

Frontier Explorer



Issue 17
Summer 2016

Robot Rules of Order
A Cybot named JOKER
The Local Rights Alliance
Robo-Sourcing the Frontier
A Crushing Ride to Easley Station
Healing and Medical Kits

... they are reflections of
ourselves.



FEATURES



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FROM THE EDITORS

Welcome back explorers!

Welcome to our robotics issue. As you can tell from the table of contents, much of this issue is dedicated to a new set of robotics rules compiled by Joseph Cabadas. He's taken all the rules from the original AD/KH set, Zebulon's Guide to the Frontier, bits and pieces from the various published modules, and material published in the various magazines (Dragon, Frontier Explorer, etc.) and synthesized them into a single coherent rule set for creating and running robots in your campaign.

Additionally we have a variety of robot themed contributions from other regular authors with specific robots, a new robot related cadre, and other topics. We also include some more of our regular features such as the on-going comics, creatures from the Jurak Hangna Foundation, and the semi-regular adventures of Alex Stone. Many thanks to the authors and contributors of these regular features.

I'm especially excited about this issue as it is the last one that I'll be putting together while working on my Master of Library and Information Science degree. I'm in my last class as I write this and will finish that class this summer and take the final End of Program exam in September, before the next issue comes out. I'm looking forward to having more time to spend on the magazine and writing again.

This issue provided me with the happy dilemma of having too much content. The robot rules article is large, and after including that plus the regular features, I had surprisingly little room left. Luckily I was able to squeeze in almost all the robot related articles in the queue (there was one that just didn't fit and will show up in a future issue). Thanks again to all of our contributors. If you'd like to join their ranks, we'd love to have you contribute. Drop me a line at editors@frontierexplorer.org or just head over to the website and hit the submit button. New authors get priority placement in upcoming issues as we like to get your stuff out as quickly as possible.

Speaking of upcoming issues, the fall issue in October is going to be spaceship themed. We've got a bunch of ships in the queue that we want to publish as well as some resources for Knight Hawks adventures. If you have spaceship related content you'd like to share, now is the time to submit an article (or even art work).

Finally, I'd like to thank our Patreon supporters. Their support helps to keep the magazine going. I've been somewhat remiss in keeping up with the reward levels as my degree work has gotten in the way but will be rectifying that starting with the next issue. If you want to help support the magazine, just follow the link in the Production Credits box above and become a magazine supporter. Thanks again to all

PRODUCTION CREDITS



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Back cover comic: Scott Mulder

Banner Logo Image: NASA

Editors: Tom Stephens, Tom Verreault

Layout: Tom Stephens

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We're fascinated with robots because they are reflections of ourselves

- Ken Goldberg

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- Tom Stephens
Senior Editor

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Optional Rules

ROBOT'S RULES OF ORDER REVISED

A (NEARLY) COMPREHENSIVE GUIDE TO CREATING YOUR MECHANICAL FRIENDS

Joseph Cabadas

Seats were at a premium when Har Jedkar of Clan Vantaria arrived for the press conference. The bottom of her cape swished down near her ankles as she surveyed the small crowd at the Oni-Senada Corporation booth.

Unlike most of the other displays at the Port Loren Convention Center, O-S was not on the main floor with the likes of the Pan-Galactic Corporation, Streel, Interplay Industries, Tachton Instruments, Obar Enterprises or the host of second and third tier supplier companies at the annual Frontier SCaRE Conference. Rather the booth was in the concourse hallway, amongst vendors such as Charlie's Chocolate Covered Gollyberries or the Star Rangers youth selling cookies.

SCaRE, of course, stood for Society of Computer and Robotics Engineers, one of the largest Techex professional societies in the Frontier. Its annual conference brought in thousands of beings from across the United Planetary Federation and even from the Non-Aligned Worlds, such as the S'sessu. A brood of eight of them were standing – if a worm can stand, Jedkar thought derisively as she was forced to get a place next to them – to the left side of the booth.

Near the worms was a small, raised platform where two product specialists – Skimpily clad showgirls, Jedkar sniffed, though she wondered if they made more per hour than she did – stood waiting to unveil a robot that hid under a silky-white tarp.

O-S only had about two dozen chairs and they were all occupied. Her bare feet hurt and it had been a long three days so far, running from one press conference to the other along with the evening receptions. She felt she had to go to at least two last night to make an appearance even though she had story deadlines. Life was so tough, she thought as she eagerly grasped a water bottle from a passing service robot.

The beat of the music from the Oni-Senada booth's tinny sounding speakers didn't help her mood. It was a song from some popular Human band, but it would have been more appropriate for a cage fight than a robotic product unveiling. Subconsciously, she adjusted the ceremonial zamara at her side.

One of the worms turned to look at her. Jedkar noticed it wore a name badge the indicated it was with a S'sessu supplier company that was affiliated with O-S. "Ah, you are jus-s-st in time. We are about to begin." It gestured

for her to move a little closer to the stage as he directed some of the other worms to slither out of the way. "You are with PG Holo-News-s-s?"

"Yes, but we cover everything here, not just products from the Pan-Galactic Corporation," Jedkar said.

"Of cours-s-se."

Moments later, the conference began with its CEO, Ernie G. Xagy, himself, going to the podium. Behind him in the booth was a gaggle of other O-S executives and managers. They almost outnumbered the reporters who bothered coming to this end-of-the-day product unveiling.

After several minutes of hearing Xagy talk about Oni-Senada's growth plans – especially with its new, "most modern plants" on Phri'sk and successes during the past year – Jedkar tried to inch away. There was another supplier reception coming up soon, but the S'sessu moved to block her way.

"Don't go yet," the S'sessu whispered. "The bes-s-st is about to come."

"What?" she asked, but a moment later, she found out.

"And now, what you've all been waiting for," Xagy said. "For too long, the PGC, Tachton and others have dominated the security and combat robot sectors. That is about to change. I present to you, the latest prototype from our Tackten Enterprises subsidiary – the pocket warbot."

With a flourish of music, the showgirls took tarp off of the robot. Jedkar nearly broke out laughing at what she saw.

It was one of those "tin can" style robots – officially called a light body. Equipped with treads, it wore an ungainly large backpack where a large parabattery was supposed to be mounted. A heavy laser and a recoilless rifle – or a stylish looking facsimile of each weapon – were strapped on either side of the robot.

"What do you think?" the S'sessu asked.

"I think it must be bolted to the floor so it doesn't tip over from all that weight," Jedkar said as she managed to slip past the worm finally. "When you can show me a working model, then there might be a story."

ROBOTICS IN STAR FRONTIERS

Robots are complex, mobile machines that are designed to perform specific jobs. Many types of robots are available. Eight common types were described in the Alpha Dawn Equipment Section including security, combat, maintenance, service and warbots, but there are many more.

The major robotics skills include: Activate/ Deactivate, Add Equipment, Alter Function, Alter Mission Identify, List Functions, Remove Security Lock, Repair and Robopsychologist.

If the robot is an alien design, then the robotics expert has a -20 percent (or more) modifier on his rolls to perform these skills. A character must have a robcomkit – or a well-equipped workshop – to work on a robot.

This work attempts to compile the robotic rules found in the Alpha Dawn game, the hints in the Zebulon's Guide as well as information found in the Star Frontiersman and Frontier Explorer magazines and the Star Frontiers wiki site for one easy reference guide.

DESIGNING ROBOTS

When building a robot, the designer must give it a body type, a way to move, a way to manipulate objects and programming. Special items and equipment can be added at additional cost and increase its overall weight.

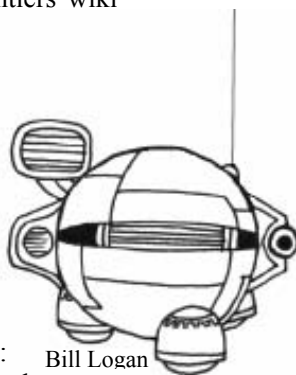
The robot body types in this section include: anthropomorphic, anthropomorphic reinforced, microbots, super-light, ultra-light, light, standard, standard reinforced, heavy-duty, heavy-duty reinforced and super-duty. An example of a “standard reinforced robot” was the RIK security robot from the adventure “Dark Side of the Moon” (Module SFAD6).

The anthropomorphic reinforced, microbot, super-light, ultra-light, heavy-duty reinforced and super-duty robot styles are house rules. In fact, robots and machines can be made larger or smaller.

For example, the Knight Hawks scenario, “Day of the Juggernaut,” features a gigantic robotic warship with robot fighters. “The War Machine” (SFKH4) is an adventure where the player characters try to destroy huge robotic processing plants. So, even larger, custom-built robots are possible.

Nanotechnology and nanobots represent another intriguing technology that was explored in the Star Trek: Voyager TV series, but these rules do not cover them.

Remember: Batteries are not included with your robot. You need to buy them separately.



Bill Logan

COMMON ROBOT BODIES

ANTHROPOMORPHIC BODY

These robots look like one of the four major races (or the species that built them, like the S'sessu). They weigh roughly 100 kg (without battery) and have 100 structure points. A type 2 parabattery powers them. Alien anthropomorphic robots, such as those of the ancient Eorna, may be much larger and heavier than standard Frontier models, but have 100 structure points.

ANTHROPOMORPHIC REINFORCED BODY

This is an anthropomorphic bodied robot that has additional structural support and heavier servos and motors added. It weighs 150 kg (without the type 2 parabattery) and has 150 structure points.

MICROBOTS

These are small, specialized level 1 robots that are about the size of a human hand. Performing specific tasks, it weighs about 300 grams. It is powered by a 10 SEU minipowerclip and has 5 structure points.

Each unit costs about 200 Credits, but often multiple microbots are needed to complete a certain task. They are controlled by a hand computer (at an additional 500 Cr cost and has a ½ function point program) or they may be linked to a mainframe computer or a brain robot.

Microbots can have a maximum of two tiny manipulator limbs (only one is standard) and come in combinations of four, six or even eight crawling limbs to replicate the movement of insects. Other variants include wheeled, tracked, rotor, hover, rocket or zero-G thruster pack styles.

Many microbots working in concert can perform amazing accomplishments. Individually they can move an object 100 times their weight (30 kilograms) though at a very slow speed, 1 meter per turn. Working in concert, as little as four microbots can move objects *half a million times* their own weight, but again at a very slow speed.

Mining companies may use dozens or hundreds of microbots to work sensitive areas. Gardeners employ them to tend plants. They can do confined-space inspections, maintenance or search and rescue work. Some can mount tiny cameras, have chronocom features and are used as mini-spy robots.

SUPER-LIGHT BODY

Sometimes called the “backpack” type, this is a very small, 10-15 kilogram robot that performs specialized tasks. Limited to levels 4 and below, they have the equivalent of three limbs – one to manipulate objects and two legs. The legs could be replaced with wheels, tracks, a

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hover unit, rotor, small aircar rockets or a zero-G thruster pack.

Only one extra limb can be added. In melee combat, this robot only does 1d5 points of damage with its limbs. Less durable than the Standard Body, it only has 15-20 structure points and weighs 10-15 kilograms (not including the 10 kg weight of its 100 SEU battery pack).

This model Costs 800 Credits for the 10 kg, 15 structure point model; 875 Credits for the 15 kg, 20 structure point model/

ULTRA-LIGHT BODY

This “backpack” robot has been reinforced with exotic, but highly durable metals, an example of which is the 233-TRB Trauma Recovery Bot. Various models typically weigh 10-15 kilograms and have 7 structure points per kilogram. Limited to levels 4 and below, they have the equivalent of three limbs for manipulating objects and movement. The legs could be replaced with wheels, tracks, a hover unit, rotor, small aircar rockets or a zero-G thruster pack.

Only one extra limb can be added. In melee combat, this robot only does 1d5 points of damage with its limbs. Ultra-lights comes in two different sizes, the 10 kg model with 70 structure points and the 15 kg model with 105 structure points. It takes a 100 SEU battery pack that weighs 10 kg.

Cost: 3,000 Credits for the 10 kg, 70 structure point model; 5,000 Credits for the 15 kg, 105 structure point model

LIGHT BODY

Sometimes called the “tin can” type – are small and are limited to level 4 and below. They have the equivalent of three limbs for manipulating objects and movement. So, some may have two legs and one manipulative arm or it may have two manipulator arms and have hover movement, tracks, wheels, rotor, hover, miniature aircar rockets or a zero-G thruster pack.

Only one extra limb can be added. In melee combat, this robot only does 1d10 points of damage with its limbs. Less durable than the Standard Body, it only has 50 structure points and weighs 50

kilograms (not including the 25 kg weight of its type 1 parabattery).

STANDARD BODY

As the name implies, this is the most common robot body type in the Frontier and it comes in all shapes. The standard robot is about the size of an average character, weighing 100 kilograms (not including the 25 kg of its type 1 parabattery) and has 100 structure points.

STANDARD REINFORCED BODY

These are armored versions of standard robots. They are about the size of an average character, weigh 150 kilograms and have 150 structure points. Its type 2 parabattery adds another 50 kg. They are nearly double the cost of a standard body because of the need for heavier servos, motors and other hardware needed to deal with the extra weight.

HEAVY-DUTY BODIES

These types of robots are also available in many shapes, but they are about the size of a ground car. It weighs about 500 kg and has 500 structure points. Its type 2 parabattery adds another 50 kg.

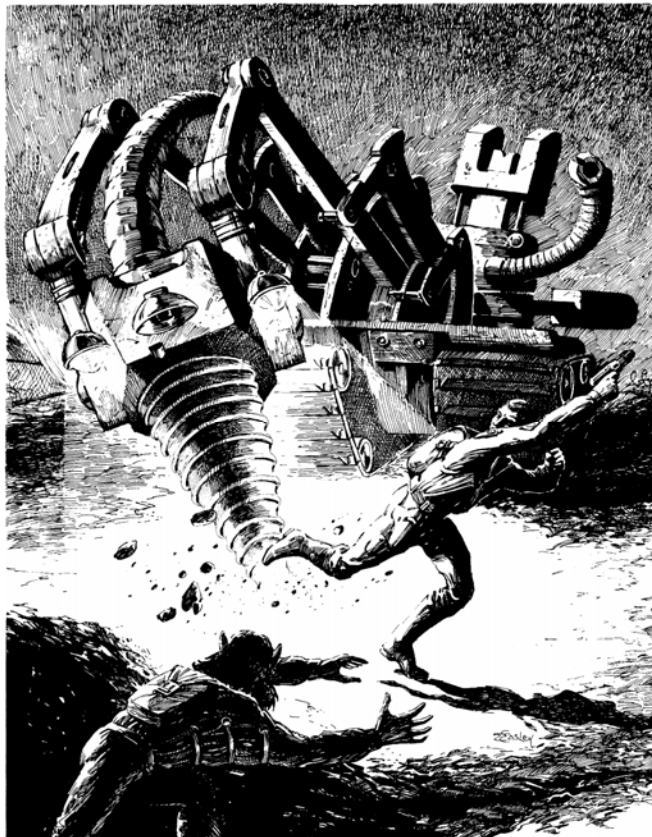
HEAVY-DUTY REINFORCED BODIES

These are armored robots, sometimes because they operate in hostile environments or are warbots capable of mounting medium vehicle size weapons. They are about the size of a small cargo truck or van. One of these robots weighs 1 metric ton and has 750 structure points. It is powered by a type 3 parabattery that adds another 100 kg.

Robotic transport versions can carry about 1 metric ton (1,000 kg) directly or up to 6 metric tons (6,000 kg) in a tractor-trailer arrangement without a movement penalty.

SUPER-DUTY BODIES

These robots range from warbots to large mining robots or robotic transports. They are about the size of a large cargo hauler or tractor, weigh 5 tons. It is powered by a type 4 parabattery that adds another 200 kg to its overall weight. With 1,000 structure points, it can carry 5 metric tons directly (5,000 kg) or up to 30 metric tons (30,000 kg) in a tractor-trailer arrangement without a movement penalty.



COMMON ROBOT TYPES

ANDROIDS

In the Frontier, androids come in different designs but they use anthropomorphic bodies. One version made by Cyber-Technologies Corporation used nano-technology. The C-T androids can convert organic matter into core components. For a more complete explanation, see the article “Androids as a non-player character race” by Victor Gil de Rubio in *Star Frontiersman* #17 magazine. Other android versions use anthropomorphic robot bodies with an organic shell that is grown over them.

BRAINS

Robot brains are robot managers and are level 6 or above. A brain has the computer link program as standard equipment. Since it usually commands other robots, brains have a whole suite of roboprograms that those under its control can access.

For example, a level 1 microbot normally doesn't have self-defense, attack-defense or search and destroy programs, but a robot brain equipped with this program can control another robot to perform these actions as long as it maintains some kind of communications link via radio, land line, laser, etc. Once the link with the robot brain is broken, a robot will return to its normal mission and functions.

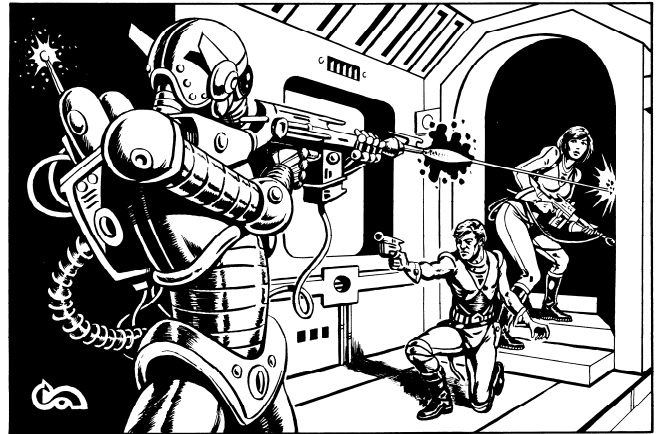
Most Frontier robot brains have heavy-duty bodies. Some are mobile mainframe computers in and of themselves with computer programs in addition to any roboprograms. Any level 6, 7 or 8 robot brain with a heavy-duty body can be equipped with up to a level 3 mainframe computer with its own power supply.

Level 7 and 8 robot brains equipped with a heavy-duty reinforced body can be outfitted with a level 4 mainframe computer and those with a super-duty body can be outfitted with a level 5 mainframe computer. These computers need their own power supplies.

If someone installs a mainframe computer and second parabattery in a robot brain, it triples the body cost and increases the body weight by 30 percent in order to account for additional shielding, shock absorbers for the computer, power conduits and such. The weight of the computer and battery must then be accounted for in the equipment section.

COMBAT

Combat robots have light, standard bodies or standard reinforced bodies. The attack/defense program is included in the robot's price. Their price also includes weatherizing for hazardous environments, such as guaranteed to survive total immersion in water up to depth of 5 meters for 20 minutes GST, extreme heat and cold, acidic atmospheres, radiation, etc. Of course, exterior damage and the length



of time the robot is in a hostile environment may cause the weatherizing seals to degrade, which in turn will damage internal circuitry. Limited to levels 2 to 4, combat robots serve as active combat soldiers.

COURIER

Courier robots are a type of service robot. It is normally used to seek out specific individuals to send and receive messages or items. They can be built with standard bodies and are limited to levels 2 to 5. Some couriers have light, super-light, or ultra-light bodies but these models cannot exceed a level 4.

CYBERNETIC

Cybernetic robots (cybots) have both mechanical and organic parts. They can perform any job other robots of their level can perform. Cybots can have any body type, but usually are anthropomorphic and are limited to levels 4 and above.

HEAVY-DUTY

Heavy-duty robots do heavy excavating, crop harvesting, rock quarrying, etc. They have heavy-duty, heavy-duty reinforced, or super-duty bodies and are limited to levels 1 to 4.

MAINTENANCE

Maintenance robots clean areas, oil machines, watch for breakdowns and malfunctions, etc. They use standard bodies and are limited to levels 1 to 4. They cannot do actual repairs.

MEDICAL

Medical robots typically have standard bodies, though some have anthropomorphic bodies. Limited to levels 4 to 6, they come equipped with the medical: first-aid roboprogram, which is equal to their level. Medical robots serve as paramedics, nurses and even doctors (if the optional Medical roboprogram is purchased). Military units often add an attack/defense program and arm their medical robots to defend wounded soldiers from attack.

RECONNAISSANCE

These robots typically have standard bodies, but some have light bodies. They come equipped with the attack/defense, computer link, and security lock programs. Some versions are outfitted with optional devices such as a holo screen, sensors, and other surveillance devices.

Reconnaissance robots are usually equipped with an alternative form of movement (hover, rotor, or rocket) and are limited to levels 2 to 4.

Their price includes weatherizing for hazardous environments, such as guaranteed to survive total immersion in water up to depth of 15 meters for 1 hour GST, extreme heat and cold, acidic atmospheres, radiation, etc. Of course, exterior damage and the length of time the robot is in a hostile environment may cause the weatherizing seals to degrade, which in turn will damage internal circuitry.

REPAIR/ENGINEERING

Repair robots have standard bodies, though some are constructed with heavy-duty bodies. They come equipped with either a robotics repair or technician programs and have Weatherization: Silver Level. Limited to levels 4 to 6, they can operate and repair robots or vehicles and machinery.

SECURITY

Security robots serve as both guards and police. They have standard bodies and are automatically equipped with the restrain program. They are limited to levels 2 to 6.

SERVICE

Service robots are used as servants. They work as store clerks, information sources, gardeners, tailors, etc. Service robots usually have anthropomorphic bodies modeled

after whichever race they serve. They cannot be mistaken for a living person, however. These robots are limited to levels 3 to 6.

WARBOTS

Warbots are intelligent war machines and often command combat robots. They have heavy-duty bodies and come with attack/defense and search and destroy programs. Often they are equipped with the optional Computer Link program. Limited to levels 5 to 6, their price includes Weatherization: Silver Level, meaning that they can survive in hostile environments such as total immersion in water up to depth of 5 meters for 1 hour GST, extreme heat and cold, acidic atmospheres, radiation, etc. Exterior damage and the length of time the robot is in a hostile environment may cause the weatherizing seals to degrade, which in turn may lead to internal damage. Warbots are designed to accept turrets – installing them does not increase the robot's body cost or weight (though the turret itself adds weight) – plus they can have one layer of spray armor added without any movement penalties.

