running high. Hijacking shipments of ore bound for the opposite power will occur.

b.5.2

end of section 6.5 point of departure: dimming prospects



▶ PREVIOUS BOOKS' EQUIPMENT

With the introduction of the Availability and Legality Codes for equipment, it is necessary to provide updated information about equipment that has appeared in the **Jovian Chronicles Rulebook**, **Jovian Chronicles Companion** sourcebook, **Ships of the Fleet** sourcebooks, and **SolaPol Sourcebook**. The following tables included the necessary Code information for equipment from these sources. We have also recreated the item information in these sources in the *Appendix* to provide a convenient, single reference of all the equipment printed to date.

Most of the items are listed with a Code that can be applied system wide, or modified as necessary. All of the weapon Codes are listed by solar region given that different regions have different concerns regarding power, public accessibility, or moral opinion. These Codes were also assigned to be consistent with the Codes as they were developed in this sourcebook. There are likely to be differences between what has been assigned here, and the *de facto*, unwritten Codes established during the course of game play. If Players and Gamemasters do not wish to incorporate these Codes as written, suggestions for modifying the Codes are found on pages 7 to 9, *Availability and Legality*.

▣ RULEBOOK EQUIPMENT

Item	Code	Item	Code
Ares Meta-Compass	4-E0	Misawa Gas Mask	4-E1
Benford Mechanical Tool Kit	5-E0	Nakumacom Communicator	4-E0
Cathode H31-P Hand Mediscanner	5-E0	Nakumacom Headset/Wristcom	3-E0
C-Cure Listening Device	6-D1	NBC Survival Suit	7-C2
Celurite Communicator	4-E0	Newsman Audio/Video Recorder	5-E1
Corado Backpack	3-E0	OzoneTech Climbing Gear	3-E0
Desert Survival Suit	4-E0	OzoneTech Pick	4-E1
Diving Survival Suit	4-E0	OzoneTech Tent (20-person)	6-E0
Drug, Eurofan	5-D1	OzoneTech Tent (2-person)	4-E0
Drug, Relaxin	4-E1	OzoneTech Water Distiller	4-E0
Drug, Sedan	4-E0	Quinn Foods Ltd. Survival Ration	3-E0
Drug, Vaccine	3-E0	Rad Survival Suit	6-C2
Drug, Vitamax	5-E0	Sinclair Flashlight	3-E0
FarSight Binoculars	3-E0	Sinclair Glow Stickers (20 pack)	2-E0
Fire Survival Suit	5-D1	Sinclair Rope, 50m	3-E0
Forger Ltd. IR Goggles	5-E0	Sinclair Shovel	4-E1
JVD Electronics Satellink	6-D1	Sleeping Bag	3-E0
JVD Electronics Communicator	5-E0	StarCom Radio Flare	4-E1
LifeTech Ltd. Field Surgery Kit	6-E2	Stine Night Goggles	5-E1
LILU MultiPaz Electronics Tool Kit	4-E0	Survival Kit	3-E0
Masuo Datapad	2-E0	Syntheskin Ltd. First Aid Kit	4-E0
Masuo-PANet VR Terminal	4-E0	Vacuum Survival Suit	4-D1
MercMed Portable Hospital	7-E2	Winter Survival Suit	3-E0

▣ RULEBOOK MELEE WEAPONS

Weapon	Code	Weapon	Code
Club, Short	3-D1	Axe, Large	5-D2
Club, Medium	3-D1	Axe, Pole	6-D2
Nightstick	4-D1	Cutlass	5-D2
Quarterstaff, Wood	3-D1	Sword, Long	5-D2
Quarterstaff, Metal	4-D1	Katana	6-D2
Tonfa	4-D1	HummerKnife	4-B2
Knife, Small	3-D1	HummerMachete	5-B2
Knife, Large	4-D2	HummerKatana	7-B3
Machete	5-D2	Bow, Light	4-D1
Spear, Short	5-D2	Bow, Medium	5-D1
Spear, Long	6-D2	Bow, Heavy	6-D2
Hatchet	4-D1		

* Increase the Availability Threshold of electric melee weapons by one.

