

An Ultimate's Guide to Combat

What comes to your mind when you think "Ultimate"? Most of you readers probably conjure up images of some mercenary, fighting on some blasted rock on the outer system. Some of you will come up with an image that is much less pleasant. Ultimate ideals are much, much different than that. We are more than simply an order of militants.

Ultimates have been associated with mercenaries since the movement's inception, simply because most of us do it at one point or another to make money. I've signed contracts with Ultimate Security, Direct Action, Gorgon, and a half-dozen smaller outfits over the course of the last twelve years. I died on New Mumbai (but you should see the other guy), and in two or three places I'm probably legally obligated not to talk about in print.

The whole sum of the Ultimate philosophy is self-improvement, however. A lot of people fear us because of the fact that we have a perceived penchant for violence, but there are two good reasons for that. First, we simply are capable of delivering better violence because of our training and familiarity with augmentations. Second, we know what's coming. About 80 percent of ultimates died in the Fall, and that's considered a victory. The TITANs aren't dead, and they're hardly even gone.

— Exemplar Harmony "Harm" Cho

The world of Eclipse Phase is wrought with danger and intrigue. The purpose of *An Ultimate's Guide to Combat* is to provide players with more tactical options, and it provides additional opportunities for combat, adding in new systems to give a combat-heavy campaign more variety.

Another of the focuses of this supplement is to provide players with a resource for a more responsive combat system, complete with new and expanded rules for weapon qualities, melee combat, and explosives. *An Ultimate's Guide to Combat* includes some theoretical battlefield tech, as well as additional general use military theory and tactics to improve battlefield simulation in the Eclipse Phase system.

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Attacking Thresholds.....	This guide is the offspring of Ultimate Security training
Extinguishing Fire.....	manuals from before the Fall, coupled with experience that has
Ordinary Combustibles (A).....	been added to our expertise both during and after the Fall. Built
Flammable Liquid/Gas (B).....	for a large audience in mind, there are some simplifications
Electrical Fire (C).....	and generalizations; this book may still save your life if you are
Metal Fire (D).....	caught in a combat situation, but it is intended to be an
Firefighting Gear.....	introduction, not a complete guide, to combat techniques and
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Mozambique Drill.....	
El Presidente.....	In the past three decades, combat gear has changed
Dozier Drill.....	more than it had in the past three centuries. Despite this, many

of the fundamental concepts of firearms and energy weapons have been well known for quite some time.

Being familiar with your gear will save your life if you have to call upon it in stressful situations; intelligence is knowing that you can shoot off a lock, but wisdom is knowing that the AP round you fire at an angle at a block of hardened metal will ricochet back through your leg.

Firearms and Railguns

Kinetic weapons are still the mainstay of transhumanity's arsenal; they are well-pedigreed and have a variety and familiarity that energy weapons just can't match, require relatively little training to use effectively, and generally lack complicated electronics. Plus, unlike seekers, someone who messes up only hurts one teammate, rather than three.

Kinetic weapons function by putting a projectile into or through a target. Contrary to popular opinion, the presence of a bullet in the body doesn't do much damage at all: it's how that bullet gets there that matters.

Faster rounds do more damage, period. Special armor on vehicle scale morphs, robots, or vehicles may negate some of this factor, but both biomorph tissue and synthmorph structure are sensitive to impacts at speed. Higher speed rounds project much more energy, and in both metal and flesh produces additional impact effects that even a larger but slower projectile is unlikely to produce. Railguns rely on this effect more than traditional firearms.

Using kinetic weapons comes intuitively to most soldiers, as they are not uncommon and many common XP's and media programs, as well as countless augmented/virtual reality simulations and games include kinetic weapons, but novice shooters often make mistakes based on inaccurate

depictions of weapons and poor weapon handling. Although modern firearms are very robust, there are still limitations to the amount of abuse that they can take, and they need to be cleaned properly every few hundred rounds to maintain optimal accuracy and reliability. Railguns require less maintenance, though they may need realignment for optimal accuracy.