ROBOT LEVELS

For those using the Zebulon Rules, robots come in eight levels with each level indicating its complexity. (For Alpha Dawn users, there are only six levels). Higher-level robots can perform more complicated jobs. Similar to mainframe and body computers, robots have programs – called roboprograms – also with eight levels. Robots above level 6 are expensive and rare.

Detailing the robot's functions and mission, the roboprograms are stored inside the robot on a circuit board that is usually secured behind at least one protective plate. In order for a roboticist to gain access to this circuit board, he usually has to remove the security plate (or plates).

LEVEL 1

Only able to perform simple jobs, level 1 robots have been pre-programmed for some specific job and usually cannot do any other activity. They cannot communicate except through computer code and often are nothing more than moving, self-operated appliances. An example of a level 1 robot is a maintenance robot that washes and waxes the floors of a building each night.

LEVEL 2

Able to handle several simple jobs, level 2 robots can receive and follow radio commands in binary machine language sent from some other machine, such as a robot brain or a computer. An example of a level 2 robot is a heavy machine that digs into and smashes up rock, then separates out flecks of gold.

LEVEL 3

Capable of doing more complicated jobs, all robots that are level 3 or higher can talk and follow verbal



instructions. If these instructions disagree with the robot's programming, it will ignore the orders.

LEVEL 4

Able to act semi-independently, level 4 robots have flexible programming. They can accomplish specific goals using different methods. For instance, when asked, "How do I get to the starport?" one level 4 service robot might give verbal directions, while another may provide a city map and mark the proper route to the destination.

LEVEL 5

These robots can act independently and give orders to other robots (level 6 robots can do this also). For example, a level 5 security robot might decide to stop chasing a criminal because the offender left victims tied up in a burning house. The robot could then organize a rescue mission with other robots.

LEVEL 6

Self-programming, level 6 robots can alter the methods they use and even their goals to account for changing conditions. They are almost, but not quite, living machines. An example of a level 6 robot is a robot brain that runs an automated manufacturing plant; this robot can modify the manufacturing process – increasing or decreasing production – in response to different economic conditions without input from its master.

LEVEL 7

These robots are not only self-programming but are also self-aware. They can learn skills like characters do with training and experience, but they do so by using the non-professional skill advancement cost.

LEVEL 8

Truly amazing, these robots are considered living machines and program themselves over time. Some include the androids detailed as a non-player character race in *Star Frontiersman* magazine. They are practically indistinguishable from the race that built them. Some Frontier roboticists debate whether the Mechanons are actually level 8 robots. They can learn multiple professions (PSAs), learning new skills at the professional cost.

ROBOT MISSIONS AND FUNCTIONS

All robots have a mission. A mission is a set of rules that tell the robot what its job is. A robot's mission is the most important order it has and overrides any other orders that conflict with it.

All robots have several functions that tell them how to accomplish their mission. Low-level robots cannot make decisions, so their functions must be very specific statements. Higher-level robots can make decisions for themselves, so their functions can be more general statements.

For example, a level 3 security robot might have the mission: "Stop all unauthorized personnel from entering this building." Its functions could define "stop" as giving intruders a warning, then using the Restrain program to keep them from entering. "All unauthorized personnel" could be defined as any person or machine that is not wearing a special badge. The robot must be given a function that defines "this building," and another that tells it what areas it must patrol to look for intruders. Another function could instruct it to call the police and report the break-in after an intruder has been restrained.

MANIPULATIVE LIMBS

Most of the robotic body types normally are equipped with two manipulative limbs, but there are exceptions such as the super-light and ultra-light models that only have one manipulator as standard equipment. These manipulators can be mechanical arms, tentacles, or specialized limbs for digging through rock or mounting tools.



Scott Mulder

EXTRA LIMBS

The number of extra limbs that can be added to a robot depends upon its body type. Some owners might mix and match rather than using the standard limbs for a particular body type. For example, a warbot with a heavy-duty body could be equipped with anthropomorphic limbs.

Anthropomorphic robots can only have a single pair of limbs added for an extra 1,000 Cr. while boosting body weight and cost by 15 percent.

The super-light, ultra-light and light body types can only have one extra manipulator installed for an extra 250 Cr. This modification boosts the robot's body weight and cost by 10 percent.

Standard and standard reinforced robots can have four extra limbs – legs or manipulators – added; the cost increases by 800 Cr per pair while the body weight and cost rises by 15 percent for each pair installed.

Heavy-duty, heavy-duty reinforced and super-duty robots can have eight additional limbs (usually heavy-duty pairs)

added at a cost of 1,200 Cr per pair. The body weight and cost also increases 15 percent more weight for each pair installed. An owner could install standard or anthropomorphic limbs, which cost less, but this modification still increases the body weight and cost by 15 percent per pair.

STANDARD FORMS OF MOVEMENT

All robot body types can be equipped with wheels, tracks or mechanical legs, hover units, rotors or whatever locomotion method – if any – the designer chooses. Some robots are designed to stay in one place for specialized jobs, say a welding robot on an assembly line, so they don’t move on their own. If a robot is not made to move, reduce its body type cost and weight by 20 percent.

Under normal conditions, most robots move 10 meters/turn. They can travel much faster, however. Top speeds for various types of robots are shown in the Normal Robot Movement Table.

Alternative movement modes for robots include wheels, tracks, hover, rotor, rocket motors, and zero-G thruster packs. Normally this equipment replaces the robot’s legs, though some units are made to have two forms of transportation.

For example, a warbot may normally have treads or legs (usually four, six or eight leg combinations), but the designer also equipped it with aircar rockets. Such a modification would add weight and cost to the unit.

ALTERNATIVE FORMS OF MOVEMENT



Robots with hover movement move the same as hover cars. Hover units that replace the legs, wheels or tracks double the basic body cost of the robot while adding 10 percent to its body weight.

Robots with rotor movement move the same as jetcopters and robots with rocket movement move the same as aircars. A rotor unit adds two-and-a-half times to the robot body’s basic cost and increases the weight by 15 percent.

NORMAL ROBOT MOVEMENT TABLE

| Maximum Speed (meters/turn) | Robot Types |
|--------------------------------|--|
| 30 (18 kph) | Light, Cybernetic, Service, Heavy Duty, Brain |
| 60 (36 kph) | Maintenance |
| 90 (54 kph) | Security |
| 120 (72 kph) | Combat, Warbot |

Aircar rockets are five times the cost of the robot’s body and increase weight by 20 percent.

Most robots (except microbots) will have an operational range of 100 hours or 1,000 kilometers before its parabattery needs to be recharged.

For zero-G or very low gravity situations, robots can be equipped with compressed air jets (also called thruster packs) to move around. Or robots specifically designed to operate in space may be equipped with an internal thruster packs in addition to limbs, doubling the standard body cost and increasing weight by 15 percent. Others can have a pack attached as removable equipment.

Robots equipped with hover movement have a top speed of 150 kph (250 m/t) with a cruise speed at 60 kph (100 m/t). Its acceleration/deceleration rates are 80/40 m/t while turn speed is 70 m/t.

Super-light, ultra-light and light body robots can have a depowered hover engine installed, meaning that the top speed is 75 kph (125 m/t) and the cruise speed is trimmed to 54 kph (90 m/t). Its acceleration/deceleration rates are 50/40 m/t while turn speed is 50 m/t.

Robots equipped with rotors have a top speed of 350 kph and a cruise speed of 50 kph (83 m/t). Super-light, ultra-light and light body robots can have a depowered rotor engine installed, meaning that the top speed is limited to 175 kph (292 m/t) but the cruise speed is remains at 50 kph (83 m/t).

Robots equipped with aircar-style rocket engines have a top speed of 900 kph with a cruise speed of 400 kph. Super-light, ultra-light and light body robots with a depowered rocket engine have a top speed of 450 kph (750 m/t) and a cruise speed of 200 kph (333 m/t).

All rotor- and rocket-equipped robots can accelerate or decelerate by 100 meters per turn, make up to six 45-degree turns and increase or decrease their altitude by 20 meters per turn. They can hover in place or conduct Nap Of the Earth (NOE) maneuvers, meaning they can fly 50 to 100 meters above the ground, following the contours of hills and valleys, to avoid detection. NOE flying reduces a rotor-equipped robot to its cruising speed and rocket-equipped robots to 100 kph.

Standard-size and larger robots with hover, rotor, and especially rocket engines might not be able to operate safely in certain confined areas such as small rooms, narrow corridors, etc. Microbot, super-light, ultra-light, and light body robots with hover and rotor engines could operate in such areas, but even these bots face difficulties

if using rocket engines.

Robots equipped with hover, rotor, or rocket engines need an atmosphere in order use these forms of alternative movement. Dust may impede maximum speed and can even cause the robot's engine(s) to overheat and shutdown, requiring a technician/roboticist to repair it. An

ROBOTIC ALTERNATIVE MOVEMENT COST, ADDITIONAL WEIGHT, SPEED AND RANGE TABLE BY BODY TYPE

| Body Types | Alternative Movement | Credits | Added Weight (kg) | Top Speed (meters/turn) | Average Range |
|----------------------------------|----------------------|--------------------|-------------------|----------------------------------|-----------------------|
| Any | Wheels/Tracks | No additional cost | None | Normal | 1,000 km or 100 hours |
| Any (except Microbot) | Zero-G Thruster Pack | Doubles body cost | Add 15 percent | Special | Special |
| Microbot | Hover | 100 | 30 grams | 90 (54 kph) | 200 km or 20 hours |
| | Rotor | 200 | 45 grams | 90 (54 kph) | 200 km or 20 hours |
| | Rocket | 300 | 69 grams | 125 (75 kph) | 200 km or 20 hours |
| | Zero-G Thruster Pack | 800 | 1 kg | Special | Special |
| Super-Light and Ultra-Light | Hover | 600 / 1,200* | 1 / 1.5 kg* | 125 (75 kph) / 250 (150 kph)* | 1,000 km or 100 hours |
| | Rotor | 1,800 / 3,600* | 1.5 / 2.25* | 292 (175 kph) / 583 (350 kph)* | Same as above |
| | Rocket | 3,000 / 6,000* | 2 / 3 kg | 750 (450 kph) / 1,500 (900 kph)* | Same as above |
| Light | Hover | 600 / 1,200* | 5 kg | 125 (75 kph) / 250 (150 kph)* | Same as above |
| | Rotor | 1,800 / 3,600* | 7.5 kg | 292 (175 kph) / 583 (350 kph)* | Same as above |
| | Rocket | 3,000 / 6,000* | 10 kg | 750 (450 kph) / 1,500 (900 kph)* | Same as above |
| Standard and Standard Reinforced | Hover | 2,000 | 10 kg | 250 (150 kph) | Same as above |
| | Rotor | 5,000 | 15 kg | 583 (350 kph) | Same as above |
| | Rocket | 10,000 | 20 kg | 1,500 (900 kph) | Same as above |
| Heavy Duty | Hover | 5,000 | 50 kg | 250 (150 kph) | Same as above |
| | Rotor | 7,500 | 75 kg | 583 (350 kph) | Same as above |
| | Rocket | 10,000 | 100 kg | 1,500 (900 kph) | Same as above |
| Heavy-Duty Reinforced | Hover | 8,500 | 75 kg | 250 (150 kph) | Same as above |
| | Rotor | 12,750 | 112.5 kg | 583 (350 kph) | Same as above |
| | Rocket | 17,000 | 150 kg | 1,500 (900 kph) | Same as above |
| Super-Duty | Hover | 20,000 | 500 kg | 250 (150 kph) | Same as above |
| | Rotor | 30,000 | 750 kg | 583 (350 kph) | Same as above |
| | Rocket | 40,000 | 1,000 kg | 1,500 (900 kph) | Same as above |

*Super-Light, Super-Light Reinforced and Light robots can be equipped with depowered hover, rotor and rocket motors that cut their maximum and cruise speeds in half but at a significant cost savings.

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impact with water – such as going underwater – has a great chance to damage the robot's hover blades, rotors, or rockets possibly reducing speed or even requiring it to stop until a roboticist or technician makes repairs.

As a consequence of various movement restrictions, robots with rotors or rockets may also have legs, wheels or treads to move around on the ground although this greatly adds to its weight and cost.

A secondary form of movement counts as two additional limbs, reducing the maximum number of extra limbs that can be attached to a robot; it also doubles the cost of the basic body type and increases the weight. Add 10 percent when calculating the increased weight. This means that a hover unit will boost the robot's weight by 20 percent instead of 10 percent; a rotor will increase weight by 25 percent while aircar-style rockets boost weight by 35 percent.

For example, Pi Porcad the Dralasite manager of several downtown buildings wants a maintenance robot that can fly to the top of his buildings to service their heating, cooling and ventilation systems. However, the robot also needs to move around on top of the building to do its work. He picks a standard body, which costs 2,000 Cr.

Keeping the robot's standard legs, he adds a rotor unit for 5,000 Cr., but the robot's body needs additional modifications, so its price doubles to 4,000 Cr. Its body weight increases by 25 percent from 100 kg to 125 kg.

ZERO-G THRUSTER PACKS

Space-based robots may be equipped with thruster packs, similar to what characters use for weightless environments. Many of these types of robots need to alternate between operating in zero-G and gravity environments so they will be equipped with wheels, legs or treads as a secondary form of moment. The robot rocket pack has 20 bursts of fuel. Each burst provides enough thrust to travel 50 meters per turn, until something causes the robot to change course or speed.

Only one burst can be used per turn. A robot can accelerate by firing several bursts over several turns, adding 50 meters/turn to its speed with each burst.

Once a robot starts moving, an equal amount of power is needed to stop moving! A robot could use all 20 bursts to accelerate to 1,000 meters/turn (about 360 kph!), but it would keep traveling at that speed in a straight line until someone or something stops it, since there is no fuel left in the pack to decelerate.

A robot using a thruster pack to move through space toward an object must make a check to move directly toward that object. This check is similar to its basic chance to hit – 30 percent plus 10 times the robot's level – and should be modified by the referee according to the

distance traveled, the size of the target and any advanced sensors that the robot may have.

For the purpose of comparison, a 1 kilometer trip to a spaceship of hull size 5 should be a standard check. Shorter distances and larger targets should allow positive modifiers, while longer distances or smaller targets are more difficult to hit. Modifiers should not exceed plus or minus 20.

A robot will quickly comprehend it is on the wrong heading and will try to correct its trajectory. This requires another burst of fuel and another check to make the proper adjustment. These adjustments may or may not increase the robot's speed. Even if the burst does not accelerate the robot, it must be counted as one of the pack's bursts.

A robot can keep making direction adjustments as long as the pack has fuel. If the robot aims at the target and has enough fuel remaining, it can come to a gentle stop at the destination by using the appropriate number of bursts to decelerate.

If a robot is aimed correctly at a target but does not have enough fuel in the pack to slow down, it will take damage when it hits the object (1d10 points of damage for each 50 meters/turn it is moving). The robot must make a check to stop at the object or it will bounce off the intended target and travel at one-half of its previous speed in a direction determined by the referee. This check has a -5 modifier for each 50 meters/turn that the robot was traveling upon impact.

Rocket Pack (no fuel): 2,000 Credits.

Rocket Pack Fuel: 50 Credits/tank

ROBOTICS: CUSTOMIZING, ADDING EQUIPMENT, & MODIFICATIONS

A robotics expert can install new equipment on a robot himself and save the installation fee (typically 10 percent or more). All non-robotprog additions or alterations to a robot are called modifications. These include adding new limbs, weapons, etc. Some modifications are more difficult than others.

A robot can be given additional arms and legs, a different means of movement, special equipment or special programs. Every addition picked from the Altered Movement or Extra Limbs tables increases the robot's body weight and cost. Modifications such as adding internal or externally mounted weapons, turrets, advanced sensors, equipment, etc. will also increase the robot's overall weight and cost. Unlike the Alpha Dawn rules, installing a robotprog does not increase weight.

Example: Sheeta Starfox goes to Cut-Rate Sam's Kustum Bots to modify her combat robot. It has a standard body

(2,000 Cr) and is a level 4 with the built-in attack/defense program (5,000 Cr). Originally its total cost was 7,000 Cr and it weighed 100 kg. Sheeta wants to add the Computer Link and Search and Destroy programs, an aircar rocket as a secondary form of movement and an extra pair of standard manipulator limbs.

The robot's body weight increases by 50 percent or 50 kilograms – 35 extra kilograms for the rocket motor and 15 extra kilograms for the additional arms. The body's cost increases by 700 Cr. to add the rocket motor and another 300 Cr. for the arms. The added weight and cost represents the structural components needed to support the extra limbs and the rocket motor. The Search and Destroy program costs 3,000 Cr., the Computer Link is 4,000 Cr., a standard pair of manipulator arms is 800 Cr. and the rocket motor costs another 10,000 Cr.

So far the customized equipment, body modifications, and programs total an additional 18,800 Cr. Robotist Sam tacks on his standard 10 percent installation fee; the price increases by another 1,880 Cr. The customized robot will cost Sheeta a total of 27,680 Cr (20,680 Cr more than a standard combat robot). It now weighs 170 kg (without its battery), but only has 100 Stamina points.

ARMOR AND DEFENSE SCREENS

Robots can be outfitted with the same types of defensive screens and "suits" as characters. In the case of defensive "suits," this is actually a type of armor or albedo paint. The same prohibitions regarding these defense devices – not being able to wear two (or more) different defense suits or use two (or more) different defense screens at the same time – applies to robots like it does to player characters. The cost of robotic suits and screens is 10 percent higher than normal (not including the installation charge).

Spray Armor: The spray armor found in Zebulon's Guide can also be added to most robots – though this would be difficult if not impossible for many cyborg or android models. Spray armor provides 25 points of protection per layer applied. Any weapons fire that strikes the robot would have to penetrate these added points before the robot's structure takes damage.

Each layer of spray armor increases the robot's weight by 5 percent and body cost by 5 percent. There is an additional 3 percent installation fee that is based on the body style's original weight. The extra weight of this "add-on" armor trims a robot's speed by 15 kilometers per hour (25 meters per turn) per layer for ground and hover robots and by 40 kph (67 meters per turn) per layer for rotor and rocket-powered robots. Note: warbots can have one layer of spray armor without suffering a movement penalty.

Some models, notably warbots, may be designed with an extra parabattery and enlarged motors and servos so they

can have up to five spray armor layers without negatively impacting their movement. Such a modification will double the model's base body cost while adding 25 percent to the overall weight (not including the cost and weight of the extra battery). This alteration does not extend the robot's range.

An installer can typically add a single layer of spray armor in about two days for light, standard, and standard reinforced robots. The installation time for a single layer on heavy-duty and heavy-duty robots is about six days and it takes eight days to install spray armor on a super heavy-duty robot. These times can be trimmed by half, but the installation charge can be double or more normal costs.

Spray armor is incompatible with Stealth Technology.

Enhanced Power Plants: As with vehicles, robots can be made to move faster with boosted motors and servos. A power plant 10 rebuild will boost the robot's top speed by 10 meters per turn (m/t); multiply the cost of the robot's body style by 20 percent to determine the cost of this upgrade. A power plant 20 rebuild will boost top speed by 20 m/t; the cost is the robot's body style cost multiplied by 50 percent. A power plant 30 rebuild will increase top speed by 30 m/t; the cost is the robot's body style cost times 80 percent.

Extended Range: In addition to programming that optimizes power usage, the range of a robot can be extended through a series of light-weighting techniques such as lighter but stronger and more expensive metals and plastics, power capacitors and, of course, a second battery pack.

The base cost of the robot's body style is doubled while the robot's base body weight decreases by 25 percent. (The player still needs to purchase another parabattery and then add the weight to his robot's total). Extended range modifications double the distance and time that most robots (except for microbots) can operate – 2,000 kilometers or 200 hours GST – at full capacity.

If a warbot already has a second parabattery because it is carrying spray armor, the robot's range would only be extended by 50 percent by adding a third parabattery. To get maximum range, the robot would need a double set of extra batteries. Fortunately, the body style cost only rises by 25 percent while weight increases by a total of 30 percent. (Again, the owner still needs to purchase the extra batteries and add their weight to the robot's total.)

STANDBY/PRESERVATION MODE

Even the simplest level 1 robot has some kind standby/preservation mode that it will enter when its battery power is nearly depleted and a recharge is unavailable. For many robots, they will enter standby mode when they have only an hour's worth of SEUs

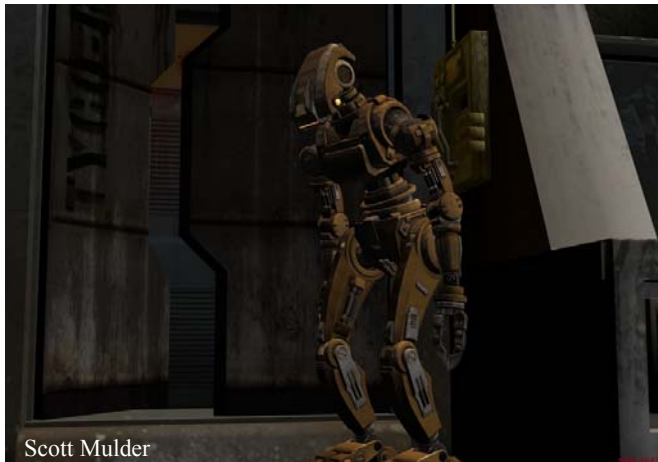
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remaining. A flying robot will attempt to land someplace relatively safe, a hover robot would stop on relatively solid ground, but less sophisticated models (level 3 and under) may unintentionally place themselves in dangerous or hard to reach locations. If a robot cannot find a safe location, it will continue traveling until it runs out of power and comes to a halt or crashes.

Robots at level 4 or above can make other judgment calls, such as when to enter standby mode, for instance, if it only has 10 hours of remaining battery power and a recharge in the near future seems unlikely. These robots can choose reasonably safe and easy to access locations – if such a place is available. For various reasons a more advanced robot may attempt to camouflage itself from anyone except its owner(s) or designated surrogates with the proper identification. Otherwise, it will attempt to attack or flee intruders.

For example, the CDC robots in the Mission to Alcazar module were placed into standby mode by Streel operatives and radically reprogrammed to attack anyone trying to approach the computer building.

When a robot is in standby mode, it only uses 4 SEUs per day, but the robot will not move and its sensor range is limited. Robots equipped with the Extended Range or the Para-Scan roboprogs only use 3 SEUs per day; if the robot has both programs available, it will only use 2 SEUs per day.