RULEBOOK RANGED WEAPONS ☐

Pistols	M	V	E	Or	L	Mf	Mr	N	J	S
6mm Revolver	5-D2	5-D2	3-D2	4-D2	5-D2	5-D2	4-D2	6-D2	6-D2	8-D2
9mm Revolver	6-C2	6-C2	3-C2	5-C2	5-C2	5-C2	5-C2	6-C2	6-C2	8-C2
9mm Heavy Revolver	7-C2	7-C2	4-C2	5-C2	6-C2	6-C2	6-C2	7-C2	6-C2	8-C2
11mm Revolver	7-C2	7-C2	4-C2	5-C2	5-C2	6-C2	6-C2	7-C2	6-C2	8-C2
7.5mm Pistol	5-D2	5-D2	3-D2	4-D2	4-D2	5-D2	4-D2	6-D2	6-D2	8-D2
9mm Pistol	5-C2	5-C2	4-C2	4-C2	4-C2	5-C2	4-C2	6-C2	6-C2	8-C2
11mm Pistol	6-C3	6-C3	4-C3	5-C3	5-C3	6-C3	5-C3	7-C3	6-C3	8-C3
9mm Autopistol	6-C3	6-C3	4-C3	6-C3	6-C3	7-C3	6-C3	7-C3	6-C3	9-C3
6mm Carbine	5-D3	5-D3	3-D3	4-D3	5-D3	5-D3	4-D3	7-D3	6-D3	8-D3
Rifles	M	V	E	Or	L	Mf	Mr	N	J	S
7mm Rifle	6-C3	6-C3	3-C3	5-C3	6-C3	5-C3	4-C3	7-C3	6-C3	8-C3
7.5mm Rifle	6-C3	6-C3	3-C3	5-C3	6-C3	5-C3	4-C3	7-C3	6-C3	8-C3
7.5mm Assault Rifle	6-B3	6-B3	4-B3	5-B3	6-B3	6-B3	5-B3	7-B3	6-B3	9-B3
8mm Rifle	6-C3	6-C3	4-C3	5-C3	6-C3	6-C3	5-C3	7-C3	6-C3	8-C3
15mm Sniper Rifle	7-C4	7-C4	5-C4	5-C4	6-C4	6-C4	5-C4	8-C4	6-C4	9-C4
Shotgun .410	4-D2	4-D2	3-D2	4-D2	4-D2	4-D2	4-D2	6-D2	4-D2	7-D2
Shotgun 12-gauge	5-C2	5-C2	3-C2	4-C2	4-C2	4-C2	4-C2	6-C2	4-C2	7-C2
Autoshotgun (12G)	6-C3	6-C3	4-C3	5-C3	5-C3	5-C3	4-C3	6-C3	5-C3	8-C3
Submachine Guns	M	V	E	Or	L	Mf	Mr	N	J	S
7.5mm	5-C3	5-C3	4-C3	4-C3	5-C3	6-C3	5-C3	6-C3	5-C3	7-C3
9mm	5-C3	5-C3	4-C3	5-C3	5-C3	6-C3	5-C3	6-C3	5-C3	7-C3
11mm	6-B3	6-B3	4-B3	5-B3	6-B3	6-B3	6-B3	7-B3	6-B3	8-B3
Grenade Launchers	M	V	E	Or	L	Mf	Mr	N	J	S
40mm Underbarrel Launcher	6-B3	6-B3	4-C3	5-B3	6-B3	6-C3	5-C3	8-B3	6-B3	9-B3
40mm Grenade Rifle	6-B3	6-B3	5-C3	6-B3	6-B3	6-C3	6-C3	8-B3	6-B3	9-B3
Gyrocs	M	V	E	Or	L	Mf	Mr	N	J	S
Gyroc Pistol	5-C3	5-C3	6-C3	5-C3	5-C3	5-C3	5-C3	6-C3	5-C3	7-C3
Gyroc Rifle	5-B3	5-B3	6-B3	5-B3	5-B3	5-B3	5-B3	6-B3	5-B3	7-B3