Ammunition storage is a major concern; the average soldier can carry four or five magazines before they begin to be encumbered by the additional ammunition that they are carrying. Likewise, novices often reload their firearms very frequently, even in situations where there may be immediate contact. This leaves them with many partially depleted magazines and provides openings for hostiles to exploit. It is often impractical to use long extended bursts of fire for ammunition management purposes, even though modern firearms have mitigated most concerns about recoil.

A final note about kinetic weapons is that firing them in microgravity pushes the user away from the direction of the projectile, even in weapons with very good recoil control. Users of these weapons should be aware that rapid full-automatic fire can cause significant shifts in momentum, which can strand an unsuspecting shooter or send them flying away from cover.

Entering the Battlefield

While civilians and security contractors may not have a lot of say on their gear, any mercenary or soldier worth their salt will carry three things into battle with them: a primary weapon, a sidearm, and a utility weapon

Primary weapons typically have an effective engagement range of at least a hundred meters, with accurate fire possible to three hundred meters, though in clustered habitats or urban environments a shorter-range weapon like a submachine gun may be more practical for its ability to be deployed in cramped quarters. Kinetic weapons and beam weapons are the most popular primary weapons, with kinetic weapons leading by far in terms of widespread adoption.

Sidearms are backup weapons first and foremost, but they sometimes include utility weapons. Shotguns with frangible rounds, for instance, can function as a sidearm, though by and far the most popular sidearm option is a pistol. Sidearm selection is heavily dependent on the preferences of individuals and institutions; most mercenary outfits prefer

heavy pistols, while civilians, police, and security prefer lighter pistols with more ammunition capacity.

Finally, people tend to bring a utility weapon with them. SWAT teams may have flashbangs, military units may bring along seekers or rocket launchers, and commandos may have satchel charges or other special gear. Grenades are the most common "utility weapon"; HEAP, thermobaric, and plasmaburst grenades are devastating against both hard and soft targets, and are standard issue for combat deployments.

Effective Combat Units

The best predictor of battlefield success is unit cohesion. Gear is interchangeable, but operators are not. Transhuman combat is different from warfare in the 20th century because it is not uncommon for the same combatants fight the majority of any given war, resleeving to rejoin comrades after they have perished, or simply being well-equipped enough to be such a dominant force as to be nigh-untouchable on the battlefield.

Units work best if they have close interpersonal relationships throughout. Respect is earned through authentic relationships, and many people grasp this concept and strangle it to death by trying to enforce unit cohesion by forced fraternization. Officers should have charisma, and as much as possible soldiers should have bonding opportunities outside combat. Unlike a faulty rifle, you cannot simply swap in a new soldier.

The one rule of battle is that you never want to have a single soldier alone in combat. Occasionally snipers or commandos may undertake a solo mission, but this only happens when they do not expect to encounter heavy combined arms resistance, or when no better option presents itself. A lack of unit cohesion may mean that soldiers abandon each other on the battlefield, or, worse, under the heat of pressure, especially when opponents like the TITANS, whose ability to perform sophisticated biological and infosec attacks is well known, are able to cause psychological tensions between troops.

The Fireteam

In any mercenary group or military worth its salt, units will be divided into fireteams. In small organizations or more decentralized organizations, like anarchist strike squads, you see more independent selection of weapons, but the fireteam unit is tried and true, and ensures that any group of soldiers in the field has the firepower they need to survive most engagements. Fireteams are created for the open

battlefield, not counterterrorism or security uses, and have a focus on sustainability and flexibility, though you may find similar groupings among police and security forces that are built around shorter engagements and close quarters combat.

Fireteam Configurations

Fireteams tend to be between four to six members in size. It is generally accepted practice to designate a fireteam leader who has a mix of forward observer and tactical decision making roles. The squad leader is usually equipped with a rifle and an underbarrel seeker or grenade launcher with smoke for signaling and concealment as well as fragmentation, HE, or HEAP rounds. The remaining members of the fireteam typically fall into one of the following categories:

Rifleman: Every soldier is trained to be a rifleman, because it serves as a good baseline skill set. Riflemen are typically not issued any special weaponry, with an automatic rifle, heavy pistol, and two or three grenades being standard issue. The rifleman's job is usually to protect the team leader, and should the squad split up they will remain together.