WEATHERIZING

Frontier robots are capable of operating in a range of conditions such as working in freezing cold temperatures, the vacuum of space, rain, fog, dust storms, etc. Constant exposure to rough conditions will eventually degrade its performance and require additional maintenance. Most robots, though, are not made to operate long in hostile environments – such as partial or total immersion in water, acidic atmospheres, extreme heat and cold, radiation such as cosmic rays, etc. To protect these valuable machines against the elements, the wise buyer adds weatherization gear.

Weatherization sealers are available in three levels – nicknamed bronze, silver, and gold – that offer increasing protection for an increased cost. This protection includes:

- **BRONZE LEVEL:** Allows for the complete immersion in water, up to a depth of 5 meters for 20 minutes GST without failure. Oftentimes, a robot can operate underwater for much longer periods of time and at greater depths without difficulty, though this is not recommended by manufacturers nor covered by any warranties. The bronze level of weatherization helps protect the robot against, extreme heat and cold, 10-15 turns in a fire, acidic atmospheres, dust, low-level radiation, extended periods in the vacuum of space, etc. External damage and the length of time the robot spends in a hostile environment may cause the weatherizing seals to fail, which in turn leads to damage of internal circuitry. The cost is based on the robot's body type and adding 10 percent; any weight increase is negligible.
- **SILVER LEVEL:** Allows for the complete immersion in water, up to a depth of 15 meters for 1 hour GST or up to 30 minutes in a raging fire without failure plus additional protection against extreme temperatures, dust and lunar dust, heavy radiation, etc. External damage and the length of time the robot is in a hostile environment may cause the weatherizing seals to degrade, which in turn leads to damage to internal circuitry. The cost is 25 percent of the robot's body type; any weight increase is negligible.
- **GOLD LEVEL:** The robot can operate on the bottom of most ocean floors at the deepest depths for hours without failure. It can operate for a period of time in many other hostile environments including temperatures that will eventually melt its outer skin or in liquid nitrogen. The cost is ten times the robot's normal body type; body weight is increased by 20 percent.

As noted earlier, hover fans, rotor blades and aircar rocket engines will be damaged – weatherized or not – if they strike the water or operate in certain environmental conditions, such as a raging fire, air clogged with volcanic ash, etc. Typically robots with this type of movement will try to avoid such conditions; otherwise, they will become trapped. If they have a secondary form of movement (legs, wheels, or tracks), robots will attempt to stop outside of a hazardous area, seal up the hover fan or rocket engine units with protective slats or collapse and stow the rotor blades in a specialized compartment, and then proceed into the water, fire, dust storm, etc.

SUBMERSIBLE ROBOTS

These are models built to specifically operate underwater. The cost and weight of the robotic body is triple the standard models, though this automatically comes with the gold level of weatherization. Their primary (and standard) form of movement is an underwater jet engine

or propeller. Equipped with ballast tanks as standard equipment, they can ascend or descend similar to a submarine.

Submersibles have a standard cruise speed of 20 kph/35 meters per turn and a top speed of 35 kilometers per hour/60 meters per turn. Such robots can be made to move faster with powerplant upgrades and be modified similarly to other robots, but the cost is doubled to take into account proper weatherization to survive the underwater environment.

ELECTROMAGNETIC PULSE SHIELDING

Electromagnetic Discharge (ED) warheads or other electromagnetic pulse (EMP) weapons can cause short-circuits that will shut down robots, vehicles, computers and other electronics that have not been properly shielded. This shielding is not a power screen, but rather an extensive hardening of the robot's internal circuitry that is much more comprehensive than installing an electric shock implant.

If EMP shielding is included as part of the robot's initial construction, the cost is an additional 50 percent of its body style while weight only increases 10 percent. If this shielding is installed later, the modification is an added 90 percent of the body style's initial cost and body weight increases by 20 percent.

Effects: an anti-shock implant is only 10 percent effective against an ED or EMP weapon. A gauss screen is only 20 percent effective. EMP shielding is about 70 percent effective. It can be combined with an anti-shock implant and/or gauss screen to theoretically provide 100 percent shielding (an automatic hit by an EMP weapon will overcome any protection). While most unshielded robots will need extensive repairs if they suffer an EMP attack, those that have EMP shielding have a cumulative 5 percent chance per turn of "rebooting" and being able to resume operations.

STEALTH TECHNOLOGY

Typically only militaries, spy agencies, some paramilitary forces, and mega-corporations worry about making their robots stealthy. Some add-on devices, such as a holographic projector or sonic ("hush") screen, also may permit a robot to act stealthy so it can ambush an adversary. Instead of jamming radars and other sensors, stealth robots rely on a range of passive electronic countermeasures, radar-absorbent materials, infrared and ultraviolet bafflers, a shape to redirect radar beams, etc. Any weapons must be stored internally for stealth technology to be fully effective.

Stealth must be incorporated into a robot's design **before** production, though stealthy modifications to an existing robot may provide some benefits.

Effects: A stealth robot is practically invisible to most detection devices (70 percent success rate). Because of its camouflage abilities, casual observers will probably miss seeing it at a distance (an 80 percent chance) even while it is moving. Note, the type of terrain will affect the distance. For example, an observer should be able to see a stealth robot sitting in an open field in broad daylight at 100-500 meters without a penalty.

A stealth robot can use a "silent kill" attack for ranged or melee combat with a basic chance to hit at 20 percent plus 5 times the robot's level ($20\% + RL \times 5$). If successful, the robot will cause an extra 1d10 worth of damage to a target while its attack will go unnoticed or unheard by other adversaries in the area. The robot also has a base 5 percent chance to instantly kill an unsuspecting target plus 5 percent per the robot's level ($5\% + RL \times 5$). If the robot uses explosive devices such as rockets, missiles, grenades, etc. it will automatically negate the robot's silent kill ability, though it still has a "first shot" attempt to slay an opponent caught unawares.

Characters trying to target a stealth robot at medium to extreme ranges suffer an additional -10 percent penalty.

Cost and Weight: The cost is 50 times the robot body's base price while body weight increases 20 percent.

Drawbacks: In addition to its high cost and requiring the robot to have built in weapons, such as concealed turrets, once the unit has taken more than 50 percent structural damage, it loses its stealthy abilities until repaired. Repairs are 10 times the normal cost if the owner wants to retain its stealth characteristics. Applying spray armor to a robot destroys its stealth characteristics.

Stealth robots are normally only used by special units of militaries, a rare number of paramilitary groups, and mega corporations at their most secure facilities.

ROBOT PROGRAMS (ROBOPROGS)

Some robots, such as service and maintenance bots, have general programs in order to carry out their missions. A waiter robot will have an etiquette and protocol program so it can react to customer requests. What follows are descriptions of specialized programs. The number in parenthesis after the program's name indicates the robot's minimum level required before it can use the program.

Normally only a roboticist will try to alter these proprietary programs; however, a character with only computer skills – including access & operate, bypassing security, defeating security, display information, interface and program manipulation – can work on roboprograms with a -20 percent modifier. Creating new roboprograms requires the Computers: Program Writing skill along with robotics skills such as alter functions and alter mission.

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ATTACK/DEFENSE: (2) The robot can fight using the same type of weapons as a character and can be equipped with a defense suit and a screen (with its own power supply). The robot can use lethal weapons.

Cost: 1,000 Credits

BIO-ELECTRIC CIRCUITS: (6) The robot – often a cyborg or robot brain – has limited intelligence (INT/LOG 25/75) and an artificial personality (PER/LDR 25/20). It can develop these abilities over time, and even learn new skills.

Cost: 60,000 Credits

COMMUNICATIONS: (4) Although more advanced robots can operate devices such as chronocoms, radio phones, poly-voxes and the like, this program permits robots to identify, operate, and even repair larger communications devices such as subspace radios, space beacons, and broadcast stations.

Cost: 8,000 Credits

COMPUTER LINK: (2) This program enables a robot to communicate directly with a computer using a tight-beam, long-range communicator. This gives it access to all the information in the computer.

Cost: 4,000 Credits

CRASH WISH: (1) If a robot becomes disabled, this program will activate a certain set of instructions including self-destruction, sending out a distress message, hibernation, etc. The methods of how this program can be used entirely depends upon what the robot is equipped with or what condition it is in. A robot without any kind of explosive can still be programmed erase its memory or overload its circuitry.

Cost: 1,250 Credits

DIS-MAP: (2) This roboprogram contains multiple maps covering every explored area in the Frontier, allowing the robot to determine a route around all known hazards while being able to locate roads, towns, geographical features, etc.

Cost: 500 Credits

ENTERTAINMENT: (3) This is a catch-all program often used by service robots. For each subroutine (subskill) purchased, the robot can do basic actions such as singing, dancing, juggling, musical instrument playing, general lore (storytelling), stage magic, and even gambling. Athletic subroutines can be added so the robot can participate as a sparring partner in boxing, wrestling, fencing, tennis, etc. When combined with the Bio-electric Circuits roboprogram, the robot would gain +5 in Intuition and +5 in Personality.

Cost: 800 Credits plus 50 Credits for each subroutine added

Scott Mulder



ETIQUETTE AND PROTOCOL: (3) The social norms of behavior vary widely among the Core Four races and the planets of the Frontier, not to mention the hazards that the naïve traveler faces when journeying to the Rim Coalition where they encounter the Humma, Osakar, and Ifshnits or various other non-aligned races. Service robots have this program as standard equipment, but other models – even security robots – might have it as part of their programming suite.

A robot can advise its master of such niceties such as proper introductions and greetings, differences in gestures and body language, meeting and seating protocols, appropriate attire for different situations, conversation taboos, and the like.

This roboprogram only covers known races. Robots at level 6 and above might be able to use it to learn to interact with the members of a newly discovered culture; otherwise, other robots will need to wait for any service updates or new programming from their masters. If used in conjunction with the Bio-electric Circuits roboprogram, the robot or android receives a +10 boost to its Personality and Leadership scores.

Cost: 2,000 Credits plus a monthly fee for updates

EXTENDED RANGE: (1) Similar to the vehicular Fuel-Scan program, this program monitors the robot's parabattery output versus use. When activated, it conserves energy whenever possible and increases the range by 25 percent.

Cost: 400 Credits

FACIAL RECOGNITION: (2) Robots at level 2 or higher are typically equipped with a facial recognition suite to be

able to identify individuals that it should be familiar with. The robot can retrieve public records – if access is available – to compare any individual and identify them. Face-changing disguises have 60 percent chance minus the robot's level times 10 (60% - RL x 10) to fool the robot.

Cost: 750 Credits plus a monthly fee

HELP-BEAM: (1) This is more of a device with a bodycomp progit. Often used in conjunction with Crash Wish, the device has its own 10 SEU microclip and must be preprogrammed by the robot's master. When a pre-set condition occurs, such as the robot is disabled or destroyed – hopefully leaving the Help-Beam unit intact – then it will send out an emergency beam on a specific wavelength. One type of preset condition that would trigger the robot to send out the distress call is if it witnesses its master in some form of distress.

Cost: 250 Credits

HELP-CALL: (1) Another carryover technology from bodycomps, this progit/device acts in a similar manner to Help-Beam but sends out an audible sound rather than a radio beam. This device must be preprogrammed. Some conditions when it may activate include when the robot becomes disabled or when an enemy roboticist tries to break open the robot's protective cover. Help-Call is powered by an internal 10 SEU microclip.

Cost: 150 Credits

INTERFERENCE: (2) This invasive program injects itself into a transmitted message and interferes with its legibility. For encrypted messages, it sounds like various tones and beeps interspersed with static, re-modulation and flanging, which makes clear reception nearly impossible. If a signal-jamming program is successful, there can be no chance of countering the interference program. To stop it requires a character to successfully use a Manipulate Program check to defeat it. If the check fails, the character cannot make another attempt for an hour.

Cost: 1,000 Credits PR: Broadcast equipment

MEDICAL: (4) The robot can perform and function as a medic such as diagnosing ailments, healing wounds, controlling infections and infestations, curing diseases, awakening unconscious individuals, prevent tissue damage, etc. as though it were a medic of equal level.

The skills covered by this program include Medical Devices, Medical Diagnosis, Medical Treatment: Disease, Medical Treatment: Infection, Medical Treatment: Infestation, Medical Treatment: Miscellaneous, Medical Treatment: Poison, Medical Treatment: Radiation, Medical Treatment: Wounds I, Medical Treatment: Wounds II, Medical Treatment: Wounds III and Medical Treatment: Wounds IV.

The base chance of success is 30 percent plus 10 times the robot's level, but the robot's maximum success rate is 80 percent.

As with player character medics, a robot with a medical program gains a 20 percent bonus (+20%) for patient care if the treatment is conducted in a well-equipped hospital or sickbay. If the patient is an animal or unfamiliar alien, the robot suffers a 20 percent penalty (-20%). Even so, the maximum success rate the robot has is still 80 percent.

A medical robot is still required to have a medkit. It could use a medkit like a normal character, or the equipment may be built-into two of its limbs. This increases the robot's weight by the weight of the kit plus 10 percent while the cost of the built-in robot medkit is 575 credits or 15 percent greater than normal.

Cost: 50,000 Credits

MEDICAL: FIRST AID: (2) This program enables a robot to help rescue wounded beings in hostile situations. A level 2 program allows the robot – such as the 233-TRB Trauma Recovery Bot, which has a super light-body – to monitor a patient's vital signs, search for and recover wounded beings, stabilize an injured character through the injection of biocort or staydoses. A level 3 program allows the robot to conduct a Medical Diagnosis, operate Medical Devices plus use Medical Treatment: Disease, Medical Treatment: Infection, Medical Treatment: Infestation, Medical Treatment: Poison, Medical Treatment: Radiation and Medical Treatment: Wounds I (First Aid).

Cost: 3,000 Credits per level

PARA-SCAN: (3) This roboprogram monitors the parabatteries used for non-movement functions, such as weapons and defense screens. It allows the robot – or robot brain or remote user – to receive constant updates on the status of various systems, determine how much power is left, transfer power from one battery system to another, etc. If the robot is damaged, the roboprogram will indicate the location and extent of damage. It will boost the robot's range and operating time by 10 percent; its effect is additive with the Extended Range program. For example, a robot equipped with both Extended Range and Para-Scan will have its range/operating time boosted by 35 percent.

Cost: 500 Credits

RESTRAIN: (2) The robot can both defend itself and attack, but cannot use a weapon on a lethal setting. For example, a robot with merely a restrain program could use shock gloves, but it will only use the stun setting. If it is not possible to use a non-lethal setting, the robot will not use the weapon. Additionally, the robot would not use an incapacitating weapon if this will result in the potential death of the target, such as if the target is on a narrow ledge hundreds of meters off the ground. Naturally,

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higher-level robots are better at making these judgment calls than lower level ones.

Cost: 500 Credits

ROBO-LINK: (1) This progit/device is a special radio receiver/program that can be installed on a robot so the owner can communicate with it through a bodycomp.

Cost: 1,300 Credits

ROBOTIC REPAIR: (4) Certain robots are made to repair other robots. The maximum number of robot designs that can be repaired is equal to the robot's level times the point cost of the robotics program. Once it has the schematics and design notes of another robot, it can repair it. It automatically has the ability to repair itself.

The specific skills covered by this program include Robotics: Activate/Deactivate, Robotics: Adding Equipment/Modifications, Robotics: Alter Functions, Robotics: Alter Mission, Robotics: Identification, Robotics: List Functions, Robotics: Remove Security Locks and Robotics: Repair.

The base chance of success is 30 percent plus 10 times the robot's level, but the robot's maximum success rate is 80 percent.

A robot with the robotics program still needs to use a robocomkit or equivalent tools. It can operate the kit like a normal character or the tools can be built into the robot's limbs. The built-in robocomkit is 10 percent heavier and 15 percent more expensive (575 Credits) than a normal kit.

Cost: 40,000 Credits

SAMPLE COLLECTION: (1) This program enables a robot – with the proper equipment – to collect a variety of samples, anything from soil samples, to air and water samples, vegetation, etc. More sophisticated robots are

better able to choose what areas to test and avoid contaminating samples or harming living creatures or damaging archeological sites.

Cost: 750 Credits.

Prerequisite: Sample collection equipment

SEARCH AND DESTROY: (4) The robot can perform combat missions that include tracking down its target. A robot must have the Attack/Defense program to use this program.

Cost: 3,000 Credits

SECURITY GRID: (2) This program is used in conjunction with a holoprojector. While the robot is in sleep mode, it can set up a light grid in its immediate vicinity so it will detect any object that breaks the beam and be able to wake up.

Cost: 500 Credits + holoprojector

SECURITY LOCK: (1) A security feature that must be defeated before any unauthorized roboticist can make any alterations to the robot's programming. This program may be installed on any robot regardless of level.

Cost: 500 Credits per level

SELF DEFENSE: (2) The robot can fight back if attacked in melee.

Cost: 500 Credits

SIGNAL JAMMING: (2) In order to intercept and prevent a signal, a robot needs a signal jamming program and the appropriate broadcast equipment. It uses a modulating signal to override and confuse receivers from obtaining a clear signal, causing the message to drop in and out. This will also disrupt remote robot control program signals. Robots whose signals are interrupted will behave according to their normal programming or will stop moving.

If the signal-jamming program is used in conjunction with an interference program, it can make clear reception of any radio signal nearly impossible. Where one fails, the other will likely succeed.

A roboticist needs to make a successful manipulate program check to defeat this program. If the check fails, the character cannot make another attempt for an hour and the signal jamming will continue.

Cost: 1,000 Credits + broadcast equipment (This needs a range limit)

SIGNAL OPTIMIZER: (3) This program boosts radio signals, weeds out corrupted data and replaces it with approximated information to fill the gaps. The result is 75 percent increased clarity. Whatever the chance of success at receiving a signal, multiply it by 1.75 and round down



to achieve the new success rate. However, this program will not counteract a signal-jamming program.

Cost: 500 Credits

Prerequisite: Broadcast equipment

SITE MANAGEMENT: (4) With this roboprogram, the robot can make structures like an environmentalist character, create improvised shelters, set or avoid primitive traps and snares, gather food, and do anything else to make a campsite livable for characters.

Cost: 3,000 Credits

SURVEY: (2) The robot can scout ahead of a character or exploration party and use the following Environmental Science skills: Analyze Animal Behavior, Biology, Botany, Cartography, Chemistry, Find Directions, Gemology, Geology, Geophysics, Physics, Toxicology, Tracking and Zoology. At level 4, the robot with the Survey Roboprogram also gains Analyze Ecosystems and Exobiology.

Cost: 2,000 Credits per level

Prerequisite: Sample Collection Roboprogram, appropriate sensors and equipment

TACTICAL ANALYSIS: (4) This program allows a robot – which needs both visual and audio receptors – to analyze its surroundings and make tactical judgments as if it were a normal player character. With enhanced data, the robot can help estimate the position of hidden targets with 20 percent effectiveness, increasing its accuracy by 10 percent.

It can also transmit this data to characters through a botlink, boosting their to-hit numbers by 10 percent. Of course to use any offensive or defensive moves, the robot must have the appropriate program.

Cost: 1,000 Credits



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TECHNICIAN: (4) A robot with a technician program can operate and repair machines and vehicles plus activate or deactivate security screens and open locks as though it were a technician of equal level. The exact skills the robot

knows are Acoustics, Communications Devices: Operate, Communications Devices: Repair, Defenses: Repair, Machinery: Operate, Machinery: Repair, Optics, Power Read, Security Systems: Activate and Operate, Security Systems: Deactivate Alarms/Defenses, Security Systems: Open Locks, and Vehicle: Repair.

The maximum types of vehicles that a certain robot can repair is equal to the robot's level times three. Once a robot with a technical program has been given the design notes and schematics of the vehicle, it can operate and repair it.

The base chance of success is 30 percent plus 10 times the robot's level, but the robot's maximum success rate is 80 percent.

A robot with a technician program must still have a techkit – or access to the appropriate tools. It may be able to use a normal techkit as a character or the tools may be built into its limbs. A built-in techkit is 15 percent heavier than a normal kit and costs 575 credits.

Cost: 40,000 Credits

TRANSLATOR: (3) This program will translate any known language in the Frontier. The robot also must be equipped with an audio receiver and a poly-vox.

Cost: 1,000 Credits

TRANSMISSION ANALYSIS: (3) This program is designed to key in on key words or voice patterns in unencrypted messages, then determine the nature of the message and pass on any suspicious messages to its controller.

Cost: 1,000 credits Pr: Broadcast equipment

VOICE SIMULATOR: (3) This program analyzes and recreates a voiceprint. To use this program, the robot must have an audio receiver and a poly-vox.

Cost: 500 Credits

ROBOT MANAGEMENT

ROBOT MANAGEMENT

Computers can direct robots through a robot management program. Higher level programs can control more robots. Often used with the industry, security, law enforcement and maintenance programs, the robot management program must be at least as high a level as the robots it is controlling. The number of robots that a program can control equals its level multiplied by its number of function points.

Robot brains often link into a computer with this program to manage other robots.

REMOTE CONTROL

The Robot Hand Controller (as detailed in the “Mutiny on the Eleanor Moraes” and in the Remote Robotic Control article in this issue) is a radio-based device that allows for a character to remotely control a robot. If a character wants to remotely control a robot, the robot must have its own code to avoid receiving conflicting commands from other units.

The controller includes a joystick and a two-way radio for verbal commands. Two miniature video screens show the operator what the robot’s sensors detect whether it’s from a visible-light or infrared sensor or other data.

Controllers often allow three modes of operation including:

1. General verbal commands within the robot’s mission and function.
2. Specific verbal commands within or outside mission and functions.
3. Joystick control with verbal and digital command overrides. This provides the operator with direct control of the robot. If the robot can fly, the hand controller will allow the operator to change altitude or direction. The pressure handgrip controls the robot’s speed and weapons (if any).

ACTIVATE/DEACTIVATE, PROTECTION PLATES, AND SECURITY LOCKS

A robotics expert can activate (turn on) or deactivate (turn off) a robot regardless of its level if he can gain access to its activation roboprogram. The expert also can activate robots that have been deactivated.

PROTECTION PLATE(S)

Before a roboticist can deactivate a robot or list its functions, remove its security lock or take any other action, he must access the robot’s internal roboprogram circuitry. This requires removing a protective plate, which normally takes one turn.