Gauss Weapons	M	V	E	Or	L	Mf	Mr	N	J	S
Needler	5-C2	5-C2	5-C2	4-C2	4-C2	5-C2	5-C2	6-C3	5-C2	7-C2
Gauss Rifle (8mm)	6-B3	6-B3	6-B3	6-B3	7-B3	6-B3	6-B3	7-B3	6-B3	8-B3
Gauss Shotgun	7-B3	7-B3	7-B3	7-B3	7-B3	7-B3	7-B3	8-B3	7-B3	9-B3
Beam Weapons	M	V	E	Or	L	Mf	Mr	N	J	S
Laser Pistol	4-C3	4-C3	6-C3	4-C3	4-C3	4-C3	4-C3	5-C3	4-C3	6-C3
Laser Rifle	5-B3	5-B3	7-B3	5-B3	5-B3	5-B3	5-B3	6-B3	5-B3	6-B3
Sniper Laser	6-B4	6-B4	7-B4	6-B4	6-B4	6-B4	6-B4	7-B4	6-B4	7-B4
Maser Pistol	5-B4	5-B4	6-B4	5-B4	5-B4	6-B4	5-B4	5-B4	5-B4	6-B4
Maser Rifle	6-B4	6-B4	6-B4	6-B4	6-B4	5-B4	5-B4	6-B4	6-B4	6-B4
Non-Lethal Weapons	M	V	E	Or	L	Mf	Mr	N	J	S
Taser	3-D1	3-D1	5-D1	3-D1	4-D1	4-D1	3-D1	4-D1	3-D1	5-D1
Sonic Stunner	4-D2	4-D2	6-D2	4-D2	4-D2	4-D2	4-D2	4-D2	4-D2	5-D2
Heavy Weapons	M	V	E	Or	L	Mf	Mr	N	J	S
6mm Machinegun	6-B4	6-B4	4-B4	5-B4	5-B4	5-B4	5-B4	7-B4	6-B4	9-B4
7.5mm Machinegun	7-B4	7-B4	4-B4	6-B4	6-B4	5-B4	5-B4	7-B4	7-B4	9-B4
11mm Machinegun	8-B4	8-B4	4-B4	6-B4	6-B4	6-B4	6-B4	8-B4	8-B4	10-B4
9mm Chaingun	7-B4	7-B4	4-B4	6-B4	7-B4	6-B4	6-B4	8-B4	7-B4	9-B4
24mm Anti-Armor Gun	7-B4	7-B4	5-B4	6-B4	6-B4	5-B4	5-B4	9-B4	7-B4	10-B4
60mm Light Mortar	9-B4	9-B4	4-B4	8-B4	9-B4	6-B4	5-B4	9-B4	6-B4	10-B4
50mm Rocket Launcher	8-B4	8-B4	5-B4	7-B4	8-B4	5-B4	5-B4	9-B4	6-B4	10-B4
Grenades	M	V	E	Or	L	Mf	Mr	N	J	S
Concussion	6-B3	6-B3	4-B3	5-B3	6-B3	5-B3	5-B3	8-B3	6-B3	9-B3
Fragmentation	5-B3	5-B3	3-B3	4-B3	4-B3	5-B3	5-B3	8-B3	5-B3	8-B3
Incendiary	6-B4	6-B4	4-B4	4-B4	4-B4	5-B4	5-B4	8-B4	6-B4	9-B4
Flesh	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	5-C1	4-C1	6-C1
Tear Gas	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	6-C1	4-C1	7-C1
Nerve Gas	8-A4	8-A4	6-A4	8-A4	8-A4	8-A4	8-A4	10-A4	8-A4	10-A4
Smoke Gas	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	5-C1