Automatic Rifleman: Entrusted with a machine gun, automatic riflemen take on support roles, placing suppressive fire. They are typically more senior than riflemen, knowing optimal positioning and having the skilled ability to use bursts of effective fire.

Assistant Automatic Rifleman: The AAR takes on a support role, carrying additional ammunition for the automatic rifleman in addition to his own rifle.

Light Anti-Tank Rifleman: LAT support is often used as an alternative "junior" role in a fireteam. Typically, fireteams do not have dedicated anti-tank capabilities, but if they are likely to encounter armor there will typically be at least one rifleman with an anti-tank weapon (typically a disposable missile launcher) to back them up.

Fireteams tend to be composed of a fireteam leader, one automatic rifleman, one AAR, and then either riflemen or LAT riflemen.

The Squad

Squads are coordinated groups of fireteams. The number of fireteams per squad varies, but a squad typically comes to between ten to sixteen soldiers, with at least two members of a command group. This command group almost always contains at least a squad leader, who takes on a tactical decision making role and coordinates communications with higher command, and a squad medic/robotics repair

specialist, who tries to keep everyone alive or patched up through the fight.

Some other specialist types are applied at the squad level that may be worth noting:

Designated Marksman: Not a sniper, the designated marksman is typically equipped with an automatic rifle, but one with better optics (or electronics) so that it is prepared to make medium to long range shots outside normal combat engagement ranges. These tend to be selected from riflemen who are good shots, and they maneuver freely to select vantages that provide good overviews of the battle, functioning as scouts as well as removing threats before they reach the other squad members.

We won't go into detail about groups larger than a squad here; organizations tend to have wildly different preferences for organization beyond that, but we will go into detail about other combat roles.

Squad Support

You will occasionally see some elements be deployed outside of the normal squad hierarchy. Depending on the organization fielding them, they will either be formally attached to a squad, or be coordinating efforts alongside squads with direction coming directly from higher ups.

Sniper Teams: Sniper teams can be devastating. A lone sniper can suppress a squad better than an armored vehicle with an HMG in some situations, because the fear of getting shot is important. For anyone with a cortical stack, a sniper is a minor inconvenience, but being knocked out of combat is still a major concern, and snipers are able to disable commanders, specialists, and other valuable elements with relatively little fear of reprisal and wreak havoc on an opposing force's morale.

Sniper teams tend to either operate with a single sniper (common for stealthier sniper roles), or a sniper/spotter pair. With modern electronics, spotters tend to take on a more traditional rifleman overwatch role, protecting the sniper while they do their work and keeping a second eye out for dangers, though there are times when they cooperate, especially among forces that are not equipped with high-end smartlinked weapons with cutting edge optics. Snipers may be deployed with anti-materiel rifles, either to fight increasingly hardened morphs (such as combat synths) or automated drones, or to allow limited anti-vehicle roles.

Forward Operations Coordinators: These guys communicate with artillery and CAS elements to call in support on target and help leverage the superior firepower available to their faction. They are, understandably, somewhat rare among some of the less-well equipped mercenary and military forces, though they can be a lifesaver in a pinch.

Anti-Tank Teams: While fireteams may deploy light anti-tank capabilities, anti-tank teams take the fight to tanks, rather than vice versa. An anti-tank team includes at least one anti-tank gunner, typically with a very heavy anti-tank weapon like a multi-launch rocket launcher or an assault cannon.

HMG Team: The HMG is a weapon that provides excellent area denial against infantry and light armored vehicles. Typically, the HMG is a two-man team consisting of a machine gunner and an assistant who helps carry part of a tripod setup and ammunition for the weapon.

Engineers: Engineers play a crucial combat role by handling detonation or disarming of unexploded munitions, battlefield construction projects like bridges and makeshift fortifications, and otherwise making logistical and tactical shifts to favor their allies.

Infosec Specialists: Although most battlefield equipment is hardened against digital interference, combat in areas with functional mesh infrastructure or where wireless equipment is deployed is crucial, and infosec specialists are a part of many military forces, handling jamming, information suppression, and communications for their forces.