The plate can be removed in one turn even if the robot is fighting the character, but not if the robot is moving and the character cannot gain a firm handhold. The character probably will take damage during a combat situation before he gets the plate off. Once the plate is off, the robot can be deactivated in one turn if the character makes a successful skill check.

The first protective plate comes with the robot body at no additional charge. Additional protective plates can be added if the robot has a secure compartment to house its control unit.

SECURE COMPARTMENTS

Some robots – level 3 and above – may have specially-designed, secure compartments for their roboprogram circuitry. This compartment might even protect the robot’s computer memory and programs for an indefinite time even if the body is destroyed or heavily damaged by water intrusion, lunar dust, an acidic atmosphere, or other hazardous conditions. For example, a manufacturer will typically certify that a secure compartment should last underwater for a month if it hasn’t been compromised.

To access the roboprograms, a roboticist may need to remove multiple protective plates. The heavier, military versions of robots have anti-tamper devices (explosives, electrical shocks, etc.) built into their protective plates.

A secure compartment costs 1,000 Credits. Each additional protective plate costs 100 Credits, but a robot can only have a total number of protective plates equal to its level.

ANTI-TAMPER DEVICES

When a roboticist is working on an unfamiliar robot with an anti-tamper device and is not actively trying to determine if one is there, he must make a successful Intuition check (with any appropriate negative modifiers) to detect it; otherwise, he will trigger it. If the character is actively looking for a trap, they have a +20 percent chance to spot it with an Intuition check.

An anti-tamper device can be disarmed with a successful use of the Remove Security Lock skill; otherwise, the trap is sprung.

If a character has set off an anti-tamper device on a robot and then tries to get into the secure compartment of a similar model, the referee may give him an additional bonus to spot and then disarm the trap.

ELECTRICAL SHOCK ANTI-TAMPER DEVICE

This device is normally powered by the robot’s parabattery but has a 20 SEU backup clip in case of a power failure. It will deliver an electrical shock of 3d10 damage plus the character would have to make a current Stamina check to avoid being stunned. Each triggering of the device drains 4 SEUs. Cost: 500 Credits

DOSE GAS ANTI-TAMPER DEVICE

This goes off like a dose grenade, affecting all characters within a 5-meter radius who would need to make a Stamina check. Cost: 50 Credits

EXPLOSIVE ANTI-TAMPER DEVICE

This is a self-destruct device designed to wreck the roboprogram circuitry, making the robot completely unusable and potentially unrepairable. It will also cause 8d10 worth

of damage to characters directly working on the robot and 4d10 worth of damage to all characters within a 5-meter radius. Cost: 1,000 Credits

POISON GAS ANTI-TAMPER DEVICE

This explodes like a poison gas grenade affecting all characters within a 5-meter radius of the robot. Cost: 50 Credits

SECURITY LOCK

After the final protection plate has been removed from a robot's roboprogram circuitry board, there may be a security lock, which equals the robot's level.

The lock must be removed before the List Functions, Alter Functions, or Alter Mission skills can be tried. A robot can be deactivated after the protection plates are taken off but before the security lock is removed. Once a security lock has been removed, it cannot be used again. A failed skill check for Robotics: Remove Security Lock can result in a malfunction (see the Malfunction section).

ROBOTICS: REPAIR

Normally, only robotics experts or robots with a repair roboprogram will try to repair robots. Characters with technician or vehicle repair skills can also attempt to repair robots but they have a -20 percent modifier. Robots are repaired according to the standard repair rules. If a repair or modification attempt roll fails, roll on the Robot Malfunction table.

When rolling on the Robotic Malfunction Table, add +15 percent to the result if a non-roboticist is working on a robot alone. If the technician or roboticist has a fully-equipped repair shop, subtract -10 from the roll. If a character is working in a team with other specialists (roboticists or technicians) subtract -5 percent per team member up to a maximum of -20 percent.

ROBOT MALFUNCTIONS

If a player fails his character's roll on his Robotics: Remove Security Locks, Alter Functions, or Alter Mission

ALPHA DAWN ROBOT MALFUNCTION TABLE

| Roll | Malfunction |
|-------|--------------------------------|
| 01-20 | No Malfunction |
| 21-30 | Function Roboprogram Destroyed |
| 31-40 | Sensor System Failure |
| 41-50 | Mobility System Failure |
| 51-60 | Short Circuit |
| 61-70 | Level Drop |
| 71-80 | Mission Erased |
| 81-90 | Haywire |
| 91-00 | Explosion |

skills, the robot can malfunction. When this happens, the referee should roll 1d100 on the Robot Malfunction Table.

TABLE RESULT DESCRIPTIONS

01-20: No Malfunction: The robot continues to function normally.

21-30: Function Roboprogram Destroyed: One of the robot's function roboprograms (picked randomly by the referee) has been destroyed. The robot cannot perform anything that requires that program. If all of a robot's roboprograms are destroyed, the robot is deactivated.

31-40: Sensor System Failure: The robot's optical or radar/sonar sensor system fails. This means the robot can only locate a target by its normal audio receivers. Since it cannot normally maneuver by touch, it must go very slowly.

41-50: Mobility System Failure: The robot's primary (and/or secondary) mobility system – whether it is a hoverfan, wheels, tracks or legs – is damaged. The referee decides what type of limitations is placed on the robot's mobility. *Examples: the robot can only turn in circles or can only move in reverse or moves sluggishly at one-quarter speed or jerks forward with little control over its speed or has no movement at all, etc.*

51-60: Short Circuit: The robot is still operating, but has been damaged (effect at referee's discretion). For example, a robot with a short circuit might rattle and spark while it works, or suffer a severe loss of power to its weapons systems.

61-70: Level Drop: The robot suffers damage throughout which drops its programming and sophistication by the equivalent of one level for the purposes of combat, skills and intellect.

71-80: Mission Erased: The robot's mission program has been erased. It still maintains all of its functions, but has no purpose in life except to survive.

81-90: Haywire: The robot is completely out of control. It might attack at random, spin in circles, recite the Dralasitic Creed, or do anything else that the referee thinks fits the situation.

91-00: Explosion: The robot's parabattery explodes, causing 2d10 points of damage multiplied by the parabattery's type to the character attempting the skill. Damage is electrical, fragmentary, and concussive.

ROBOT COMBAT

A robot gets one melee attack for every pair of limbs it has. If the robot uses a weapon, it causes whatever damage is normal. When the robot attacks without a weapon, standard and anthropomorphic limbs cause 2d10 points of damage; heavy-duty limbs cause 6d10 points of damage.

Frontier Explorer

A robot using a ranged weapon is treated exactly like a character and is subject to all the ranged combat modifiers. However, a robot cannot attack unless it has a restrain, self-defense, or attack/defense program. The types of attacks available are determined by the respective programs.

As per the Alpha Dawn rules, a robot's basic chance to hit is 30 percent plus 10 times the robot's level ($30\% + RL \times 10$). This is the number used in both ranged and melee combat.

A robot's initiative modifier (IM) is its level plus three ($IM = RL + 3$). Other modifiers apply as usual.

A computer using a Robot Management program can remotely control the robot's weapon systems. It will have a base chance to hit of 30 percent plus 10 times the program's level ($30\% + 10 \times \text{Prog Level}$). The initiative modifier is the computer's level plus three.

| Level | To-Hit | Initiative Modifier |
|-------|--------|---------------------|
| 1 | 40% | +4 |
| 2 | 50% | +5 |
| 3 | 60% | +6 |
| 4 | 70% | +7 |
| 5 | 80% | +8 |
| 6 | 90% | +9 |
| 7 | 100% | +10 |
| 8 | 110% | +11 |

HELMET WEAPONS

Except for some anthropomorphic cybots and androids, robots do not wear helmets. However, they can mount some of the helmet weapons found in Zebulon's guide such as the minigrenade launcher or helmet rafflurs on their heads. As with characters, if a robot has a minigrenade launcher mounted, it cannot have helmet rafflurs added and vice versa. The mounting cost is 10 percent higher than normal because adjustments need to be made so robots can use these weapons.

WEAPONS HANDLING

As with vehicles and characters, there is a limit to the number of weapons that a robot can handle. A robot can make one melee attack for every *pair* of limbs that it has. Most robots (except the "tin can" style) that have a pair of standard or anthropomorphic limbs can pick up and use normal weapons without penalty. These weapons include grenades, man-portable heavy weapons such as the Ke-5000 (the standard, Alpha Dawn heavy laser) and Ke-6000 (the Zebulon heavy laser that causes slightly more damage per SEU), a Rafflur M-10, a recoilless rifle, a machine gun, etc. They do get a penalty for firing two weapons.

BUILT-IN WEAPONS

All robots, including androids, might have built-in weapons, some of which may be concealed until they are used. Hand and arm mounted weapons cannot be used if the robot is holding another weapon in its manipulator arms (unless the robot has more than one pair of arms and the weapons are mounted in the secondary pair). Built-in weapons can be used – without a firing penalty – in addition to any that the robot uses with its manipulator arms. Mounting costs are the weapon's price plus 20 percent; to mount a concealed weapon, the cost is equal to the weapon plus 50 percent. The weapon's weight is increased by 15 percent.

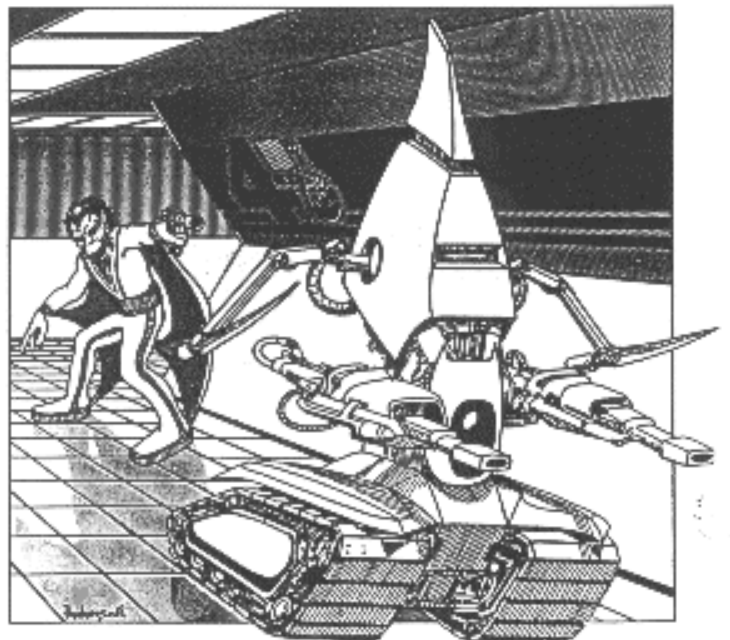
A microbot might be built around a one-shot "holdout" pistol or carry a grenade or an explosive. Super-light, ultra-light, light, standard, standard-reinforced robots can only have up to two built-in and/or concealed pistol-size or melee weapons.

Anthropomorphic robots and androids may have up to four built-in and/or concealed pistol-size or melee weapons (or up to six if an extra set of limbs have been installed). These weapons are often mounted in the hands and/or forearms.

Standard and standard reinforced bodied robots can have up to six built-in weapons (which is equal to the maximum number of manipulator limbs that could be added to such a unit). If the weapons are rifle size or larger, then the weapon replaces a limb but it will have servos so it can swivel around.

Heavy-duty, heavy-duty reinforced and super heavy-duty robots can have eight built-in and/or concealed weapons. These include pistol to rifle to man-portable weapons but not vehicle weapons.

Warbots with heavy-duty bodies can have two small



turrets or one medium turret, but they cannot mount vehicle weapons. Surface mounted weapons are on swivel mounts and have firing arcs – front (F), front and right (F-R), front and left (F-L), front hemisphere (FH), right side (RS), left side (LS), rear (Rr), rear and right side (Rr-RS), rear and left side (Rr-LS) or rear hemisphere (RrH). Even a surface-mounted rifle or grenade launcher will take up the space for one limb.

Warbots with heavy-duty reinforced bodies have 8 hardpoints available for mounting man-portable and vehicle weapons. The weapons can be internally or externally mounted. The warbot can have two turrets – two small, one small and one medium, or two medium turrets. Surface mounted weapons are on swivel mounts that have firing arcs. Small weapons take up the space for one limb; medium weapons take up the space for two extra limbs; and large weapons take up the space for three extra limbs.

Warbots with super-duty bodies have 18 hardpoints available for internal or external man-portable or vehicle weapons. It can have up to four turrets – four small turrets or one medium and two small turrets or two medium turrets or one large and one small turret. Surface mounted weapons are on swivel mounts with firing arcs. Small weapons take up the space for one limb; medium weapons take up the space for two extra limbs; and large weapons take up the space for three extra limbs.

TURRETS

Capable of rotating 360 degrees, a top-mounted turret allows the robot to face one direction yet engage an opponent that is not in the firing arcs of its other weapons. The robot could fire its turret weapons

at a second or even third target. Top mounted turrets cannot fire at objects more than 90 degrees above them.

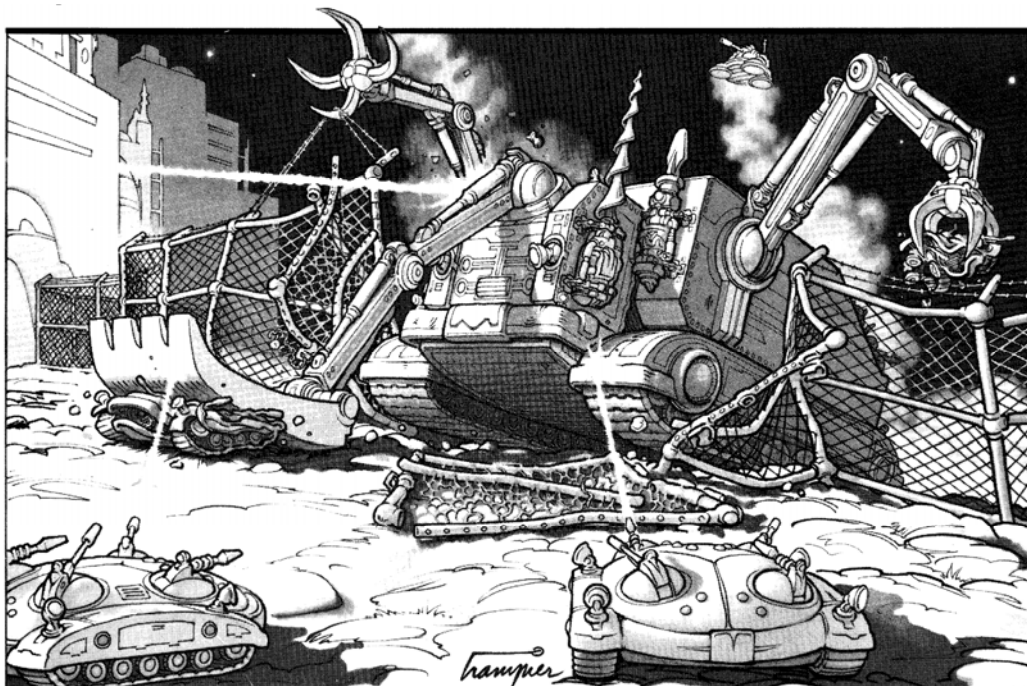
A vertically mounted (side) turret can fire at straight up and straight and straight down, but only 90 degrees in the other direction.

Turrets have motorized components that permit them to rotate and move. Although more expensive than a surface mount, they are popular on warbots.

Since warbots are designed to accept turrets, adding them does not increase the robot's body cost or weight; the turret still has weight and a cost, however. Turrets added to other models will add 20 percent to their body cost and weight in addition to the cost and weight of the turret.

INTERNAL TURRETS

This type of turret is concealed inside the robot's body until it is needed. Once activated and deployed, it can fire in a full 360 degree arc. Thus, a warbot could be camouflaged to look like another heavy-duty robot and catch characters unawares until it fires – or until a roboticist successfully uses his identification skill.



ROBOT TURRET WEAPON MOUNT TABLE

| Mount Type | Size | Hardpoints | Weight (kg) | Cost (Credits) |
|-----------------|--------|------------|-------------|----------------|
| Visible Turret | Small | 2 | 5 | 2,000 Cr. |
| | Medium | 3 | 10 | 2,750 Cr. |
| | Large | 5 | 25 | 3,500 Cr. |
| Internal Turret | Small | 2 | 6 | 3,250 Cr. |
| | Medium | 3 | 12 | 4,000 Cr. |
| | Large | 5 | 30 | 5,250 Cr. |

ROBOT DESIGN COST TABLE: COST PER LEVEL

| Level | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----------|-----|-----|-------|-------|-------|-------|--------|--------|
| Cost (Cr) | 200 | 500 | 1,000 | 2,000 | 4,000 | 8,000 | 20,000 | 30,000 |
| To-Hit | 40% | 50% | 60% | 70% | 80% | 90% | 100% | 110% |
| IM | +4 | +5 | +6 | +7 | +8 | +9 | +10 | +11 |

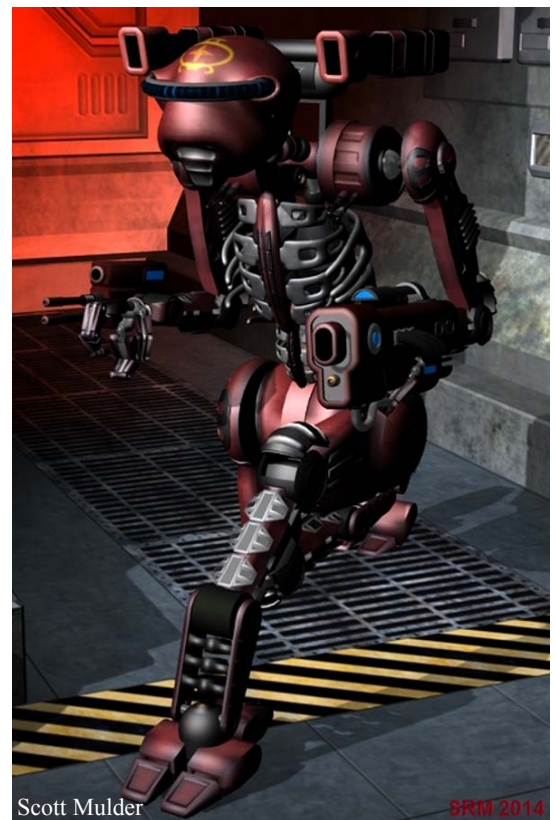
ROBOTIC DESIGN COST TABLE: BODY TYPES

| Body Types | Credits | Structure Points | Battery Type | Credits | Battery Weight |
|----------------------------|-------------|------------------|--------------------|---------|----------------|
| Anthropomorphic | 3,000 | 100 | Type 2 parabattery | 1,200 | 50 kg |
| Anthropomorphic Reinforced | 6,000 | 150 | Type 2 parabattery | 1,200 | 50 kg |
| Microbot | 200 | 5 | Minipowerclip | 50 | -- |
| Super-Light | 800/875 | 15/20 | 100 SEU pack | 500 | 10 kg |
| Ultra-Light | 3,000/5,000 | 70/105 | 100 SEU pack | 500 | 10 kg |
| Light ("Tin Can") | 1,200 | 50 | Type 1 parabattery | 600 | 25 kg |
| Standard | 2,000 | 100 | Type 1 parabattery | 600 | 25 kg |
| Standard Reinforced | 3,500 | 150 | Type 2 parabattery | 600 | 50 kg |
| Heavy-Duty | 5,000 | 500 | Type 2 parabattery | 1,200 | 50 kg |
| Heavy-Duty Reinforced | 8,500 | 750 | Type 3 parabattery | 2,300 | 100 kg |
| Super-Duty | 20,000 | 1,000 | Type 4 parabattery | 4,500 | 200 kg |

| Extra Limbs | Credits | Body Weight Increase | Body Cost Increase |
|---------------------|---------|----------------------|--------------------|
| Microbot (Single) | 100 | 10 % | 10 % |
| Light-Duty (Single) | 250 | 10 % | 10 % |
| Standard Pair | 800 | 15 % | 15 % |
| Heavy-Duty Pair | 1,200 | 15 % | 15 % |
| Anthropomorphic | 1,000 | 15 % | 15 % |

| Robot Security Equipment | Credits |
|--------------------------------------|-----------|
| Secure Compartment (3) | 1,000 |
| Additional Protective Plates* | 100/plate |
| Anti-Tamper Device: Electrical Shock | 500 |
| Anti-Tamper Device: Dose Gas | 50 |
| Anti-Tamper Device: Explosive | 1,000 |
| Anti-Tamper Device: Poison Gas | 50 |

*Note: A robot can only have a total number of protective plates equal to its level. Extra protective plates can only be added if the robot has a secure compartment.