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn



WEAPON STATISTICS

► STICKS & CLUBS	ACC	DM	RANGE	ROF	AMMO	COST	WT.
Club, short	0	AD+5	close combat	n/a	n/a	5	1
Club, medium	0	AD+9	close combat	n/a	n/a	10	2
Nightstick	0	AD+6	close combat	n/a	n/a	20	1
Quarterstaff, wood	0	AD+7	close combat	n/a	n/a	7	2.5
Quarterstaff, metal	0	AD+11	close combat	n/a	n/a	25	4
Tonfa	0	AD+6	close combat	n/a	n/a	20	1
► KNIVES	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Small Knife	0	AD+3	Throw	0/2	n/a	10	0.25
Large Knife	0	AD+5	Throw	0/2	n/a	15	0.5
Machete	0	AD+8	close combat	n/a	n/a	20	1
► SWORDS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Long Sword	0	AD+11	close combat	n/a	n/a	100	1
Cutlass	0	AD+10	close combat	n/a	n/a	75	1.5
Katana	0	AD+13	close combat	n/a	n/a	300	1.5
► AXES & POLEARMS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Hatchet	0	AD+7	Throw	n/a	n/a	15	1.5
Ax, Large	0	AD+11	close combat	n/a	n/a	50	2
Ax, Pole	-1	AD+12	close combat	n/a	n/a	100	2.5
► SPEARS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Spear, short	0	AD+8	Throw	n/a	n/a	20	1.5
Spear, long	-1	AD+12	Throw	n/a	n/a	35	3
► HUMMERS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
HummerKnife	0	AD+9	close combat	n/a	30	150/10	0.5
HummerMachete	0	AD+15	close combat	n/a	30	325/10	1.5
HummerKatana	0	AD+20	close combat	n/a	30	1,000/10	2
► ELECTRIC MELEE WEAPONS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Any melee weapon	same	same/elec.	same	n/a	30	+75/10	same
► BOWS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
Light Bow	0	7	5/10/20/40	0/1	1	150/1	0.5
Medium Bow	0	10	6/12/24/48	0/2	1	200/1	1
Heavy bow	0	15	7/14/28/56	0/2	1	450/2	3
► HANDGUNS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
6mm Revolver	0	7	5/10/20/40	0	6	120/2	0.5
9mm Revolver	0	14	6/12/24/48	0	6	200/4	1
9mm Heavy Revolver	0	23	7/14/28/56	0	5	350/5	1
11mm Revolver	0	25	7/14/28/56	0	6	400/5	1.5
7.5mm Pistol	0	10	6/12/24/48	0	10	150/4	0.5
9mm Pistol	0	15	6/12/24/48	0	9	225/6	1
11mm Pistol	0	24	7/14/28/56	0	8	425/8	1
9mm Autopistol	0	15	8/16/32/64	1	40	475/25	2
► RIFLES	ACC	DM	Range	ROF	Ammo	Cost	Wt.
8mm Carbine	0	18	45/90/180/360	0	1	175/0.5	2
7mm	0	24	50/100/200/400	0	20	280/10	4
7.5mm	0	28	60/120/240/480	0	10	375/5	4
7.5mm Assault Rifle	0	28	65/130/260/520	1	40	750/25	4.5
9mm	0	32	75/150/300/600	0	10	500/6	4.5
15mm Sniper Rifle	+1	40	100/200/400/800	0	4	900/5	6
► SHOTGUNS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
.410	0	22	6/12/24/48	0	10	120/5	2
12-gauge	0	28	7/14/28/56	0	8	200/5	3
Autohotgun (12G)	0	28	6/12/24/48	1	50	1,200/30	6
► SUBMACHINE GUNS	ACC	DM	Range	ROF	Ammo	Cost	Wt.
7.5mm	0	12	22/44/88/176	2	40	450/15	3
9mm	0	18	25/50/100/200	2	30	575/20	3.5
11mm	0	24	30/60/120/240	2	30	750/30	3.5



RULEBOOK ARMORS

Armor	Code	Armor	Code
Leather	3-E0	Composite, Heavy	6-C1
Leather, Studded	5-E0	Duraplast Mail	5-C2
Plated, Light	6-E0	Durashell	5-B2
Plated, Heavy	6-E0	Reflec	6-C2
Composite, Light	5-C1	Interference Screen	6-B2

SHIPS OF THE FLEET EQUIPMENT

Equipment	Code	Equipment	Code
CESS Mk XII Spacesuit	4-E1	Masuo Comm M-Link	4-E1
Crew Belt	3-E0	Ozonetech Environmental Detector	4-E1
Darox Remote Release Tether	4-E0	PN-9K Emergency Space Suit	4-E1
Golden Space Cage	4-E0	Tool Harness	3-E0
ILLegre-70 Mobile Computer	4-E2	Wayland Industries Dual Spray	4-E0