Remote Operators: These soldiers often fight remotely, but the shells they control may be attached to a squad. It's not uncommon to have someone remote controlling or jamming into a light aerial vehicle or ground-based drone to provide supporting fire or drop supplies off to troops, though larger vehicles tend to be piloted locally to eliminate the risk of digital intrusion.

Special Forces

Infiltration forces, scouts not attached to squads, and the like fall under the auspices of special forces. Special forces operators are expected to be able to function both as forward operations coordinators and complete covert mission tasks. Lacking heavy weapons, they use silenced weapons with subsonic ammunition and flash suppressors as a standard kit, and gather intelligence or complete sensitive missions. They tend to be among the elite soldiers of any given force, and

have great operational flexibility, but their primary objective lies in completing their mission, not neutralizing enemy forces.

The After-Fall Armory

The Fall taught transhumanity a number of things. First, you can't count on massive decentralized AI tactical networks in place of boots on the ground. Second, sufficiently nasty things can suborn your gear. Third, most battlefields are pretty unsurvivable for even well-prepared transhumans.

I'd say that about half of the things that I encountered during the Fall were things that could only be dealt with using specialized gear or external support. At New Mumbai we had to deploy nukes to stop the TITANS' advance, and we didn't have enough time to get everyone out (civilians and soldiers both).

So, with that in mind, here are a few things that anyone going into combat in this day and age should expect. I'm going to take a moment to remind everyone that the best force multiplier in existence is the transhuman mind, unless the Factors do something particularly shocking, so do enough reading to set yourself apart from the genetrash.

Handling Expensive+ Costs

Eclipse Phase uses simplified costs to reflect the fact that it is unlikely that one will find items at the same price in habitats on opposite sides of the solar system. *An Ultimate's Guide to Combat*, however, looks at military and government issue equipment that would cost a fortune on the private market, and for which blueprints may simply be unavailable or extremely highly restricted. *AUGC* uses Expensive+, Expensive++, and so forth to denote objects that not only are expensive, but are orders of magnitude more expensive than standard; Expensive+ is equivalent to 100,000 credits as an average cost, Expensive++ is equivalent to 1,000,000 credits as an average cost, and so forth.

Weapon Qualities

A lot of people overlook the vagaries of various weapons. Each weapon has its own unique upsides and downsides, and you should be making an intelligent and informed decision about each of your tools as you prepare for battle.

Some weapons are renowned for their ability to consistently put out damage against a variety of targets. These reliable weapons are a mainstay in many peoples' arsenals.

Reliable weapons roll each damage die twice, taking the higher result as the final outcome for the die. *Reliable*

applies not only to the weapon's base damage, but any damage added by automatic fire. Alternatively, 2 damage may be added for each d10 in the weapon's DV instead of rerolling dice.

A handful of weapons are capable of causing damage to a large area; these blast-causing weapons can hit multiple targets at once.

Area weapons are not content merely to damage a single target, but also cause damage to additional morphs. *Targets standing within a number of meters equal to the Blast rating of the weapon fall victim to the same effects as the original target of the weapon.*

There are some weapons capable of functioning radically differently, to the point where different skills are used with various modes of the weapon.

Multi-Mode weapons are capable of being used in multiple different configurations. *The skills used will vary from weapon to weapon.*

It is not uncommon to find weapons that cause damage across a whole cone of fire. These weapons are devastating to unsuspecting combatants or those who cannot take cover.

Saturation weapons use special rules detailed in the *Saturation Attacks* section.

Some rare weapons do damage directly through radioactivity (x-rays, gamma rays, neutrons, or other energetic particles). These are highly illegal, and go by a number of names; they are generally lumped together as enhanced radiation weapons. Some nuclear weapons, typically referred to as enhanced radiation weapons, yield primarily radiation instead of blast and heat, and have this quality as well.

Radioactive weapons ignore a target's armor, though special radiation hardening applies. *They also expose targets to a number of millisieverts equal to their rating.*

On the other hand, not all of the special qualities that weapons can have are good.