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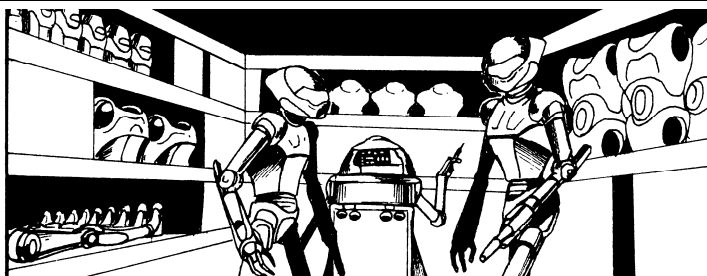
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ROBOTIC DESIGN COST TABLE: ROBOT CLASSIFICATIONS/ COST (CR) PER ROBOT LEVEL

| Class | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Movement Rate |
|--------------------|-------|-------|--------|--------|--------|--------|--------|--------|---------------|
| Android | -- | -- | -- | -- | -- | 20,000 | 30,000 | 80,000 | 40 m/turn |
| Brain | -- | -- | -- | -- | -- | 17,000 | 30,000 | 80,000 | 30 m/turn |
| Combat | -- | 3,500 | 4,000 | 5,000 | -- | -- | -- | -- | 120 m/turn |
| Courier | -- | 3,500 | 4,000 | 5,000 | 7,000 | 11,000 | -- | -- | 30 m/turn |
| Cybernetic | -- | -- | -- | 5,000 | 7,000 | 11,000 | 30,000 | 80,000 | 30 m/turn |
| Heavy Duty | 5,200 | 5,500 | 6,000 | 7,000 | -- | -- | -- | -- | 30 m/turn |
| Maintenance | 2,200 | 2,500 | 3,000 | 4,000 | -- | -- | -- | -- | 60 m/turn |
| Medical | -- | -- | 10,000 | 15,000 | 18,000 | 21,000 | -- | -- | 120 m/turn |
| Reconnaissance | -- | 8,200 | 9,000 | 10,000 | -- | -- | -- | -- | 120 m/turn |
| Repair/Engineering | -- | -- | -- | 39,500 | 42,000 | 50,000 | -- | -- | 60 m/turn |
| Security | -- | 3,500 | 4,000 | 5,000 | 7,000 | 11,000 | -- | -- | 90 m/turn |
| Service | -- | -- | 4,000 | 5,000 | 7,000 | 11,000 | -- | -- | 30 m/turn |
| Warbot | -- | -- | -- | -- | 12,000 | 16,000 | -- | -- | 120 m/turn |

ROBOPROG COSTS

| Robot Programs (Roboprogs) | Credits | Robot Programs (Roboprogs) | Credits |
|----------------------------|-------------|----------------------------|-----------|
| Attack/Defense (2) | 1,000 | Restrain (2) | 500 |
| Bio-electric Circuits (6) | 60,000 | Robo-Link (1) | 1,300 |
| Communications (4) | 8,000 | Robotic Repair (4) | 40,000 |
| Computer Link (4) | 4,000 | Sample Collection (1) | 750 |
| Crash Wish (1) | 1,250 | Search & Destroy (4) | 3,000 |
| Dis-Map (2) | 500 | Security Grid Program (2) | 500 |
| Entertainment (3) | 800 + fee | Security Lock (1) | 500/level |
| Etiquette and Protocol (3) | 2,000 + fee | Self Defense (2) | 500 |
| Extended Range (1) | 400 | Signal Jamming (2) | 1,000 |
| Facial Recognition (2) | 750 + fee | Signal Optimizer (2) | 500 |
| Help-Beam (1) | 250 | Site Management (4) | 3,000 |
| Help-Call (1) | 150 | Survey (2) | 2,000 |
| Interference Program (2) | 1,000 | Tactical Analysis (4) | 1,000 |
| Medical (4) | 50,000 | Technician (4) | 40,000 |
| Medical: First Aid (2) | 3,000/level | Translator (3) | 1,000 |
| Para-Scan (3) | 500 | Transmission Analysis (3) | 1,000 |
| | | Voice Simulator (3) | 500 |



OTHER EQUIPMENT COSTS

| Robot/Computer Equipment | Credits | Robot/Computer Equipment | Credits |
|--------------------------|---------|--------------------------|---------|
| Bot Link | 500 | Holographic Keyboard | 250 |
| Bot Restrainer | 150 | Holoprojector Type I | 1,000 |
| Bot Tracker | 70 | Holoprojector Type II | 1,500 |
| Charging Dock | 400 | Holorecorder Type I | 700 |
| C-Thru Analyzer | 1,500 | Holorecorder Type II | 1,200 |
| Credit Scanner | 700 | Plastiscreen | 300+ |
| Cutting Torch | 500 | Speech Output | 100 |
| Dart Attachment | 200 | Somatic Control | 300 |
| Dose Dart Ammo (Qty. 5) | 10 | Voice Control | 100 |
| Holographic Display | 200 | Holoprojector Type I | 1,000 |

ADDITIONAL NOTES

The prices given here are for customized robots. Standardized models coming from a manufacturer may have significant lower prices due to a variety of mass production advantages including the commonality of parts and the fact they can make a profit over time.

Player characters can also try haggling to get a lower price. Customizers might offer discounts or package deals to characters such as buy a program and receive Weatherization: Bronze for half off.

Parts shortages can occur due to wars, blockades, piracy, labor disputes, etc. So, a referee can feel free to make some systems more pricey or hard or nearly impossible to acquire.

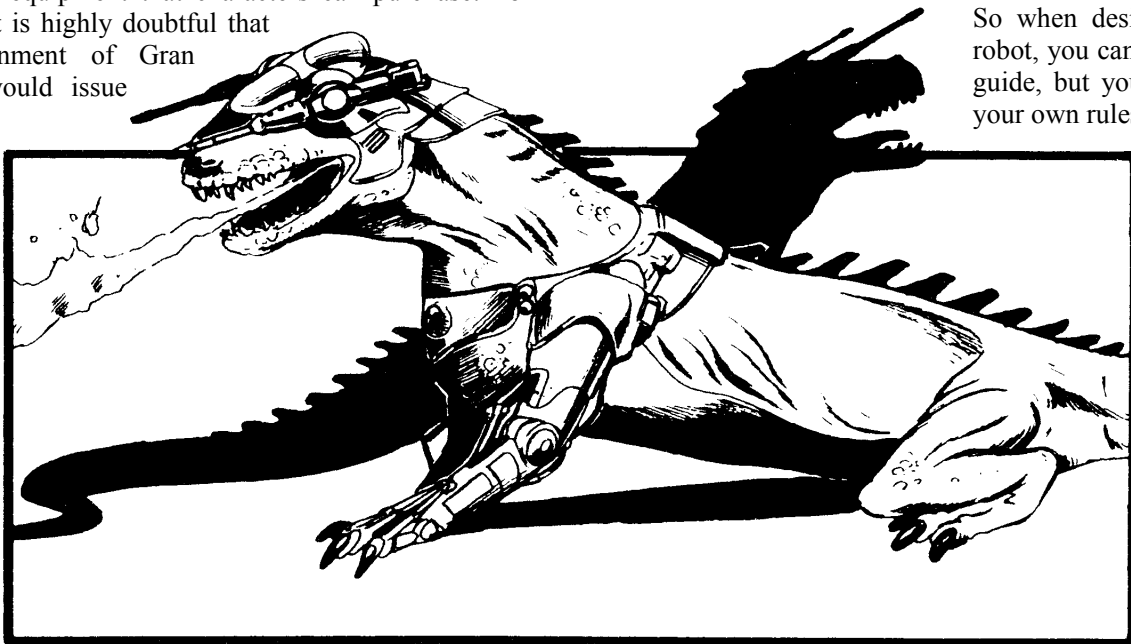
Planetary laws will also significantly affect what types of robots and equipment that characters can purchase. For example, it is highly doubtful that the government of Gran Quivera would issue any

adventurer a permit to build a warbot. The Pan-Galactic Corporation might be very willing to supply the body and chassis, but a character would need to go off world to get it outfitted.

The referee or players may design other roboprogs to meet different conditions. For example, a Heavy-Duty mining robot may have an excavation program to help it identify where to work, a robotic transport may have some of the vehicle programs listed in Zebulon's Guide to help it do its job, etc.

Some other robot articles from Star Frontiersman and Frontier Explorer also provide good alternative rules that were not included in this article. One such article by C.J. Williams is "The Robot Ward" in Star Frontiersman #18. Williams provides information about the need for robot maintenance, robot ailments resulting from neglect, malicious software, etc. It is a good stand-alone supplement that didn't need to be repeated here.

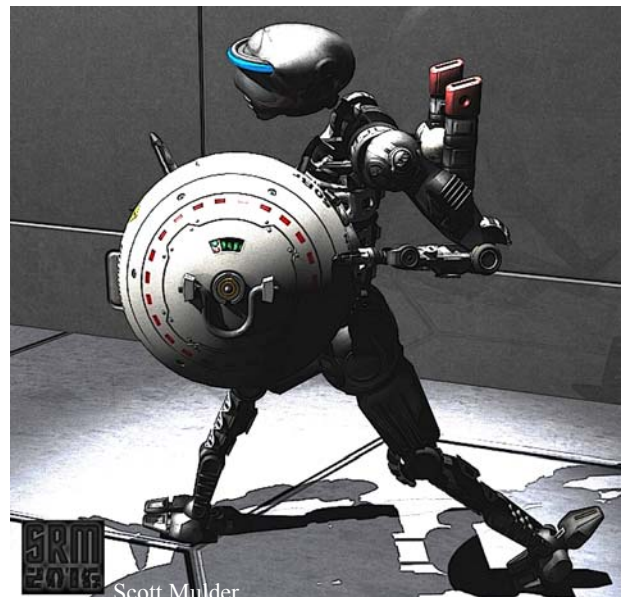
So when designing your robot, you can follow this guide, but you can make your own rules too.



ROBOT DESIGN CHECKLIST

1. Chose a purpose for the robot. For example, what is it supposed to do? If it is a service robot, is it a waiter, a bartender, a general assistant, etc. This should help determine what body style, robot type, and level that you want.
2. Chose a body style. Keep in mind that certain robot types are limited to certain body styles. The body style may also limit the robot level. For example, using *Frontier* technology, an owner cannot use a microbot to design a level six robot.
3. Pick a robot type – for example, courier, service, maintenance, combat, warbot, etc. Remember to list any standard programs that come with the robot type so you don't end up repurchasing them.
4. Pick a robot level. The robot type and body style may limit what levels are available for your mechanical friend.
5. Manipulative limbs – decide if you are installing any additional limbs. Keep in mind that the body type will determine how many – and what types – of limbs can be added.
6. Pick the standard mode of transportation – legs, wheels or track movement – and list how many legs, wheels or tread units the robot has.
7. Or, you can switch to an alternative mode of travel such as hover, rotor, rocket power, zero-G thruster, etc. Keep in mind switching to an alternative mode of travel will alter the robot's body cost and weight in addition to the cost and weight of the new drivetrain.
8. Or, if the robot has two movement types – a standard mode and an alternative mode – then the hover, rotor, aircar rocket, or thruster pack is considered a secondary form of transportation. This results in additional costs and weight to upgrade the robot's body. The secondary travel mode also takes up space for two extra limbs. If space for extra limbs is not available, then you can't add a secondary transportation mode.
9. Or the robot may be a submersible. See the rules about that option.
10. Decide if you want or need any powerplant modifications to increase speed.
11. Prepare the robot for additional parabatteries for extend range – this modification increases the body style's weight and cost. Remember to purchase the extra battery and add its weight to the equipment section.
12. Purchase a weatherization package if desired.
13. Purchase electromagnetic pulse shielding if desired.
14. Purchase stealth technology if desired. Keep in mind the expenses and limitations of this design.
15. Purchase additional robot programs. Remember that a robot's level and type may prevent it from having certain types of roboprograms.
16. Add any protective plates and/or a security compartment.
17. Buy any anti-tamper devices for your robot.
18. Purchase and install any non-weapon equipment that you want your robot to have such as radios, magnigoggles, etc. Keep track of the additional weight.
19. Weapons – decide if the robot has any built-in or externally mounted weapons. Robots must have the appropriate roboprograms to use certain weapons. Don't forget to purchase ammunition and/or power sources and account for the weight.
20. Purchase and add any turrets, taking into account any modifications to the robot's body.
21. Determine what defenses the robot will have – for example, albedo paint, skeinsuit plates, defense screens, spray-on armor, etc. Add the weight and cost. Include a power source for powered screens.
22. Add the 10 percent installation fee to the total cost. Remember, some modifications such as spray-on armor have a separate application fee.
23. Calculate the total cost and weight of the robot. Determine its initiative modifier (IM) and attack scores. And, of course, recheck your calculations.
24. If necessary, refine the robot's mission and function instructions.
25. Have fun with your new robot friend.

FE



Robots

A CYBOT NAMED JOKER

Tom Verreault

K'yberdine Robotics of Terledrom produced a ship and installation maintenance and repair management cybot whose name, when translated from Vrusk, was Joint Operation Controller Electronic Remotes or simply Joker. Its mission was to manage or supervise low level robots maintaining a ship or installation. The ultimate mission being to free up the crew or staff to not worry about whether the head was fully stocked in multi species toilet paper. This model cybot was known to be both creative and highly effective at its mission (star ships with a Joker gained +5% bonus to DCR).

The Joker model cybot used donated dralasite brain cores exclusively. Whether this fact lead to the glitches that occasionally turned up is difficult to prove. However, some Joker cybots seemed to develop a sense of humor though on the corny side.

Their ability to enhance the damage control of a Star ship makes the Joker highly sought after and since the model was discontinued a decade ago the price for one has only increased.

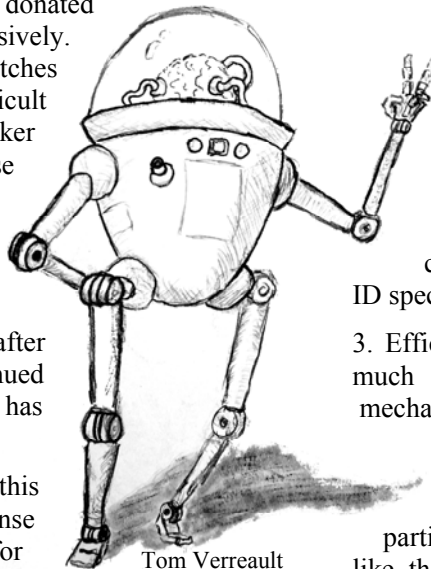
Theories abound about how this cybot might have developed a sense of humor but no one knows for sure. Some theorize that it's because the dralasite style sense of humor that is typically exhibited is hard wired into the dralasite brain core.

The reality is that an obsolete model of anti-shock implant was used in the Joker and when the cybot experiences a strong power surge it acts as a circuit breaker shutting down the cybot. It requires a full reboot and afterwards the sense of humor develops.

One way the sense of humor expresses itself if by targeting the lower level robots for abuse and practical jokes. They will begin to have graffiti written in binary etched on them or signs attached to them in Pan Gal.

Typical graffiti:

- "Short Circuit Me"
- "Recycle Me"
- "To err is sapient, I just run programs."



Tom Verreault

A TYPICAL JOKER CYBOT

Level 6 cybot in a standard robot body

Equipment: anti-shock implant, chronocon, toxyrad gauge (to help protect organic parts), type 1 para battery, robot management program

TYPICAL JOKER MISSION

Manage FACILITY robotic assets to maintain FACILITY at highest efficiency so that STAFF may accomplish their mission.

TYPICAL JOKER FUNCTIONS

1. FACILITY is usually defined with a map, layout, or schematic.
2. STAFF can be defined a number of ways: with a roster (will require staff to prove they are the name on the roster), with roster and identity records (photos usually work), or anyone with a company/facility ID and/or uniform (uniform and ID specs will be included).
3. Efficiency is defined with extensive files on the way much of the facility's service facilities and mechanical/electrical fixtures are supposed to work (including repair and maintenance of other robots). There is language to allow staff to instruct the cybot in adjustments that aid that particular staff person's efficiency like whether they like the multispecies toilet paper to dispense from the front or back of the roll.

Note: if the Joker is the only facility robot he will do all maintenance and service work himself but the facility will not benefit from his ability to boost DCR and additionally he will begin to experience malfunctions within 1-3 months since he will work 20 hours a day, 10 days a week (the GST week).

The stock cost of a JOKER Cybot new out of the box was 17,720 CR. However, this model has been discontinued and the demand for one displaying the odd quirk of boosting DCR has driven prices to between 3 to 5 times the stock price. Player characters attempting to buy one will need to role play the negotiation or roll against an appropriate skill or the PER ability score. Some Jokers have had mag boots installed for duty in space and many seem to have been modified with extra limbs for some reason.

Robots

THE SCYTHE DRONE

A DOWN & DIRTY CONVERSION OF THE REAPER DRONE

Tom Verreault

Disclaimer #1: The Scythe is a very bad idea for game balance, power creep, and playability.

Disclaimer #2: What follows is a quick and dirty approximation of the Reaper using, as much as possible, existing game mechanics, hardware and systems. If you don't think it's very pretty, then my advice is to not ask it to dance.

For purposes of clarity the real world drone will be referred to as the Reaper and the game version will be called the Scythe.

THE CONVERSION

The Reaper drone could be treated as a robot in Star Frontiers (SF). So the first question is what is the level of the robot. SF robots can communicate verbally at level 3 and above and to my knowledge the Reaper does not do this. However, the Reaper's hunter killer mission would suggest a SF warbot with the hunter killer program; which unfortunately means a level 5 or 6 robot. Since this is a conversion we'll go with a level 2 security robot.

The next consideration is the robot's body. None of the existing robot bodies work for our purposes though the heavy duty body comes close in size. So we'll say that the defense contractor developed a special aerial drone body that matches the size and cost of the SF jetcopter (this is important when we get to arming this beast). The cruise speed of the SF jetcopter is 350 kph while the Reaper's is 230 kph. For the sake of game balance and to give player characters a chance to intercept a Scythe on its mission of death, we'll use the Reaper's cruising speed of 230 kph.

The drone will need the attack/defence and search/destroy programs for robots as well as the computer link program. IR optics (see Dragon #99 "Tanks A Lot!"), a radiophone, and a type 4 parabattery will also be required.

Star Frontiers has never bothered much over the maximum ceiling of its air vehicles and we'll not worry about that either but should a referee need a ceiling the real world Reaper's ceiling is a little over 15,000 meters.

We've already reference Dragon #99 and the "Tanks A Lot!" article and naturally enough, the military grade weapons for arming the Scythe will be found there. The article in question can be found on line here:

<http://www.spy.net/~curator/tanks.htm>

Because we used a jetcopter's body the Scythe is limited to two weapon pods each holding 2 spaces of weapons. The weapon is of course the guided missile with choice of

cheap missile or expensive missile. Clearly the author, Alex Curylo, had game play and power balance in mind when he designed these weapons and they bear a poor resemblance to real world guided missiles. However, the scope of this article is not a rewrite of "Tanks A Lot!" so we're using the guided missiles as is. This means a Scythe can carry 4 of them and fire any number of them in one turn at up to 10 km from the target.

Depending on which missiles are being used, the referee should be prepared to roll a lot of dice. Alternately, this is a weapon capable of massive destruction and the potential to kill the whole party of player characters so its use should be limited to killing vehicles and destroying buildings, preferably when the player characters are not in them. It might be advisable to not waste time rolling for damage and simply declare targets destroyed unless player characters are operating the drone and resource allocation is important to the game.

Finally, the cost is of course no comparison between game world and real world. The Reaper costs \$64.2 million. The Scythe (unarmed) costs 57,300 Cr.

THE SCYTHE

Cost: 57,300 CR

Speed: 230 kph/ 50 kph

Cargo: 4 spaces of weapons in 2 two space weapons pods.

GUIDED MISSILES

All guided missiles cost 300 Cr to mount. The damage for the expensive missile should be 60d10.

OPERATING A DRONE

The drone is designed to be operated remotely by a living being with their finger on the switch. A robot of this level is capable of managing itself in flight and piloting to a designated area. Release of weapons can only be ordered by a sapient operator. To operate the drone requires a console set up in a vehicle or building with a radiophone or similar equipment. This means on a world with no communication net or comm satellites, the drone can be operated up to 100 km (should this be 1000km for the radiophone?) from the controller. Alternately, a robotic hand controller could be used but its range is more limited.

FE

Equipment

REMOTE ROBOTIC CONTROL

Tom Verreault

In module SFKH2, *Mutiny on the Eleanor Mores*, the survey robot hand controller was introduced as new equipment. Some details were overlooked like its cost and the range of its transmitter. This article will update the hand controller for general use and introduce other methods as well.

THE ROBOTIC HAND CONTROLLER

This device is a videocom remote controller with a range of 250 km. Terrain and tall buildings can greatly degrade the range.

The hand controller has a joystick and visible light and IR displays. The optical displays can be toggled between 4-5 cameras mounted on the robot.

A robot must be paired to a hand controller. It must also have an installed videocom receiver/transmitter (see below) or a radiophone. If the robot lacks IR optics there will be no IR display.

A robot can be controlled by one of 3 methods:

1. General verbal commands (commands must be within mission or function).
2. Specific verbal commands outside or within mission or functions.
3. Joystick control with verbal overrides. This is direct control of a robot by joystick.

Because the device has all the bells and whistles, a character without robotics skill can use this device to control a robot and only suffer a -10% penalty instead of the standard -20% for performing an unskilled action.

There is a more expensive model called the C model. This device has an internal chronocom (range 5km). On worlds with world-wide com networks, using the chronocom gives the device virtual global reach. Weight for both versions of the device is 1kg.

Note: I've assumed that this remote controller is based on the same technology as the radiophone in the equipment list and that this is different in operation from the chronocom. The hand controller obviously transmits IR

and video much like the videocom equipment for star ships in the game hence the use of that terminology.

Standard model cost: 250 Cr

C model cost: 350 Cr

VIDEOCOM RECIEVER/TRANSMITTER

This item is an accessory for installation in vehicles and robots. Like the hand controller it has a 250 km range and terrain can greatly reduce this. The radio Reciever/transmitter is required equipment for a robot to be controlled by radio signal. Used in a vehicle it allows for radio based two-way communication.

Weight: N/A **Cost:** 200 Cr

WALKIE TALKIE VIDEOCONS

Allows two-way communication over limited range (100 km).

Weight: N/A **Cost:** 100 Cr/ pair.

ADDITIONAL RULES

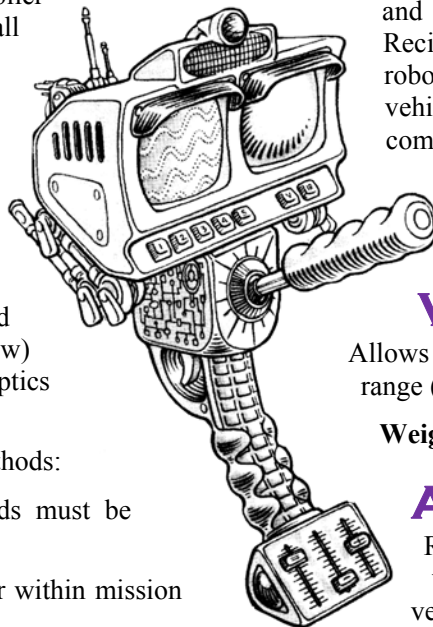
Robots with installed chronocoms or videocoms can be controlled by a roboticist verbally. There is a -10% penalty for required control checks done this way.

Note: computers with access to a communication device and a robot management program allow a computer operator to control a robot in the same way as the hand controller.

Finally, having made the assumption that radiophone/videocom communication is different from chronocoms I also differentiate them further. Videocom technology is not secure and can be listen in on while chronocom communication is secure.

SUGGESTED USES

1. An engineer could use a robotic remote to inspect external damage to the ship.
2. Demolitions remotes would greatly increase safety of the demolitions expert.