SOLAPOL EQUIPMENT

Equipment	Code	Equipment	Code
Equipment	Code	Equipment	Code
Analysis Kits	5-C1	Identification Kit	5-C1
Armor Undershirt	4-C0	Investigation Robot	7-C2
Assault Cutter	5-C1	Monowire	8-B4
Assault Helmet	5-C2	Nutrient Supplement	3-E0
Assault Suit	6-C2	Patrol Drone	8-A3
CIT Lightweight Vacuum Suit	6-C2	Powered Shears	5-E1
Datapad	2-E0	Protector Weave	8-A2
Evidence Containers	3-D0	Remote Sensors	6-C2
Far-Sight Targeter	5-C2	Sas Opener	5-E1
Field Armor	4-C1	Scaling Pads	6-C2
Flashlight	3-E0	Security Bypass Kit	7-B3
Forgery Kit	7-A3	Stress Detector	6-C1
Gas Mask	5-D1		

Note: All Advanced Equipment listed on page 116 and 117 of the SolaPol Sourcebook is Code 10-A5 everywhere.

SOLAPOL WEAPONS

Weapon	M	V	E	Or	L	Mf	Mr	N	J	S
Whip	5-D1	5-D1	4-D1	4-D1	4-D1	5-D1	5-D1	6-D1	5-D1	8-D1
Net Gun	5-C0	4-C0	4-C0	5-C0	5-C0	5-C0	5-C0	6-C0	5-C0	6-C0
Goopgun	4-C0	5-C0	6-C0	4-C0	4-C0	4-C0	5-C0	5-C0	4-C0	5-C0
Nightstick w/Taser	5-C1	4-C1	5-C1	4-C1	4-C1	4-C1	5-C1	7-C1	5-C1	7-C1
Riot Shield	5-C1	4-C1	3-C1	4-C1	3-C1	3-C1	4-C1	7-C1	4-C1	6-C1
Nakima J6 Laser Pistol	6-C2	4-C2	5-C3	4-C2	4-C3	5-C3	5-C2	6-C3	6-C2	8-C2
Ares Waffenfabrik A-4 Gyroc Autopistol	6-C3	6-C3	6-C3	5-C3	5-C3	4-C3	4-C3	6-C3	5-C4	7-C3
Colt-Silver 9mm Defender Pistol	6-C2	6-C2	4-C2	4-C2	4-C2	5-C2	5-C2	6-C3	6-C2	7-C3
Bolker Needler Pistol	6-C2	6-C2	4-C2	4-C2	4-C2	5-C2	5-C2	6-C3	6-C2	7-C2
Ares Waffenfabrik Riot Control Device	5-C1	6-C1	5-C1	5-C1	5-C1	4-C1	5-C1	6-C1	6-C1	7-C1
Morgan M5 40mm GL Rifle	6-B3	6-B3	5-C3	6-B3	6-B3	6-C3	6-C3	8-B3	6-B3	9-B3
Holt PR-9 Assault Autoshotgun	6-C2	6-C2	4-C2	5-C2	5-C2	5-C2	5-C2	7-C3	6-C2	8-C2
Desse Hotshot-3 Laser Assault Rifle	5-B4	6-B4	7-B4	6-B4	6-B4	6-B4	6-B4	8-B4	6-B4	9-B4
Walter-Stromm E89 Stunner Rifle	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	4-C1	5-C1	4-C1	6-C1

M = Mercury, V = Venus, E = Earth, Or = Orbitals, L = Moon, Mf = Martian Federation, Mr = Martian Free Republic, N = Nomads, J = Jupiter, S = Saturn