Some weapons are dependable for a low-grade damage output. These unreliable weapons tend to let you down when you most depend on them, though by some fluke it's possible to get good hits out of them now and again.

Unreliable weapons roll each damage die twice, taking the lower result as the final outcome for the die. Unreliable applies not only to the weapon's base damage, but any damage added by automatic fire. Alternatively, 2 damage may be subtracted for each d10 in the weapon's DV instead of rerolling dice.

Some weapons are just plain unwieldy. These weapons are difficult to use and carry effectively, making it difficult to move effectively while carrying them.

Unwieldy weapons confer a -10 penalty to all Flight, Fray, Freerunning, and Freefall tests made by the user while the weapon is being carried or used. Characters with multiple unwieldy weapons suffer the first -10 penalty and then take an additional -5 penalty for each additional weapon. Large morphs reduce the penalty for unwieldy weapons by 5, and very large morphs reduce the penalty by 10. Small morphs, on the other hand, increase the penalty by 5.

Older weapons, and some post-Fall weapons made in a pinch to use fewer resources, suffer from recoil. I like to keep an old anti-materiel rifle from Earth that I've had since I left for New Mumbai in a locker. It packs a real kick, but it's as hard-hitting as any gun you'll see today.

*Firing a weapon with the **Recoil** quality imposes a -10 penalty to future attacks with that weapon during the remainder of the combat turn, unless the weapon has been deployed or the character uses a complex action to recover from the recoil.*

One thing you don't hear about firearms that often is how many of them are total lemons. Especially if you're buying from scum tinkerers or the Jovians, you can expect a lot of low-end cheaper firearms to be unreliable at best.

*When firing a weapon with the **Lemon** quality, the weapon jams (kinetic, seeker, or spray weapons) or overheats (energy weapons) if the attacker rolls a 1 on any of the damage dice rolled on account of the weapon's DV. Melee weapons with the Lemon quality break entirely; they lose any other qualities and do $1d10 + SOM \div 10$ damage. A jammed projectile weapon requires a Complex Action to unjam, while an overheated energy weapon cannot be to attack again until the end of the next turn. Broken melee weapons may be repaired; the Game Master decides what processes this entails.*

Variable Rating Weapon Qualities

Sometimes weapon qualities may have a range or list of values; this means that the user can decide the level at which the quality functions.

Example: Kinetic Gauntlets have an Area (0-10) rating, which means that they can be used to effect a single target only, or all targets within ten meters.

Damage Bonus

An Ultimate's Guide to Combat introduces a variety of new weapons, many of which use different statistic calculations. It is suggested that Damage Bonus be calculated using the rules in *Transhuman* (p. 96), which state that either $SOM + DUR \div 20$ be used to calculate Damage Bonus or that small morphs should decrease Damage Bonus by 1 and large morphs should increase Damage Bonus by 2. For sake of consistency with the other books, this book uses $SOM \div 10$ to represent the standard damage bonus, and adds in weapons that use $SOM \div 5$, for weapons that use double the normal damage bonus.

Alternate Caliber

Firearms in AF 10 can be found in alternate calibers that make them more suitable for specific types of combat; a rifle with a smaller round may not do as much damage as its full sized counterpart, but it will allow for more ammunition to be loaded into a magazine; a standard automatic rifle with a 30 round capacity modified to fire rounds in a smaller caliber can hold 42 rounds in a standard magazine, or 63 in an extended magazine, while the same rifle modified to use larger caliber rounds could hold 24 rounds in its magazine, or 36 in an extended magazine. When calculating the number of rounds that a firearm using an alternate caliber can use, always round down; extended magazine capacities are calculated from the caliber modified number prior to rounding, however. There is no (effective) cost difference between rounds of different calibers.

Alternatively, firearms can be purchased with the Caliber Adaptation modification applied; this does not change their cost, though they cannot use normal caliber rounds.

All normal firearms require the Caliber Adaptation modification to function with alternate caliber rounds; railguns can use small caliber rounds by default, but must be upgraded with a large caliber adaptation.