Campaign Material

ROBO-SOURCING THE FRONTIER

Tom Verreault

Junior Executive senior grade Kl'xx T'r, a vrusk, glanced at the human steward arranging platters of mixed digit food and carafes of freshening liquid on the side board just inside of the conference room. The brief glance triggered two side thoughts along different facets of his brain even as he smoothly continued his presentation.

Kl'xx had studied communication to overcome his inability to speak the same languages as the other space faring species and improve his ability to communicate through the computerized electronic translator, the polyvox. He had also studied communication as a means to excel in the corporate organizational environment. In time he had come to value beauty in well-crafted communication and oral presentations. Despite the hint of annoyance at the human steward Kl'xx the orator artist was on his game and shifted his position and activated a holographic display of 3D pie charts to shift his audience's attention away from the steward and anchor it on Kl'xx and his beautiful presentation.

Even as Kl'xx was self-congratulating himself on the beautiful job he was doing, a smaller facet of his brain registered the thought that the offending human in question seemed familiar to Kl'xx. If he had not been so deeply concerned with the beauty of his presentation he may have done more than quickly dismiss the thought. If he had devoted other facets to the thought a realization may have come into focus causing him to realize that this human was an intern that Kl'xx had interviewed for internship in the legal department. He also was one of the many interns as well as paid staff to leave the mega corp when Kl'xx's own robo-source program made their positions obsolete. Because he was shifting everyone's attention no one noticed when the steward attached something to the underside of the side board.

"...as you know, robo-sourcing was tested in the legal department. A robotic brain with an advanced legal program was tasked with doing document preparation and initial document review. Experienced lawyers had final document review. The results were a 62% reduction in department staff, a corresponding savings in payroll and a 33% increase in efficiency of the department overall."

Carlos listened to the vrusk exec drone on through his polyvox about how wonderful robo-sourcing was when all it had done was terminate his internship, crushed any hope of an entry level position at PGC and left him with a crushing mountain of credit debt from law school. His

mounting resentment had made him an easy mark for the Silver Death Cult recruiter and led to today where Carlos and another cell member, masquerading as caterers, would strike at the robots taking jobs from the living. Except that Carlos' plan went beyond that of what the rest of his cell had envisioned. Carlos was going to strike at the exec who had headed up the robo-sourcing project.

He armed the explosive device and texted his partner. Wendy was leaving a similar device in the sub floor beneath the robotic brain that had replaced most of the legal department in the PGC Tower. The sound of beautiful presentation followed him all the way to the elevator.

"...the key factors for robo-sourcing are rapid technological change, greater emphasis on corporate core competencies, increased risk, and the search for greater flexibility, and the growing strength of an interstellar economy. The results of complex change in the cost boundaries facing mega corps...."

"Breaking news: two explosions occurred earlier today at the PGC Tower. Preliminary reports say they were on the 43rd and 76th floors. As many as 8 are reported dead with the injured numbering as high as 20 and the death toll could rise. The terrorist group, the Silver Death Cult has taken responsibility. Star Law is refusing to comment at this time...."

GAME INTEGRATION

Robo-sourcing is only the latest practice of the vaunted Frontier wide mega corporations to trim costs and payroll. The claim is that it is not about paying less for labor but about increasing profitability. The counter claim is that the increased profitability is at the expense of workers while bonuses for executives are at an all-time high.

Robo-sourcing can be instituted in a variety of ways. Traditionally it has been employed extensively with security, customer service, and facilities maintenance departments but now corporations are looking to employ it in other areas as well. Robotic brains are being successfully used to replace administration and support staff in departments that were never considered for robo-sourcing before. With the appropriate program, robotic brains effectively replace armies of aides, secretaries, and administrators. Retained are the top-level specialists in the affected department.

The social consequences are numerous with increased unemployment being the most obvious. The terrorist cadre, the Silver Death Cult has gained popularity and expanded its activities as robo-sourcing has increased. The governments of many colonies are considering legislation to limit or regulate robo-sourcing.

There is little doubt that conflict and unrest over robo-sourcing will abound for decades across the Frontier.

ROBOT DESIGN

Robotic brains employed in robo-sourcing may require a specialized program that allows it to understand the job. In the story above the robotic brain would have required a law program. These programs don't exist on the equipment list but can be created at need. Most should cost 2000 Cr.

A typical robotic brain management bot used for robo-sourcing is a level 6 robotic brain in a heavy duty body with a computer link program and a program in the work

it is supposed to do. The typical cost is 28,000 Cr.

At the robotic brain's disposal will be a series of lower level robots. Some maybe anthropomorphic robots acting as secretaries, and others may be standard body robots managing, printing, collating, and delivering of documents in the example of the legal robot, or otherwise doing the menial and day-to-day tasks of the field.

If parties were trying to damage or destroy the robotic brain, it lacks the programing to defend itself properly but being level 6 it will certainly try by fleeing and directing the robots at its disposal to get in the way of attackers. Secretary bots may have a restrain program that would allow them to accost an attacker and attempt to stop them.

A secretary bot is a level 3 maintenance robot with an anthropomorphic body, type 1 parabattery, a restrain program, and a customer service & office work program (500 CR) and it costs 7600 Cr.

The mission of the secretary bot is to control access to living employees and or a robotic brain while performing typical secretarial duties.

FE

NEW 35TH ANNIVERSARY LOGO AND PATCH

Back in 2012, I created a [30th anniversary logo](#) and got permission from Wizards of the Coast to produce [a patch based on that logo](#). 2017 is the 35th anniversary of Star Frontiers and it's time for a new logo and (hopefully) patch as well.

I've talked a bit about this on social media and the response has been positive so I'm bring this to the wider community. I'm also unveiling the new logo I've produced.

Seen at right, the new logo carries with it much of the iconography and style of the original patch. The Assault Scout has been replaced by a Sathar Destroyer but much of the rest has stayed the same. The destroyer image was created by the Frontier Explorer's resident CGI artist, Scott Mulder.

I've created [a webpage describing the new logo](#) much like the one for the 30th Anniversary logo where you can find details and digital copies of the logo to download. I encourage everyone to use the logo in Star Frontiers related activities throughout 2017.

I'm still waiting to hear back from Wizards of the Coast on permission for the patch which is taking longer than I anticipated. I am fairly confident that they will say yes but there is always the possibility of rejection. However, if there is a large demand, the probability is higher that they will give permission to produce it. If



you would be interested in one (or more) patches based on this logo, do me a favor and send an e-mail to patches@frontierexplorer.org and let me know how many you'd be interested in buying. Like last time they will be a 3" circular patch and cost \$5, including shipping. This will give me an estimate of the demand as well as a way to contact you once they are going into production.

Thanks for your interest and help.

Miniatures

**BUILDING THE FRONTIER IN MINIA TURE:
ROBOTS!**

Tom Verreault

When it comes to robot miniatures, there are a multitude of products and lines available from numerous manufacturers. What follows is some recommendations for populating your games. I recommend that gamers simply collect what they like.

Official Star Frontiers miniatures are still out there and turn up on EBay. My personal favorite is the one with the hover fan for movement. They are a product of their time and the poses can be a little awkward but they have a charm all their own that may just be rooted in nostalgia.



If you collect these be forewarned that lead rot is a problem with these miniatures. Lead rot is were acid from the environment and the card board packaging reacts with lead and begins a self-perpetuating chemical reaction that eats away at the lead. Inspect these miniatures for deterioration and prime them right away.

Fans of the Terminator movie franchise can find serviceable miniatures in the Games Workshop Warhammer 40,000 Necron line: <https://www.games-workshop.com/en-US/Necron-Warriors-2015>.



Games Workshop miniatures are plastic and unit box sets come with lots of extra bits (heads, weapons, arms, etc.) which is a plus if you are into converting miniatures. The box set retails at \$36. There is a

thriving trade in GW miniatures on EBay and it's possible to buy 1 figure or individual bits through the auction site. This will allow you to collect 1-2 terminators on the cheap rather than buy a whole regiment box set. Note: the box set comes with swarm units that can be pressed into service as drones.

Reaper Miniatures' Chronoscope line is an interesting product line with lots of possibilities for Star Frontiers games. The "Briony, Cybertechician" blister pack includes the following Miniature:

<https://www.reapermini.com/OnlineStore/Chronoscope/latest/50064>

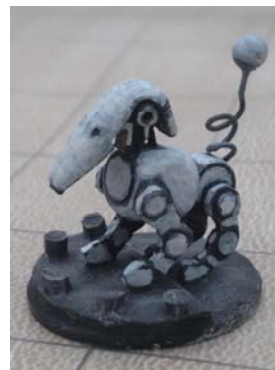


It looks like something out of Star Wars and of course the female technician works as a PC miniature. The blister pack retails at \$8.99 but this manufacturer is noted for the high detail in their Miniatures and quality of their castings which makes them worth the price.

Old Glory Miniatures markets "Build You Own Robot". At \$41 you get a variety of 13 bodies and a large selection of arms and heads (there will be heads and arms to spare). Old Glory does not produce the detail or quality of casting of a company like Reaper as their philosophy could be described as miniatures for the masses. These robots would price out individually at \$3.10 each which makes them reasonably priced. They are also, in my opinion the closest match to TSR's Star Frontiers miniatures as far as robots go.

<http://www.oldgloryminiatures.com/proddetail.asp?prod=BMM-144>

This miniature is a scratch build. The head is a Lego Star Wars piece I found in the street. The body is two wooden beads. The tail is a pin I wrapped around a rod with pliers. The legs are sheet styrene stock and decorated with circles made from a rotary leather hole-punch used on an index card. Ignoring the base I would estimate I have a dollar invested in this miniature.



FE

THE CYBERNETIC EMANCIPATION LEAGUE

A NEW CADRE FOR THE FRONTIER

Tom Verreault

The Cybernetic Emancipation League or CEL is a cadre of questionable legal status. It is rumored to have connections to the terrorist organization the Silver Death Cult. Regardless of the veracity of these rumors linking it to the SDC, CEL members have certainly participated in criminal activities by stealing cybots and attempting to "emancipate" them. Corporations insist this activity is corporate espionage but so far no court in the Frontier has allowed that charge to stand.

The CEL is adamantly against the de-sapientization of individuals by incorporating all or part of their body into a cybot or cybernetic robot. They state that cybots are completely unnecessary due to the current technology in the robotics industry.

A CEL cyberneticist has claimed that the brain-wipe performed on organic brains used in cybots does not actually erase memories but instead blocks them, leaving the personality and memories trapped within the cybot. Thus the mission statement of the CEL is, "To unblock memories from the organic brains of cybots and emancipate the individual". They also engage in political advocacy and propaganda campaigns attempting to influence governments and the public at large.

The CEL has officially disavowed the actions of individual members who break the law. However, it is believed that the theft and alleged destruction of private property by individual members would be impossible without support of the organization in whole or in part.

The position of most mega corps is to deny the claims that brain-wipe technology is a fraud. The body donors of the organic portion of the cybot were all legally dead and any seemingly lingering memories are fragmentary and simply require a second brain-wipe and fresh installation of operating software. They oppose any attempts to pass new regulatory measures or hijack new regulatory bills to maintain the status quo.

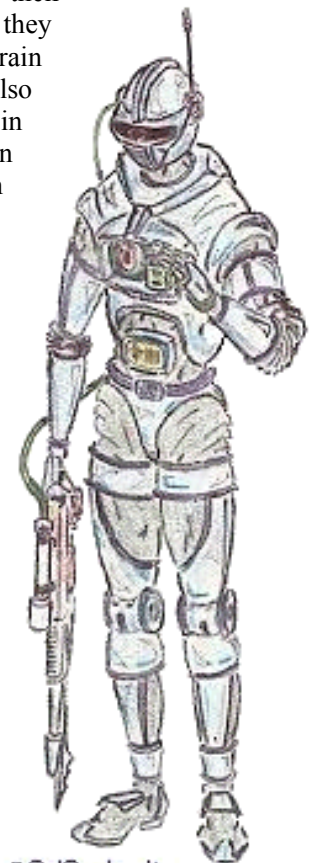
PLOT HOOKS

1. The player characters' (or the employer's) cybot has been targeted for emancipation. Its abduction should come as a surprise with overwhelming force brought to incapacitate the PCs (stun and immobilization weapons). Once the cybot is recovered, it begins to demonstrate a distinct personality. This personality will be child-like at first but will fully emerge within

days or weeks and begin to exert its own will and pursue its own agenda.

2. Corporate bounty offered for the recovery, operable or inoperable, on emancipated cybots. CEL operatives will oppose the PCs in this endeavor and if the cybot is truly an emancipated person then it will certainly resist the PCs.
3. A new client believes her husband was murdered. To compound her problem it appears he had signed a valid body donor contract and he's been used in the creation of a cybot. She desires that the PCs would hack corporate records, locate the cybot with her husband's brain, and kidnap him. She's made arrangements with CEL to emancipate him. She would also like for the PCs to prove his death was not an accident and if justice cannot be obtained in a court of law then she's also willing to pay for some "old school" frontier justice.
4. The CEL believes that their cause would benefit if they could study sathar brain tubing technology. They also believe they are in possession of the location of a lost or forgotten sathar outpost and hope that it has such equipment. They are looking for a team with prior experience with sathar equipment (veterans of the Voltturnus or the Beyond the Frontier campaigns). They will fund the expedition and since trade in sathar tech is prohibited they will pay hefty bonuses for discretion.

FE



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TITAN RISING: 2299

EPISODE #10.0: "DENTAK"

V2.0

FORMER ALLIANCE FLAGSHIP
C.S.S. HAMMERFALL IN HIGH
ORBIT ABOVE ACHILLES M121.

NOW, THE ORBITAL BASE
OF OPERATIONS FOR THE
SEPARATIST BLOCKADE ...

HUMANS...

SUCH A
STRANGE
SPECIES.

IT HAS BEEN
FAR TOO EASY

...TO MANIPULATE
THE MINDS OF THESE
PRIMITIVE BEINGS.

UNWILLING
TO SEE REALITY
BEYOND THEIR
PERCEPTION.

... AND UNDER THE
INFLUENCE OF THE
ENIGMATIC DENTAK.

EVEN WHEN
THE TRUTH IS
DIRECTLY IN FRONT
OF THEIR VERY
OWN EYES.

MOMENTS LATER...

DENTAK,
PLEASE...
COME IN.

REPORTS
HAVE STARTED
TO COME IN...

THAT THE
ALLIANCE FLEET
IS NOW IN THE
NEBULA.

**KNOCK
KNOCK!**

WE ARE
STANDING ON THE
BRINK OF A CIVIL
WAR HERE.

DO YOU STILL
BELIEVE THE XIN
POSE A SIGNIFICANT
THREAT TO US?

IT TRULY IS ONE OF
THE UNIVERSES' GREAT
MYSTERIES HOW THE
HUMAN RACE EVER
MADE IT THIS FAR
OUT INTO SPACE.

IT IS BOTH
CURIOUS AND
CONFOUNDING.

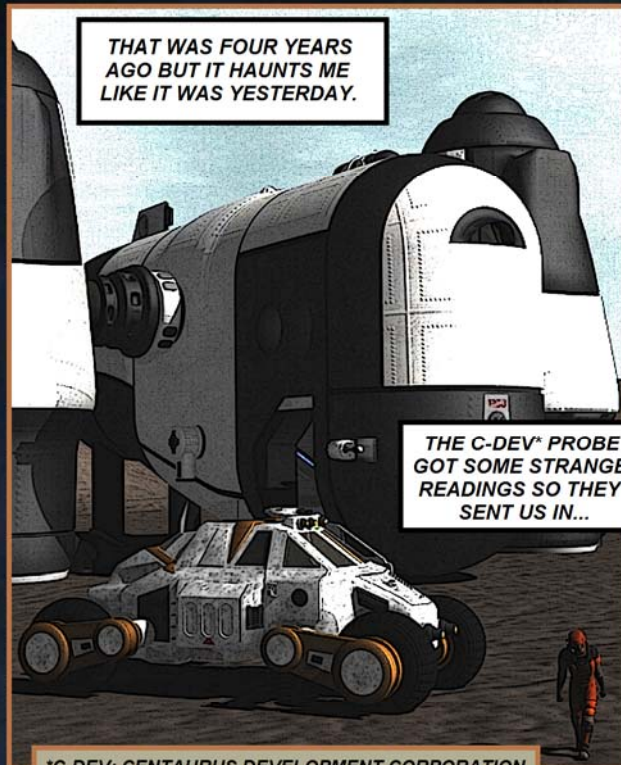
BUT FOR NOW,
CURIOSITY WILL
HAVE TO WAIT.

ABSOLUTELY
WITHOUT A
DOUBT!



DON'T LET
THEIR COOPERATIVE
DEMEANOR FOOL YOU.

THE FIRST TIME THAT I
EXPERIENCED THEIR TREACHERY
I WAS ON THE C-DEV SURVEY OF
ACHILLES M121 WITH YOUR
FATHER...



THAT WAS FOUR YEARS
AGO BUT IT HAUNTS ME
LIKE IT WAS YESTERDAY.

THE C-DEV[®] PROBE
GOT SOME STRANGE
READINGS SO THEY
SENT US IN...

*C-DEV: CENTAURUS DEVELOPMENT CORPORATION



YOUR FATHER AND
I TOOK THE SCOUT
TO INVESTIGATE
THE ANOMALY...



THE SENSOR READINGS
WERE COMING FROM A
SMALL CRATER CLOSE
TO OUR LANDING ZONE.



INSIDE THE CRATER
WAS THE WRECKAGE
OF A MASSIVE SHIP.

...AND IT WASN'T
ONE OF OURS.



THE WRECKAGE OF AN ALIEN SHIP
ON ACHILLES WAS TOO IMPORTANT
OF A SCIENTIFIC FIND TO PASS UP...

AS MISSION COMMANDER
IT WAS MY CALL WHETHER
TO PROCEED OR ABORT.

IT WAS A DECISION THAT
I LATER WOULD LIVE TO
REGRET MAKING.

TO BE CONTINUED...

Campaign Material

THE LOCAL RIGHTS ALLIANCE

A NEW CADRE FOR THE FRONTIER

Chris Donovan

The Local Rights Alliance maintains that government at all levels - but especially the UPF - has become too powerful and usurps the natural rights of individuals and local/planetary authorities. In particular, they object to laws that in any way tax or regulate corporations and businesses or interfere with trade on any scale.

POLICIES, POSITIONS, & TENETS

The primary beliefs of the LRA are stated as follows:

- 2) All rights are the natural property of individual sentient beings, not creations of any agreement, society or state. The primacy of this principle cannot be disputed.
- 3) The rights of sentients broadly fall into two categories:
 - a) freedom of person – to control one's own body and mind absolutely, and
 - b) freedom of property – to acquire and to dispose of resources as one is able utilizing the efforts of body and mind.
- 4) Consequent to the above, the initiation of force against another sentient inevitably violates the recipients rights above. As such, force may only be initiated against another to protect one's own rights.
- 5) Rights of one sentient in no manner whatsoever impose any legal or moral obligation upon any other sentient other than that of respecting said rights.
- 6) On occasion, it is desirable for sentients to act in common cause. To that end, governments suitable to the furtherance of such causes may be instituted, provided that:
 - a) Such governments have only those powers explicitly granted to them by the consent of the individuals that form them.
 - b) Said individuals are free to alter the form of that government at their pleasure, alter its mandate, or disband it entirely as they choose.
- 7) Any government thus empowered must be kept as close as possible to the sentients under its jurisdiction in order to be better able to understand their conditions and to ensure their ability to properly oversee its actions.

MEMBERSHIP

The LRA has many active members and more support some of its positions on specific issues. The party has the most influence on colony worlds as well as worlds such as Pale, New Pale, Corpco, Kraatar and Lossend where the population is either sparse, primarily involved in basic agriculture/ industry, or both.

The LRA is particularly popular among the well-to-do. Many wealthy people publically support the LRA, including the CEOs of many Frontier mega-corporations. The bulk of its manpower, however, comes from organizing among low-income, disaffected voters whom it courts by blaming either the UPF, planetary governments, or both for ills ranging from local unemployment levels to fluctuations in planetary climates. The central theme of the party's recruiting pitch is that government itself is the source of their woes.

ACTIVITIES

In addition to its ground-level organizing, the LRA furthers its goals by funding sympathetic political candidates at all levels of government and by endowing foundations and universities to write scholarly papers supporting LRA positions. It also bombards holonet viewers with paid advertisements pushing its message, a task made much easier by the support of K'zik Z'ken K'zrr, the vrusk owner of the Intersystem News Service media conglomerate.

The most recent campaign has seen the LRA calling for the convening of a new Treaty Assembly to rewrite the UPF Charter and Articles of Federation to remove nearly all UPF authority over planetary affairs. Virtually the only role remaining for the UPF would be maintaining Spacefleet against the Sathar threat, a cause which the LRA strongly supports.



ALLIES

The party's strong support for Spacefleet has gained it the approval of the Anti-Satharian League. In a surprising move, it has joined efforts with the Alliance for the Rights of the People (whom it ordinarily dislikes) on their anti-Star Law campaign.

ENEMIES

The LRA hates (among others) the Galactic Light party, the Synthfood Workers Guild, the Brotherhood of Spacers, and the anti-megacorporation activist group known as the Liberators. The feelings are mutual.

CONTROVERSIES

Statements made by some LRA members and candidates that seem to support positions held by the Firsters, Kraatar Liberation Corp, and other controversial cadres with have drawn public criticism, as has the party's strong ties to the yazirian Family of One.

A major controversy sprang up recently over the comments made by Streele's Vice-President for Colonial Operations, Desmond Hargrove (a prominent member of the LRA) to reporters after Streele refused to allow Council of Worlds members access to the Streele controlled world Corpco. The Council party, led by Councilbeing Dorohtlas of the Galactic Light party was seeking to examine conditions on the planet first-hand after allegations arose that Streele was importing large amount of slaves to support agricultural operations on Corpco. Hargrove dismissed the allegations saying that the Corpco colony was a "shining example of a place where unfortunate sentients can find a fresh start in life."

When Councilbeing Dorohtlas spoke about allegations made by the investigative news holoprogram "Eye of the Frontier" regarding the terms and conditions of the "fresh start", Hargrove stated that any colonist who was unhappy would be permitted to leave "as soon as they pay off their indenture."

It is also rumored that the shadowy group known as the Investors is a major source of the party's funding.