EQUIPMENT

Item	Mass (kg)	Cost (credits)	Item	Mass (kg)	Cost (credits)
► MEDICAL EQUIPMENT					
Syntheskin Ltd. First Aid Kit	2	50	Winter	4	450
LifeTech Ltd. Field Surgery Kit	10	650	OzoneTech Tent		
Cathode H31-P Hand Medicanner	1	500	2-person	1	50
MercMed Portable Hospital	25	4,500	20-person	6	250
► DRUGS					
Euforan, 1 dose	0.01	20	OzoneTech Water Distiller	1	175
Relaxin, 1 dose	0.01	8	► TOOLS		
Sedan, 1 dose	0.01	5	LILU MultiPaz Electronics Tool Kt	2	500
Vaccine, 1 dose	0.01	5-200	Sinclair Flashlight	0.5	10
Vitamax, 1 dose	0.01	10	Sinclair Glow Stickers, pack of 20	0.5	15
► COMMUNICATION TECHNOLOGY					
All-Purpose Communicators			Benford Mechanical Tool Kit	5	300
Nakumacom	0.25	20	OzoneTech Pick	4	15
Celurite	1	500	Sinclair Shovel	3	10
JVD Electronics	10	10000	► Personal Equipment		
Nakumacom Headset/Wristcom	0.5	25	Newsman Audio/Video Recorder	1	200
C-Cure Listening Device	0.01	50-1000	Cap	0.1	10
JVD Electronics Satellink	2.5	200	Clothes, Summer		
Masuo-PANet VR Terminal	5	250	Lower-class	1	10
► OUTDOOR AND SURVIVAL GEAR					
Corado Backpack	4	75	Medium-class	1	50
FarSight Binoculars	0.5	50	Upper-class	0.5	250
OzoneTech Climbing Gear	7.5	1,000	Top-of-the-line	0.5	1,000+
Misawa Gas Mask	0.5	40	Shoes, normal	1	35
Forger Ltd. IR Goggles	1	200	Shoes, designer	1	400+
Ares Meta-Compass	0.2	100	Clothes, Winter		
Stine Night Goggles	1	350	Lower-class	1.5	25
StarCom® Radio Flare	0.5	15	Medium-class	1.5	90
Sinclair Rope, 50m	1.5	10	Upper-class	1	475
Sleeping Bag	1	40	Top-of-the-line	0.5	1,750+
Survival Kit	5	200	Boots, winter	1.5	75
Quinn Foods Ltd. Survival Rations	1.5	30	Boots, designer	1	800+
► SURVIVAL SUITS					
Desert	3	750	Masuo Datapad	0.1	200
Diving	10	500	Hat0.2	75	
Fire	6	800	► Memocards		
NBC	12	1,200	10 minutes	0.05	1
Rad	8	1000	30 minutes	0.05	2.5
Vacc	6	5000	30 minutes	0.05	2.5
			60 minutes	0.05	4
			120 minutes	0.05	7.5
			240 minutes	0.05	14
			Watch, cheap	0.05	15
			Watch, designer	0.1	250

A	Abraham Microgravity Assistant	65	Audio-Visual Player	60	Climbing Gear	66
	Adaptive Adhesives	70	Audio-Visual	60	C-Link	58
	Adaptive Fittings	16	Augmented Suit	13	Clothing, ProTech	36
	Adhesives, Molecular	70	Autofactories	6	Code	7
	Airlock, Portable	46	Auto-Piton	66	Code, Legality	8
	Ammunition, Boosted	28	Availability	7	Colt-Silver	23
	Ammunition, Special	28	B		Command	69
	Anachronism Weaponry	23	Bag, Stealth	38	Communications	58
	Anti-Laser Aerosol	35	Benford	72	Communications, Accessories	59
	Anti-Laser Aerosols	35	Bicycle	66	Communicator, Enhanced	16
	Anti-Missile Systems	35	Bloch	49	Communicator, Helmet	36
	Apollo Crew Suit	12	Bomb Disposal	32	Compact Display	50
	Archive Crystal	50	Bomb, Sealant	44	Composite Tape	66
	Area Waffenfabrik	22,27	Brake, Muzzle	30	Compound CS	33
	Armageddon Gun, HA-IX	27	Breathing Apparatus	65	Computer Module	54
	Armor Damage	38	Broomstick	68	Computer Security, Actions	53-54
	Armor Options	36	C		Computer Security, Advanced	53-54
	Armor Piercing	28	Camera 240X	60	Computer	49
	Armor, Stealth	38	Cancel	69	Computer, Quantum	51
	Armored Boots	15	Capacitor	70	Computer Security, Defeating	53-54
	Arresting Tether	66	Caseless	28	Construction Code, Standardized Space	71
	Artificial Intelligence	54	Cathode Electronics	45	Construction Equipment	70
	Asp	24	Chemical Analyzer, Mark IV	72	Comput Module	55
	Assault Shield	36	Chemlog	72	Crew Maneuvering Unit (CMU)	68
	Audio Earphones	60	Claim Beacon	65	Crew Suit	12
			Class, Restriction	8	Crossbow	23