Alternate Propellant Loads

It is possible to manufacture traditional firearm (but not railgun) projectiles with different propellant and projectile materials and proportions to make very effective bullets with special qualities. The two most common types of load changes are hypervelocity and subsonic rounds. There is no (effective) cost difference between these rounds and other rounds.

Hypervelocity rounds use a projectile of normal weight and a more energetic propellant. They can only use ammunition types that are compatible with railguns. If fired in a firearm without the hypervelocity adaptation, they add the recoil effect, as they are substantially more energetic than standard rounds. Low-quality firearms may explode on a critical failure with hypervelocity rounds, though most after-Fall weapons can handle the additional pressure. Firearms with the Lemon quality will explode if hypervelocity rounds are used in them. Hypervelocity rounds get a slight range bonus.

Subsonic rounds, on the other hand, are designed so that their projectile never breaks the sound barrier. Typically, projectile weight is increased while propellant loads are decreased or kept similar to standard rounds. Subsonic rounds are harder to hear than normal rounds (-10 to perception tests to hear, which stacks with silencers and other effects), but they have shorter range and poorer penetration and damage performance on account of the slower speed.

Railguns cannot change propellant loads, as they do not use traditional propellants.

Weapon Manufacturers

Weapons are as diverse as transhumanity, and there's generally a weapon for any given purpose or environment. Violence is part of the transhuman nature, and as tool-making creatures, we've made great tools for violence whenever we've encountered new situations to apply it.

Weapon manufacturers tend to have their own personal hallmarks. One company may have a different target audience than another, and each has their own trademark line and iconic weapons. Some people swear by certain brands, often on account of minor features that just aren't found elsewhere.

Distributed Munitions

Born out of an early 21-st century open-source weapons movement, Distributed Munitions is considered

somewhat controversial for their anarchist leanings among more conservative groups.

Since they are built around the concept of blueprints, the entire Distributed Munitions system has been designed around voluntary contributions, and the group exists more as an autonomist group akin to the argonauts than as a microcorporation or hypercorporation.

While all Distributed Munitions designs are available free of charge, they may be subject to legal restrictions in many habitats; fabbers with safeguards against building weapons typically have the full Distributed Munitions catalog included on their restriction list.

Distributed Munitions is prone to quality control issues; experimental designs are distributed because they exist, not because they are necessarily practical. Experimental-branch weapons from Distributed Munitions gain the Lemon quality, lose 1d10 from their DV, but gain +7 DV. Distributed Munition Digital Munitions manufactures all sorts of weapons, though only Kinetic and Beam weapons have enough adoption for experimental-branch variants.

Tradition Arms

They may not be the most fancy of weaponsmiths, but Tradition Arms is dependable for a number of reasons. First, they make their weapons built entirely around analog components. There is nothing digital in their arsenal, and the most complex electronics are some capacitors in their railgun variations.

Expensive and overrated, according to critics, Tradition Arms aims for a Jovian and bioconservative market in general, pointing out that without fancy software their guns will never betray you and turn into some sort of TITAN subverted toy. Of course, the simple nature of Tradition Arms' weapons also means that it is the warrior's skill, not their gear, that wins the day. They are of fine craftsmanship, though. Rajput have both blueprints and a small arsenal of Tradition Arms weapons on hand.

Weapons sold by Tradition Arms lack digital systems, using electronics only as necessary for a weapon's functionality. Almost all systems on a Tradition Arms weapon are analogue; any circuitry in them comes down to simple switches, batteries, and capacitors, rather than having digital controls. Tradition Arms blueprints are available; they are DRM-free and cost the same as a purchased weapon does, though

terms and conditions prevent the resale of Tradition Arms weapons made on fabbers in this manner.

Tradition Arms weapons require cased ammunition that is incompatible with modern firearms (even their railguns use ammunition with a self-contained power supply). When fired on full automatic modes, TA kinetic weapons are treated as having the Recoil quality, and other TA weapons are treated as having the Lemon quality. TA does not make seeker weapons. However, TA weapons tend to be high caliber, gaining -1 AP and +2 DV.