LOCAL RIGHTS ALLIANCE

HEADQUARTERS

Roston City / Gran Quivera / Prenglar

LEADER

Yozzuf Fuzinade, Chair of the Steering Committee (Yazirian)

SCOPE OF OPERATIONS

UPF-wide

MAJOR OFFICES

Point True / Pale / Truane's Star, Moline / Clarion / White Light, Gozzorf / Kraatar / Tristkar

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- At the **Space Ranger** Level – Richard Farris, Scott Holliday, and Kenneth Reising
- At the **Station Master** Level - Pagan

I want to say thanks to our patrons for their contributions.

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Frontier Fiction

A CRUSHING RIDE TO EASLEY STATION

Eric Winsor

I'm writing this while convalescing on the flight from Easley Station to Lossend. The breaking ride in to Easley Station was brutal. There was a little excitement after dropping out of the void into Timeon and Captain V'Thi-Keek, always prepared, used his planned hard breaking burn into Easley Station to avoid any trouble. A ship popped out of the Void on our second hour in Timeon and continuously vectored to match our course. Captain V'Thi-Keek found this highly suspicious so we did some rather harsh course adjustments to put us on vector for Easley Station as swift as possible and then spent the last day and a half speeding in at zero G and then burst breaking for a capture orbit around Easley with Makoto tensely watching our unknown pursuer.

A LEISURELY RIDE THROUGH PRENGLAR

The ride through Prenglar system was very relaxing after the aggressive push to get out of Cassidine. Plicka and Makoto started us on a long eighty hour course adjustment to get us pointed at Timeon with the least use of fuel possible. The nice side benefit to this was we ended up with a pleasant constant 0.61 G gravitational effect for the entire eighty hours. Plicka kept the course adjustments so consistent and uniform that hardly ever did I feel the sideways effect of course corrections. The crew passed their time for the next four days by sticking to their routines of managing the ship. Captain V'Thi-Keek has a very well organized crew. Makoto or V'Thi-Keek would report hourly scan results to the entire crew detailing any ship detected within sensor range. Plicka dozed in and out of sleep to keep a round the clock post at piloting. Te Gala did much the same, napping between scheduled engine and system checks. Dr. Caine spent his time monitoring the crew biometrics with special attention to Plicka and Te Gala to make sure they did not over do things and become fatigued. This required him to follow a schedule of naps and vigorous exercise to keep himself in a healthy rhythm. I was left to myself and ended up on a sleep and wake cycle somewhere between Makoto and V'Thi-Keek so that I seemed to always observe Makoto handing off his shift to Captain V'Thi-Keek before I went to sleep. I ended up spending a lot of time talking to Makoto and learned about his duties on the ship.

Makoto was previously a UPF fighter pilot in the Theseus militia. He fought the Sathar and pirates. I asked him

once about how many kills he had and he responded that only holovids make kills important. The mission, he explained, is what is important. The team, he stressed, is what matters. Pilots who chase kills over mission, cost the lives of their comrades. Makoto is dedicated to his ship and crew. He is the best man to have monitoring and scanning for threats. He will never let his comrades down. Nothing passed by Makoto's attention. Makoto was the first to notice our pursuer two hours into Timeon. When I got to my shuttle at Easley Station I looked up Makoto on the core network and he is credited with seven Sathar frigate kills and two Sathar fighter kills. He was an instructor at the Theseus military academy and trained most of their current fighter pilots.

We also entertained ourselves during the four days in the Prenglar system by playing a card game called Tack. The deck has sixty cards in five suits of twelve cards, circles, stars, squares, triangles, and crescents. Each suit has two imperial cards (king and queen), eight common cards numbered one through eight, a clergy card, and a castle card. The imperial cards are greater than the common cards. The clergy card is greater than the imperial cards except when the castle card is played with the imperials. The castle cards cancel each other out when played against each other. Common cards played with a castle against imperials or clergy without a castle win. Castles not supported with any other card always loose. Clergy against a greater number of common cards is a draw. Common cards against common cards is resolved by summing the common cards against each other, the greater value winning. The full deck of sixty cards is shuffled and hands of five are dealt to each player. Players then take turns from left to right drawing and discarding to build a challenge hand. This continues until any given player decides to challenge another rather than draw. A challenge is resolved in the open. Each player lays down his cards and the winner takes his opponents cards, selects five and places the other five face down to conceal them. Challenges continue, anyone free to challenge any other, until only one player remains and then the played cards are moved to the discard pile and a new hand is dealt. The discard pile is reshuffled back into the dealing deck once there are not enough cards available for a round. Points are kept, a point for each challenge won, and the winner is the highest point total after a pre-agreed upon number of rounds.

Another entertainment the crew was dedicated to is the old holo vid show *Salud* about a spacer bar in Port Loren. Makoto is fond of the retired grav ball player and bar tender Tom Moldoon. He's constantly advising the crew about how Tom could actually get a relationship with Dayan Keeps. Plicka is fond of the dralasite bar stool comedian Dom Drallarborn and can quote his lines as Dom says them. Captain V'Thi-Keek harbors a secret fondness in my opinion for the bar know-it-all vrusk, K'liv-v K'la-v-v'tntn who spouts long lines of suspicious facts. I guess this fondness because Captain V'Thi-Keek always twitches his antennae toward the holodisplay whenever K'liv-v K'la-v-v'tntn is on. Doctor Caine openly admits that he has a crush on Dayan but finds the waitress Cora more grounded and easier to love. Te Gala won't pick a favorite character but spends most of the time rolling with laughter. If I had to pick a character for Te Gala I would have to say it is Nobby Boy, the country grown yazirian who seems clueless to the city and spacer life he has joined.

I thoroughly enjoyed my four days in the Prenglar system with the crew of the Void Crusher.

AN UNKNOWN FOLLOWER

Our transition through void space to the Timeon system was as professional and exact as our transition into Prenglar. Makoto was on station and brought us right to the brink before Captain V'Thi-Keek woke up, seemingly like clockwork, and directed the final maneuvers per Makoto's astrogation. Captain V'Thi-Keek went promptly back to sleep after reiterating his orders for a fast burn into Easley Station. I had anticipated the celebration from our last jump into Prenglar but Dr. Caine explained to me that they only celebrate after Plicka does a long hard high G burn. He then pointed out that we would be doing a long hard high G breaking burn into Easley Station and that meant another celebration after docking. I glanced

over at Plicka and he was already fondling the jar of strawberry syrup during our brief interlude while Te Gala checked and monitored the resting engines. Dr. Caine was already waiting to assist me in re-engaging into my CAC. He explained to me that the plan was for another fifteen G burn for an hour followed by forty six hours at one and a half Gs to get us in to Easley Station quick and drop cargo. Then they would burn out to their next jump after a day at the station.

Right after the first hour fifteen G burn Captain V'Thi-Keek got up and started his cross over shift with Makoto. I was recovering from the G stress under Dr. Caine's watchful eye. Towards the end of the second hour Makoto got very serious and pulled the captain to his station. They conferred among themselves for several minutes and then Captain V'Thi-Keek ordered Plicka to alter his course directly inwards towards Timeon a few degrees away from our vector to Easley Station in the outer system. The captain then climbed back into his CAC. Te Gala and Dr. Caine became very focused on their station displays. About ten minutes later Makoto announced to the group, "Our bogey has matched our course!" and switched his station main display to the central holo-display. A wedge of the Timeon system was displayed in midair between the ring of CACs. The Void Crusher was indicated by a green blinking triangular icon heading directly toward the distant star labeled Timeon. The bogey was a red round icon behind us and slightly below the ecliptic. Dashed lines extended forward on the display in red and green to a pulsing yellow X that indicated the intercept point some distance away.

"Engine status?" queried Captain V'Thi-Keek.

"Twenty minutes remaining on this fuel rod," responded Te Gala.

"Good!" clicked V'Thi-Keek. "Let's test our admirer," he said as he turned to Plicka.

"Point us back at Easley Station Plicka!" ordered Captain V'Thi-Keek.

Plicka swiftly vectored us back toward Easley Station jarring us into the sides of our acceleration couches. Ten minutes later Makoto reported what we all expected but didn't want to hear.

"She has matched our course again," reported Makoto.

"Keep us steady on this course and acceleration Plicka." ordered Captain V'Thi-Keek as he nodded to Makoto.

"I'll have current acceleration and velocity measurements on the bogey in two minutes," advised Makoto.

The next two minutes ticked away like twenty and then the holo-display popped a yellow X on our path to Easley Station. Makoto spoke up, "She is breaking at two Gs and is currently at 2,927,314m/s to our 2,388,909m/s. At this rate she will intercept us in thirteen hours and twenty



minutes with a velocity advantage of plus 264.7km/s. She can hit us fast and be gone." The Captain preened his antennae in deep thought.

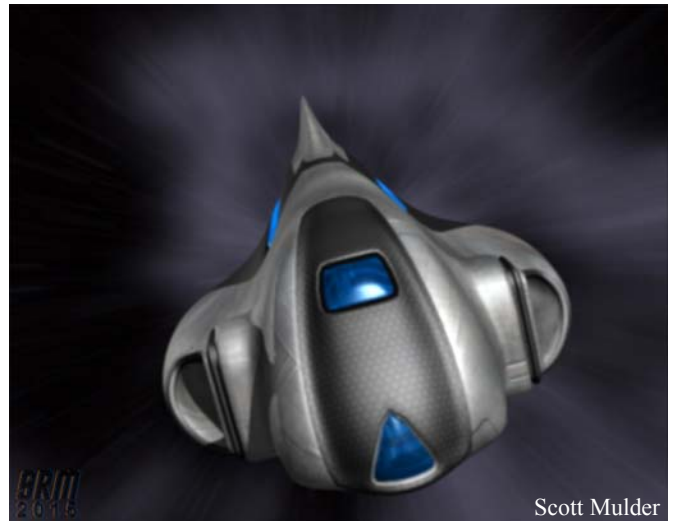
"Te Gala, load the next fuel rod rich. Plicka, let us coast when our current fuel rod is depleted," ordered Captain V'Thi-Keek.

Dr. Caine then whispered to me over private comms, "Now we see who is the faster ship."

We coasted along and Makoto continuously monitored our shadow. Twenty minutes after we started coasting Makoto announced that the bogey was coasting too and updated our intercept to be nine hours fifty minutes away. For the rest of the hour we coasted and our shadow coasted as well. The bogey had 512km/s greater velocity than us so intercept was inevitable if we persisted in our course as is.

V'Thi-Keek had been running simulations during the hour of coasting and Plicka had slowly turned the ship around with minimal thrusters so as to not alert our pursuer to our next thrust vector. Everyone was silent and then Captain V'Thi-Keek asked for a go from everyone to go for another long fifteen G burn to regain speed. One by one each crew member gave a Go starting with Te Gala and ending with Makoto then Plicka. All Captain V'Thi-Keek had to do was say Go and Plicka lit up the engines full and smashed us into our CACs. Another hour at fifteen Gs so soon after the initial breaking maneuver was not what my body needed. I passed out for forty five minutes. Dr. Caine monitored my vitals closely. When I came to, Dr. Caine filled me in that our pursuer had not inverted and was breaking at two Gs possibly in attempt to beat us to Easley Station. Makoto was quite sure the pursuit ship could not push or break at more than two Gs as she had not gone beyond two Gs previously and all other scans indicated she was a commercial ship. The Captain and Makoto had worked out a flight plan to continue coasting just below jump speed for fourteen hours and close the distance to Easley Station before breaking at fifteen G bursts for nine hours with evenly spaced equal periods of relief coasting after each brief breaking burn. Following that there would be two hours of two G burns, an hour of coasting, and then two hours at one G and just below one G to transit into an orbit with the gas giant Easley for protection to allow the bogey to pass by at high velocity. The gas giant Easley as a shield and the pursuer's extreme velocity should make any potential shot at us a luck shot at best.

At the start of our second hour of coasting our pursuer cut breaking and several long bursts of coded communications were monitored by Makoto. Captain V'Thi-Keek and Makoto tried to decode the communications and the few short replies that the bogey received but had no success. Whoever was following us was well protected from eavesdropping. The coding



Scott Mulder

schemes appeared to be very high tech and likely supported by very expensive and powerful computers on both the bogey's side and her secret compatriot. Makoto mused that she was likely debating whether to try and overrun us, attempt a wild shot, and then swing back much later to pick through our debris. Captain V'Thi-Keek disagreed and figured she was negotiating another plan with an accomplice on Easley Station. He then wagered against Makoto three liters of peanut butter for Plicka that the bogey would start breaking again as soon as the coded negotiations were complete. Sure enough the bogey started decelerating again about the start of the next hour. Captain V'Thi-Keek nodded toward Makoto and Makoto agreed, "We stick to our flight plan!"

Hour upon hour went by as we coasted and the bogey continued to break. All indications were that Captain V'Thi-Keek had read the situation right. The crew remained vigilant but relaxed as the status quo remained true. During this time I got to pondering about the bet between the Captain and Makoto and asked Plicka why the winnings would go to him. He informed me that this was an agreement between Makoto and the Captain to keep him from reciting poetry. He further explained that the strawberry syrup had been payment for a previous bet that Makoto owed the Captain. Apparently the Captain tended to win most of the bets and the bets were made on a regular schedule to keep Plicka permanently away from poetry recitals.

HARD BURN INTO EASLEY STATION

Our bogey continued breaking at two Gs as we coasted along near jump speed. The crew took rotating power naps and I nervously wiled the time away unable to relax or sleep. Then, after what seemed to be days, the coasting time was done. The crew became very active and Dr. Caine warned me that this next experience was likely going to make me sick. We all reengaged our CACs and

the fifteen G breaking began. Excruciating burst of pressure followed by just as abrupt weightlessness. Makoto monitored the bogey intently and during each pause in the breaking he would force out a report that she was still maintaining her breaking course of two Gs. Then he would announce the separation distance between us, gulp some big breaths of air and brace for the next burn by Plicka. During the fourteen hours of coasting our separation distance from the bogey had grown from 16,373,933 km to 41,284,037 km. The concern of the crew now was to not lose too much of that lead. Everyone was worried that the bogey would stop breaking and push for speed to close the distance and gain an attack before we reached orbit around Easley.

The repeated crushing breaking burns and sudden periods of weightlessness did make me sick. I blew chunks into my respirator and thanked the creators for suction that pulled the mess away from my face and kept the mask clear so that I could breathe without sucking in bits and fluids. During the crushing forces of breaking all I could do was gulp for air and fight the looming blackness of unconsciousness. When zero G came I would violently relax and suck in air in great heaps before barfing up a bit more of my stomach. After several rounds of this I was dizzy and incoherent. I gazed longingly over at Dr. Caine and he smiled back. I blacked out at the next breaking thrust as Dr. Caine sedated me.

I came to some hours later during one of the zero G moment of recovery and caught Makoto reciting off the current distance to our bogey as some 48,000,000 km. That sounded good as it was a higher number than I had remembered before. Then Plicka braked again and I was out just as fast as the Gs hit me. I dreamed about a herd of elephants I had once seen as a child in a history vid in school. The elephants were trampling me into the sharp grass of the savanna. When I next came to I noticed that the grass shards that I was dreaming of poking into my skin were actually the CAC needles in my suit jabbing ever more painfully into me. I longed to have the vein and artery implants that the crew had. All these IVs were a horrible experience. Fortunately I didn't get to ponder on the pain long as I heard Makoto announce a distance around 47,500,000 km and Plicka burned the engines again and I lapsed back into unconsciousness.

Each time I came to Makoto would announce a distance some 500,000 km less than before. I remember 46,000,000 km and 45,250,000 km. Then I must have been out longer because I got worried when I next heard 42,000,100 km and then after another blackout 41,000,000 km as I blacked out. I dreamed the elephants were running me down and that I was running out of road to run on and that they would soon be just dancing on me. Then I awoke as the elephants stopped stamping on me and were just pushing on me with their trunks. The pressure was much less but still a burden after being

trampled for so long. I eased back into consciousness and blinked at the ceiling as the color and clarity returned to my vision. Somewhere in the distance I heard Makoto announce a distance of 37,003,142 km. I thought to myself, "I am glad that elephants were not brought by any of the colony ships to the Frontier." The beasts now seemed cruel and vicious to me. The creatures could stay in the history vids as far as I was concerned.

Dr. Caine started talking to me on the private link between us. He inquired as to my well-being. He kept assuring me, "You've had a rough ride but you took it like a trooper." Then he added, "Didn't you find that fun?" I stared wide eyed at him thinking he was a crazy man. Nine hours of fifteen G bursts was not an entertainment. I wanted to reply that I had hated it and he was crazy for enjoying it, grinning ear to ear as he was. Dr. Caine did not give me the time to reply. He started quizzing me to get me thinking and back in control. He asked me to read my heads-up display. I recited the labels on all of the monitors. The oxygen was at 32%, nitrogen at 66%, and supplement gasses at 2%. He responded informing me that oxygen was up to bust my respiratory system and the supplement gasses were medicated with stims to help my system repair. I glanced over at the G meter and commented that we were at a steady two Gs. Dr. Caine explained that we were on approach to the gas giant Easley and still needed to break a bit but the fifteen G burns were over. He indicated that we had almost two hours to go yet at two Gs and then we would coast again to give Te Gala a chance to rest the engines and change some fuel rods. I commented about the pain and soreness from the CAC suit IVs and Dr. Caine nodded and tapped on his console a bit. I felt a warm soothing electric sensation waft over my skin and down to my bones. I relaxed and enjoyed the sensation as Dr. Caine warned me that I could enjoy it now but I would be sore like a triathlete times ten after this for days. He was right, after we got to Easley Station and all through my ride to Lossend I was stiff as a board and walked like a cheap robot. I couldn't sit, I couldn't lie, I couldn't bend, but I had to in order to help myself recover.

I focused on enjoying the medication as Dr. Caine kept me exercising during the last six hours on our way into Easley Station after the final fifteen G burn. Makoto counted off the minutes and hours with the distance to our bogey, 33,338,079 km at T minus five hours, then 29,779,080 km at T minus four hours, 26,347,173 km at T minus three hours, 22,978,815 km at T minus two hours, and then 19,743,123 km at T minus one hour. Easley was looming big ahead of us and Easley Station was orbiting far out in a geosynchronous orbit. Makoto kept reporting that the bogey was continuing to break at two Gs as all of us worried about her getting within the dangerous 100,000 km needed to fire upon us. We all knew she would be hurtling past at some 850,000 m/s as we quickly dropped below 2,000 m/s going into Easley orbit making any shot

a luck shot but that didn't take the tension away. Then Captain V'Thi-Keek announced that the TSS Dragon, an assault scout from the Timeon Militia was ten hours out and hailing our bogey to submit to inspections before docking at Easley Station. I breathed an audible sigh of relief and commented about how fortunate it was that the Dragon had shown up because I was worried about the bogey catching us during our layover at Easley Station.

Captain V'Thi-Keek caught me off guard when he responded, "I called upon our diplomatic courier privileges to bring the TSS Dragon here. She is here to keep our follower away from us while we drop our packages and push on. I radioed our plan ahead while we were in hard burn and you were out. We will not stay at Easley Station longer than a few hours so we can off load and pick up other packages. The TSS Dragon will push out with us after holding our follower in deep space for inspections. I have arranged for you to be on the next shuttle to Lossend as soon as we dock."

I didn't know how to take this. Days of friendly camaraderie and now I feared I was being put off the ship as if I were unlucky and a pariah. No one spoke to me any differently or mean and any way, but they were all very serious. The remainder of the orbital breaking around Easley and transition to dock at Easley Station was quiet and all by the book. Dr. Caine got me up and started getting me out of my CAC g-suit. He applied ointment to each of the IV locations and enough bandages that I looked like a cartoon pin cushion accident.

ODDLY QUIET GOODBYES

Te Gala gathered my bags together and Dr. Caine insisted I eat a little more before we docked. I commented to Dr. Caine about my awkward discomfort after Captain V'Thi-Keek's explanation about the arrival of the TSS Dragon. Dr. Caine reassured me that this was not anger or malice but a part of their business that I unfortunately had to see. When we docked Dr. Caine pressed a communications code chip into my hand and told me to install it so that they could talk to me if needed after they leave. Te Gala carried my bags to the air lock and helped me strap and shoulder them up. Plicka accompanied me onto the station and escorted me to a dralasite acquaintance waiting at the exit of the customs office. He quickly introduced Ma'Duman in dral and instructed me to follow him directly to the shuttle.

Ma'Duman took me a sharp right through a security door and through office corridors after exiting the customs office. My inspection had been brief and complete and my passport tagged with entry into the Timeon system. When we had passed beyond ear shot of the customs office Ma'Duman directed me into an office restroom and

said, "Pardon me and wait here for a minute. Plicka asked me to give you something."

Ma'Duman then slowly extracted a needler pistol from within a pocket he had formed in his side. I must admit, I tensed up and was seeking a path to flee from the lavatory but Ma'Duman was blocking the door quite deliberately. I moved my bags toward the front of me to act as a shield. Ma'Duman gripped the needler by the barrel and handed it to me grip first while saying, "Plicka says you are not armed and you may very well need this on Lossend."

My brain jerked at that thought and offer. I puzzled quickly as I took the weapon and Ma'Duman motioned for me to put the weapon into my bag. I started to question what was going on and Ma'Duman replied, "I do not know what is going on but Plicka's work and the Void Crusher attracts trouble some times. They carry items for important people and governments, sometimes innocents get caught in the middle. It is time now for you to get out of the middle. Lossend allows side arms. Here is a customs declaration chip for when you get to Lossend, just install it on your passport and they'll think nothing of it. The only communication the Void Crusher will have with you will be though Plicka. You gave him a gift when you got on the Void Crusher. He will start any communication by referencing it. If the communication does not reference the gift or gets the gift wrong, do not answer. Sorry for the inconvenience friend."

Ma'Duman then escorted me back out of the restroom and down back office hallways to the terminal where the shuttle to Lossend was docked. I was taken directly aboard and given a private cabin. I told the steward I was very tired, asked to not be disturbed, and locked the door. I stowed my bags under the bed, got out the needler, tucked it in my pocket and lay down in bed watching the door. My trip to Lossend had taken a very strange turn in events.

FE



Scott Mulder

HEALING AND MEDICAL KITS

Chris Donovan

The Alpha Dawn rules make healing the exclusive province of the Biosocial PSA and include an extensive list of contents for the standard Medkit. In order to make the rules a bit more realistic/complete while simplifying the bookkeeping GM's may elect to use the following rules instead:

TRAINING

There are three levels of medical training: one general that any character can learn and two forms of dedicated expertise which require the full Medical skill (characters must choose which of the three at time the skill is taken):

FIRST AID

This represents someone who has had basic emergency medical training (soldiers, police/fire personnel, or the graduate of a civilian first aid course).[1] Therefore, it is within the abilities of all characters, regardless of whether or not they are in the Biosocial PSA. First Aid training includes basic wound care (cleaning, splinting, and bandaging cuts/abrasions/strains/broken bones) as well as diagnosing and treating shock/signs of poisoning/etc. It also includes the ability to perform CPR.

First Aid training does not include instruction in administering prescription or controlled medications such as Biocort, Telol, or Antitoxin, nor does it teach more advanced medical procedures such as inserting IVs, breathing tubes and so forth.

The following Medical sub-skills may be used by any character with this level of training: *Administering Drugs* (over-the-counter only), *Diagnosis* (general information only), *First Aid*, *Controlling Infection* (basic methods only, no medication)

First Aid training allows any character to restore 1 to 10 points of STA immediately.

MEDIC

This is the type of training received by Combat Medics, Emergency Medical Technicians, and Trauma Nurses. It focuses primarily on stabilizing the patient's condition prior to moving them to where they can receive more sophisticated aid from doctors with better facilities and to be able to assist doctors performing operations in medical facilities

Medic training includes First Aid training with the addition of advanced procedures such as starting IVs and airways, some basic surgery, advanced wound dressing/stabilization, and administering prescribed or controlled medications under a doctor's supervision.

This type of training does not include diagnosing specific types of diseases or poisons, the ability to administer advanced medications such as Telol or extremely specific fields of medicine such as neurology, orthopedics and so forth.

The following Medical sub-skills may be used by any character with Medic training: *Administering Drugs* (o-t-c and basic, such as antibiotics and Biocort), *Diagnosis* (full information), *First Aid*, *Controlling Infection* (full methods) plus *Minor Surgery* and *Activating Freeze Fields*.

Medic training allows the medic to restore either 11-20 or 2-20 points of Stamina. [2]

DOCTOR

Doctors are fully-trained medical professionals. Doctors may make full use of all Medical sub-skills as per the Alpha Dawn rules.

WOUNDS

Wounds are divided into three levels:

- *Minor* (up to 10 STA)
- *Moderate* (11-20 STA)
- *Severe* (21 STA +)[3]

Any level of wound may benefit from First-Aid, recovering 1-10 STA, but such may be applied only once to any given wound.[4] Any damage beyond that requires the use of a medkit of the appropriate type (see below). Diseases are automatically considered *Severe* injuries regardless of the amount of damage done.

Example: Gemma Lane is trying to help her boyfriend Zac Quasar, who has been shot. Zac has taken 23 points of damage. Gemma is not a Medic, and has only a First-Aid Pack. Gemma does her best, and restores 7 points of Zac's Stamina. Zac still has 16 points of damage to heal. Gemma may not treat this wound again because she has applied First Aid once, and she has neither the skill nor the higher-level Medkit needed for the task.

Later, they find their friend Yk'Vr'Nyrr, who is a Doctor and has a First Responder's Kit. Yk performs Minor Surgery successfully and heals another 11 points. Yk can either perform another Minor Surgery at a later date - not First Aid, because the wound was a Moderate one - and finish the job, or Zac will have to heal the last 5 points of damage naturally. If Yk had had a full Doctor's Kit, she could have attempted Major Surgery and possibly healed it all at once.

All other rules concerning wounds and healing remain as per Alpha Dawn.

MEDKITS

Medkits, like skill types and wound levels, are divided into three types. Each type has a number specifying how many times it may be used to heal an injury of each type. It is assumed that the kit contains all the necessary supplies for the task. The three levels of medkit are described below.

MEDKIT 1 / FIRST AID PACK

in the Alpha Dawn Basic rules, this is the most basic sort of medkit. It is the sort commonly found in homes, carried by ordinary hikers, etc. Anyone can use a first aid pack to treat up to 10 *Minor* injuries before its supplies are exhausted. A single First Aid Pack (sufficient for one person or a small family) costs 40 credits, measures at least 15 x 10 x 2 centimeters, and weighs approximately .5kg.



Larger types of this kit exist, and are often found in businesses or other areas where large numbers of people live and work. (Additional 40 credits and .5kg per 10 uses, maximum of 50 uses total).

Refills for larger kits may be purchased in 10 use blocks at the same price.

Any character may purchase and use a Level 1 Medkit.

MEDKIT 2 / FIRST RESPONDER'S KIT

This sort of medkit contains all of the supplies of a first aid pack in greater quantity plus a number of items to make treating *Moderate* injuries possible. This sort of kit is the type carried by EMTs and combat medics, and requires a character to have at least that level of training to use properly. It is designed to treat *Minor* injuries and help stabilize more heavily injured characters (presumably for transport to a medical facility). This sort of medkit is

designed to treat up to 20 *Minor* injuries and 10 *Moderate* ones.

A complete First Responder's Kit costs 200 credits, measures 28 x 25 x 20 centimeters, and weighs 5kg. Refills for this type of kit cost 150 credits and weigh 3kg. Complete First Responder's kits may be purchased only by characters certified to have at least Medic training. Others may purchase a "basic" version of this kit that lacks controlled medicines for 150 credits (refills 75 credits).

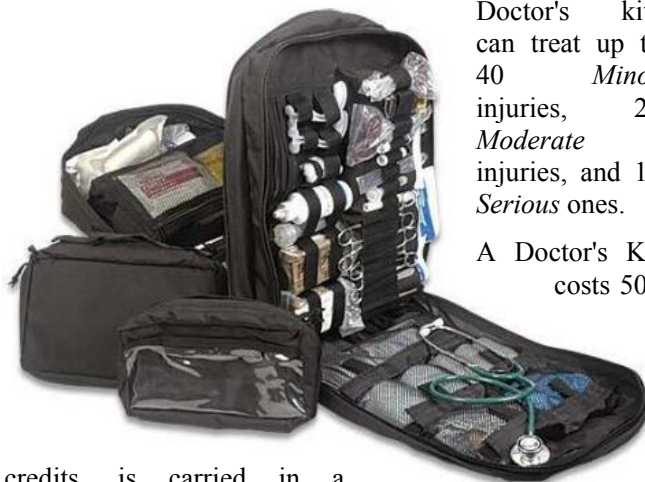


MEDKIT 3 / DOCTOR'S KIT

This is the sort of kit a field surgeon or civilian doctor carries. It is capable of providing the resources to treat any sort of injury and if not cure the patient, then, at least, maintain their life until a hospital can be reached. It can also give field treatment for poisonings and diseases.

Doctor's kits can treat up to 40 *Minor* injuries, 20 *Moderate* injuries, and 10 *Serious* ones.

A Doctor's Kit costs 500



credits, is carried in a backpack measuring roughly 28 x 53 x 15 centimeters, and weighs 10kg. Purchase is restricted to fully-licensed Doctors. Refills are 400 credits and mass 5kg. This is equivalent to the medkit described in the Alpha Dawn Expanded rules

NOTES AND REFERENCES

1. A character following the instructions included in nearly all First Aid Packs may also be considered to have this level of skill at the GM's option.
2. 10 points plus 1d10 if Biocort is used. If no Biocort is available, roll 2d10.
3. These wound levels correspond to the three levels of treatment in the AD rules (*First Aid*, *Minor Surgery* and *Major Surgery*).
4. This is to prevent players from hoarding a stockpile of First Aid Packs in lieu of having a Medic in the party.

FINDING THE FLINTHOPPER

Eric Winsor

Salutations sapient of the Frontier. Back when Dwain, Tik, and I visited Osaka about two and a half years ago Tik had privately been investigating the rumored flinthoppers of Circe. Tik had been collecting images of flinthoppers sighted by back country hikers and odd security cameras. He had a collection more vast than the holovid tabloids. Tik had been applying all of his xenophysiological education and experience and had noticed a few physiological traits in the many images he had studied that gave him the hunch that flinthoppers were not native to Circe. Tik saw plant traits in these mysterious insect mammal hybrids.

Our visit to Osaka to find the sac-laang was a long planned desire of Tik with a second secret goal. Tik came to Osaka prepared to chase a scientific hunch. While we were out searching for the sac-laang Tik deployed a score of D.O.G. (Detecting Olfactory Gyrocopter) robots programmed to follow anything that matched the image profiles Tik had developed around the flinthopper. Those little drones floated and dodged for a year through the Osaka fungal jungles then one of them got a hit on a little critter no bigger than your thumb. It followed it around for two days and then lost it. After that nothing was seen by any of the dogs. Tik kept up hope for another couple months then we went off to Terledrom and Dwain made close friends with ravenous cave creature of Terledrom. Tik lost his focus after that. But then...

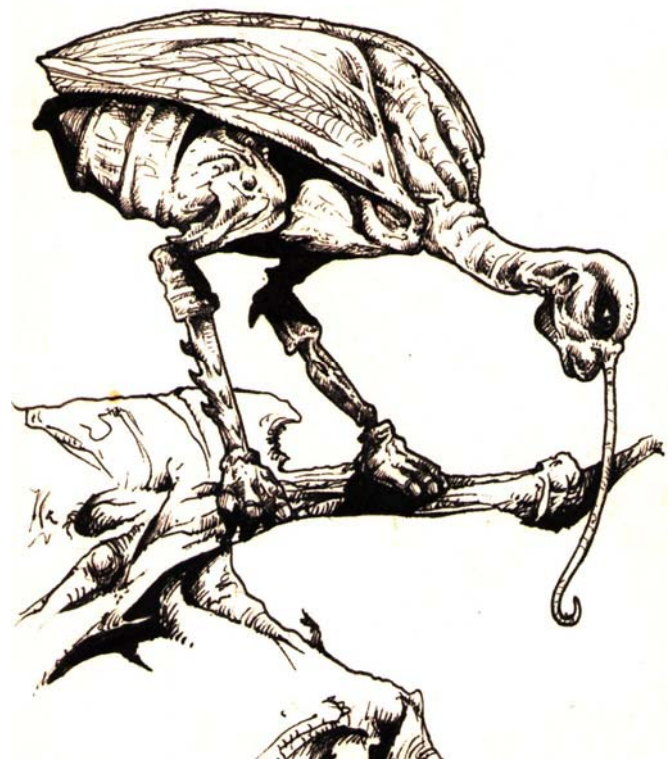
LIGHTNING STRIKES TWICE

During the lock down after the Sathar parasite incident another dog drone got a hit on a flinthopper and started tracking it. However, we were not allowed back into our buildings nor could we access any of our computers for three days while the authorities searched everything top to bottom, inside and out for contamination, infestations, viruses, worms, infections, and all else both biological and electronic. They found nothing and had Tik in a fit of worry for three days watching a small monitoring display through a window hoping that the recorded images being beamed from far away Osaka would continue coming in positive until he got a chance to direct other dog drones to join in on dog fifteen's pursuit.

The morning of the fourth day the authorities didn't even get a chance to pull the quarantine tape off the door. Tik cut the tap and barged through the doors as soon as they were unlocked. The preceding three days had been a frantic programming effort for Tik. He devised nine

different programs for the dog drones to join the search in pairs and alone. The moment he was into his office he began sending the new programs out to the individual dogs. Then he spent the next two days camped in his office praying that the updated recordings beamed in from Osaka would continue to have flinthopper profiles and images from dog drone fifteen.

Tik came dancing out into the halls when dogs eight and five beamed images of the flinthopper as well. Eight and five had been reprogrammed to follow dog fifteen and test for scent trails on anything that the flinthopper touched. The sniffer dogs soon picked up scents that were consistent with locations where the flinthopper had landed and not scents from locations the flinthopper had not visited. More and more dog drones arrived and with the added tracking ability two other dogs followed scent trails to two other flinthoppers. Soon a little area of about two square kilometers was swarmed by all the dog drones.



Flinthopper by [BlackDonner](#)

The payoff discovery happened about a week into the swarm search when a flinthopper was recorded laying hundreds of tiny eggs along a leaf of a tree. Tik programmed one of the dogs to take a sample of about a

dozen eggs and fly the vial to Sahng Sh-laund VooZhoo, professor of taxonomy at Osa SiVa University. Sahng identified the eggs as that of a rare Osaka insect-mammal-plant hybrid called a mangsalings. Sahng shipped the eggs here to the JHF on Hakosoar with recommendations for suitable micro habitats to hatch and raise the mangsalings. Another dog was placed in a stationary position to continuously monitor the remaining eggs until they hatched. Unfortunately the eggs were all eaten a few days later by a wandering vine worm. Sahng has postulated that this vine worm, a sitoring as it is called by the Osaka, may be the cause of why the mangsalings are so rare. Sitoring are known to seek out protein foods over cellulose foods.

As of this writing, the direct control of the dogs has been taken on by Professor Sahng. The population of mangsalings in the wild appears to be very small for this odd osakish creature. They seem to be confined to this portion of the fungal jungles.

HATCHING MANGSALINGS

The eggs had all swelled to about three times their initial size by the time they arrived at the JHF. Tik immediately split the eggs into eleven separate insectariums using various habitats recommended by professor Sahng. Three had egg pairs placed in them and the other eight had individual eggs placed in them. Two of the eggs in the individual insectariums withered and died a few days later. Patience, tender care, and the natural instinct of a Vrusk like Tik pulled the rest of the eggs through and two weeks later little mangsalings started bursting out of the eggs.

Each tiny mangsaling was about two millimeters in size. Interestingly they were fully formed. Tik had expected them to hatch into a larval state like most insects but these little critters were walking about on their little legs in minutes. Their first task was to eat their egg casings and drink the remaining yolk. One of the paired eggs that hatched before its sibling ate not only its own eggs, but devoured the egg of its sibling and cannibalized it. The other two pairs had hatched at the same time so both were walking and eating their own eggs. They have shown no signs of aggression against each other after hatching.

GROWING FLINTHOPPERS

Mangsalings on Osaka grow to about 20mm in size, about the size of a human or yazirian thumb print. Our observations show they subsist on as many small creatures as they can lure close enough with the stamen like appendage growing from the front of their heads. They conceal themselves in among flowering vegetation and dance their stamen decoy close to the pistil to induce nectar secretions. Other small creatures then come to feed on the nectar and the mangsaling pounces on them to consume them. When prey fails to show up or gets away

the mangsalings have been observed feeding on the nectar as a secondary food source.

Tik's hypothesis was that mangsalings provided with an abundant food source where the proper proportions of nutrients were available would grow beyond 20mm in size. He theorized that mangsalings had been inadvertently transported to Circe and the food sources they acquired there provided them with a rich supply of the nutrients they needed to continue growing beyond the 20mm adult limit observed on Osaka.

Tik had been doing his research about the environments of Circe where sightings of flinthoppers had occurred. Circe-ariums matching the various Circe environments had been previously established and the habitats of the mangsalings were connected to the individual Circe-ariums to see which food sources attracted the mangsalings and promoted giant growth in them.

The mangsalings proved to be just as mobile and curious as their parents on Osaka. All of them ventured forth from their insectariums and flew into their respective Circe-ariums on their tiny wings. Then began the long wait to see which, if any, of the mangsalings grew beyond the 20mm adult size. So, each week Tik would restock each Circe-arium with fresh food sources. Soon the experiments began to show that mangsalings in Circe-ariums with abundant sources of protein food were growing larger and faster than the mangsalings with low protein diets or cellulose only diets.

Tik captured each mangsaling each day and measured its height, weight, and various other physical parameters. Two months after their hatch dates none of the mangsalings had yet surpassed 20mm in height. However the trends still indicated that the prospering protein feed mangsalings would surpass 20mm before reaching the adult age of 140 days. Sure enough, a week later two of the highest protein diet mangsalings had passed 20mm and were gaining height fast. The problem was that the larger the mangsalings got, the more food they needed and the harder it was for them to feed. Shortly after doubling their size at 40mm the mangsalings lost their ability to fly. Their mass was now greater than their insect wings could support. The large mangsalings turned to chasing and overpowering their prey but as they got larger the tiny insects they had been subsisting upon began to be too fast for the large mangsalings to catch.

Tik was prepared having anticipated that any mangsalings on Circe would have adapted to larger and larger food sources as they grew. He also had a couple of reports from Circe where flinthoppers were sighted eating larger wild animals. Tik began introducing larger insects in all of the Circe-ariums with large mangsalings. Then as they grew larger he introduced small animals and continued increasing their size as the mangsalings continued to grow.

When the experiment reached its completion at 180 days, 40 days past adulthood for mangsalings, the high protein mangsalings were standing nearly a meter tall and still gaining height where the other mangsalings had reached their max height at or shortly after 140 days of age. Throughout this entire experiment the large mangsalings had to be transferred to larger habitats multiple times. The larger the mangsalings got the larger the space they needed to run and chase down their prey. Their hunting tactics being primarily to hide among vegetation and then pounce or chase down their prey once it had wandered to close to them.

Tik began calling the large mangsalings flinthoppers after recording several holovids of them chasing their first small animals and then hopping upon them repeatedly to bludgeon them to death. Given that large mangsalings have black claws on their feet with a flint like appearance the name flinthoppers is appropriate.



Size Comparison to Flinthopper by [BlackDonner](#)

Our staff's experience raising giant mangsalings lead to the development of accurate search guidelines for the proper environment to find flinthoppers on Circe. Tik provided the findings and guidelines to the Circe Natural Resources Administration and they located a pair of flinthoppers in the wild in short order. This pair was captured and DNA samples were taken. The analysis proved Tik's hunch true. Circe flinthoppers are in fact giant Osaka mangsalings that somehow were inadvertently transported to Circe as eggs or shortly after hatching. This conjecture is based upon the growth rates observed in the mangsalings we switched to high protein diets later in their growth lives. Giant growth of mangsalings appears to be dependent on constant and consistent protein availability from the first day of hatching.

DANGEROUS FLINTHOPPER TRAITS

Circe NRA Rangers and our staff have observed a number of flinthopper traits that make them dangerous to the average citizen and the unwary hiker, camper, or adventurer. Flinthoppers hunt by concealing themselves and ambushing. Their mixed biology of mammal, insect, and plant unique to Osaka blesses the flinthopper with an

appearance that easily blends into nearly any environment. Flinthoppers hidden in tall grass can easily appear as a large stone or a stone with branches of wood if their legs and heck are showing. A flinthopper in a tree may appear to be part of the tree. The body of the flinthopper was once mistaken as a large insect hive in one of the enclosures by Dwain and he tried to remove the foreign organism from the habitat. He received a nasty kick to the chest that knocked the wind out of him and would have left him helpless to a hopping attack had not another JHF staff member been in the enclosure washing down things and turned the hose upon the flinthopper and startled it into retreat.

The kick of a flinthopper is very strong. They can punch through most domestic wall paneling and bruise or break bones or carapace of any of the core four races. When flinthoppers hop upon their prey they typically kick their feet down upon landing to increase the force of the landing. Flinthoppers have also demonstrated intelligent perception in identifying the head and eyes of various races of the Frontier. The Circe NRA has recordings of a dralasite ranger who was attacked and pulled his head flat against its body for protection. The flinthopper accurately kicked at the dralasite's eye spots as the dralasite wiggled and morphed shape to hide its eyes repeatedly. Hungry flinthoppers are very willing to ambush prey much larger than themselves and will work in pairs.

| Mangsaling Flinthopper | | |
|--------------------------|------------------------|--------------------------|
| TYPE: | Carnivorous Omnivore | |
| SIZE: | Tiny : 20mm | Medium : 1.5m |
| NUMBER: | 1-2 | |
| MOVE (walk-run): | 0.1-1 m/turn | 14-105 m/turn |
| MOVE (flying): | 48 m/turn | NA |
| IM/RS: | 8/75 | 6/55 |
| STAMINA: | 3 | 60 |
| ATTACK: | Kicks, Hops, and Bites | |
| DAMAGE: | 1d2 | 1d10 |
| SPECIAL ATTACK: | None | |
| SPECIAL DEFENSE: | Natural Camouflage | |
| NATIVE WORLD(S): | Osaka (mansaling) | Various (flinthopper) |

GM NOTES

A known dralasite crime boss is trying to adapt cybernuk carapace technology to the flinthopper. His smugglers inadvertently transported the mangsaling eggs onto Circe. He recently acquired more mangsaling eggs from Osaka and is raising flinthoppers in various locations in the Frontier after he picked up on the JHF communications with Circe NRA about the flinthoppers they left on Circe.

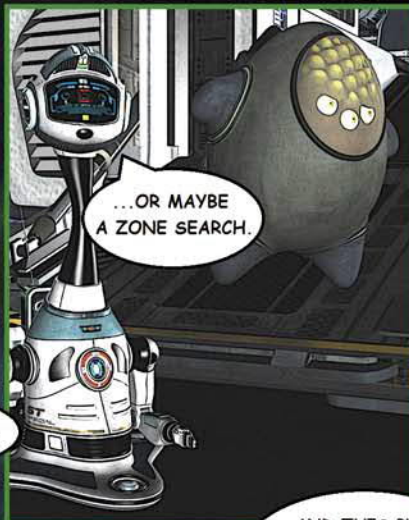
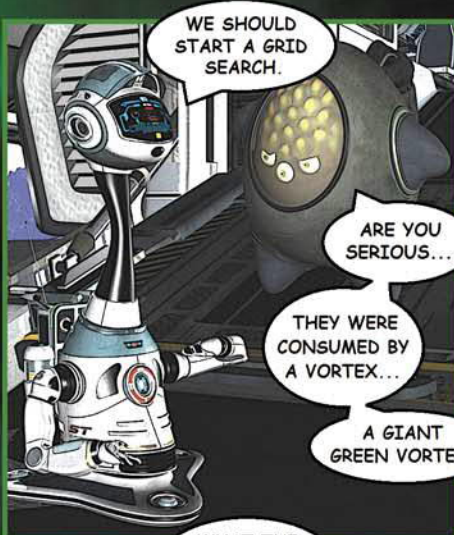


GRYMZ

GUIDE TO INTERGALACTIC CONQUEST



LESSON #17: DOES NOT COMPUTE



MEANWHILE