Tradition Arms manufactures Kinetic, Beam, and Spray weapons.

Smartgun Systems

The smartgun system is marketed as a weapon for someone who doesn't want to worry about self defense. Used similarly to a normal gun, smartguns typically have a barrel that can aim fifteen to thirty degrees off of where the user is aiming, and fires after using a smartlink system to verify targets with the user. Smartguns use an integrated AI with its own weapon skill (45/60, depending on the price of the AI system), and are typically hardened against assault by using a variant of skinlink; with only a hour's training users can send commands by neural reflex. Haptic feedback encourages the user to hold the weapon in such a way that it can engage its targets. The feed from the weapon to the user is sent wirelessly to mesh inserts, however, and may be intercepted or jammed. The transmitter sending targeting feedback of the user has an effective distance of five meters, and has an EMP threshold of 12.

Smartgun systems are comprised of two separate parts: the AI and computer components and the mobility platform that accompany it. The AI has a skill rating of 45 or 60, depending on the electronics suite that accompanies it and the software loaded. These packages have a Moderate or High cost, respectively. Most smartgun AI packages can be applied to any weapon, though exotic weapons may not have sufficient data available for use.

The mobility components of a smartgun must be purchased separately. The modifications necessary to make a one-handed weapon a smartgun are available at Moderate cost, while two-handed smartgun adapters typically have a High cost.

Kinetic Weapons

New Kinetic Weapon Mods

Caliber Adaptation: Firearms may be rechambered and have barrels and other mechanisms replaced to use small caliber or high caliber rounds, changing their effectiveness and ammunition capacity. A firearm can have a small or large caliber adaptation (or a normal caliber adaptation, if they come with a small caliber modification applied), while railguns typically only have large caliber modifications. Unlike firearms, railguns can fire rounds smaller than their caliber adaptation, though neither firearms nor railguns can fire high caliber rounds without the appropriate adaptation.

Hypervelocity Adaptation: Firearms with the hypervelocity adaptation mod do not have the recoil quality added when firing hypervelocity ammunition. [**High**]

New Kinetic Weapons

Heavy Machine Gun: For when a normal machine gun isn't heavy enough, the heavy machine gun offers higher calibers and larger mechanisms to guarantee that targets go down. Typically only capable of full-automatic fire (though some variants also include semi-automatic fire), they fire devastatingly large rounds at frightening speeds. Heavy machine guns are two-handed weapons, and have the Unwieldy quality. [**Expensive**]

Anti-Materiel Rifle: Capable of taking down heavily armored vehicles and drones (but not typically tanks), collectively referred to as materiel, anti-materiel rifles fire rounds that are evolutions of the early anti-materiel rounds adapted from 12.7 or 20 millimeter anti-aircraft guns. [**Expensive**]

Assault Cannon: Assault cannons fire rounds adapted from heavy vehicle autocannons. Only technically an infantry weapon, they require deployment to avoid recoil and are unwieldy. Assault cannons cannot have caliber mods applied, and subsonic and hypervelocity rounds are not available for assault cannons. [**Expensive+**]

More Railguns

Railgun variants of practically every conventional firearm exist (shotguns being the only notable exception). As such there are a few things noted.

Railgun variants of Expensive firearms are treated as being Expensive+, while Railgun variants of Expensive+

weapons are still Expensive+ (but have a minimum cost of 200,000).

Railgun heavy machine guns and anti-materiel rifles burn through batteries at twice the rate of other railguns (100 shots per standard battery), and railgun assault cannons burn through batteries at four times the rate (50 shots per standard battery).

Shotguns

Shotguns are not as effective as battlefield weapons as their depiction in the media would indicate. Mercenaries and soldiers will not typically be outfitted with shotguns, but there are times when the weapons are useful for one of two purposes: light, unarmored targets (such as biomorphs or cases), or when fighting threatens to breach a habitat.

Modern shotguns fire caseless ammunition with integrated flechette rounds. Flechettes can have a number of modifications applied to them. Shot and slug projectiles are also available; slugs tend to turn shotguns into very short range rifles (remember that the velocity of projectiles from a shotgun is much lower), and shot functions like flechettes, but tend to have less armor penetration. Shot is available in plastic, flux, and regular varieties, while slugs are available with the full spectrum of ammunition modifications, including smart ammunition (flak cannon slugs are limited to the types of ammunition appropriate for railgun ammunition). Flechette rounds are not customizable with ammunition types.

Shotguns tend to have a lower muzzle velocity than other kinetic weapons. For the past two decades, the same advances that mitigated recoil in other firearms have been applied to shotguns, so you don't have to worry about the kick of a 12-gauge taking out your shoulder.

Likewise, smart materials allow for the choke (which changes the pattern of shot impact) of a shotgun to be configured for appropriate distances on the fly; a user with a smartlink can do this automatically, while old-school users can use a quick action to change the range of a shotgun's choke.

Most shotguns are kinetic weapons, but there is a railgun variant. Popularly called flak cannons, these weapons fire a cluster of magnetic projectiles, and can have their spread adjusted similarly to a traditional shotgun. They can fire slugs, but the normal railgun ammunition type restrictions apply. As an added feature, a flak cannon can fire grenades (with range increments equivalent to a conventional SMG). Flak cannons are only available in a two-handed configuration, and tend to

pose a much higher risk of hull breach than their chemical propellant utilizing brethren.

Shotguns cannot be use hypervelocity rounds.

Each type of shotgun has its own ranges; an underbarrel shotgun or flak cannon, or a shotgun in a pistol form factor uses light pistol ranges, while full sized shotguns use submachine gun ranges. Flak cannons use conventional firearm assault rifle range increments (for flechettes, slugs, and grenades). Shotguns firing flechette or shot lose 1d10 damage for firing at long range and 2d10 damage for firing at extreme range. Shotguns firing flechette or shot suffer reduced accuracy penalties for firing at long ranges (no penalty at medium range, -10 at long, and -20 at extreme).

Although many weapons are multi-integrated after the fall, underbarrel shotguns and flak cannons remain in use due to their utility and their ability to be attached to other weapons without requiring attention from a professional armorer.

Underbarrel Shotgun: The underbarrel shotgun has been a staple of counterterrorism and military forces for many years, and its utility combined with its quick stopping power makes it ideal. As a complex action, an underbarrel shotgun can be attached to any two-handed weapon. It can also be used as a standalone weapon, but requires two hands to use in this manner due to the awkward design of the firearm. [Moderate]

Shotgun Pistol: The variety of sawn-off shotguns and other highly portable shotguns manufactured by transhumanity is exceptional, but the one common trend that shotgun pistols have is being neat single-handed weapons that fire normal shotgun rounds. [Moderate]

Hunting Shotgun: Hunting shotguns fire larger cartridges than most of the other shotguns that are available, and are favored by those who need to do a lot of damage and make a statement. With a pump-action or semiautomatic firing method, they are capable of shooting quickly and accurately in a wide variety of conditions. The hunting shotgun is a two-handed weapon. [Moderate]

Assault Shotgun: The typical drum-fed assault shotgun is a mean looking weapon that can clear a room in seconds. Capable of being used in a variety of roles and purposes, the assault shotgun has a reputation as a terrifying weapon. The assault shotgun is a two-handed weapon. [High]

Underbarrel Flak Cannon: The underbarrel flak cannon provides incredible power and range compared to its traditional brethren, and maintains its larger counterpart's grenade launcher functionality, though its range is pitiful due to the short length of the weapon. They are commonly favored as grenade launchers, as they function almost identically to their larger parent weapon when launching grenades. As with an underbarrel shotgun, it can attach to any two-handed weapon, but requires two hands to use effectively if it is detached. [**High**]

Flak Cannon: The flak cannon has a reputation as a truly fearsome weapon. Capable of doing massive damage, the flak cannon has the ability to chamber grenades or microgrenades as well as flechettes and slugs. The flak cannon is a two-handed weapon. [**Expensive**]

Shot, Flechette, and Chokes

Shot and flechette projectiles utilize a shotgun's choke to change the spread pattern of the projectiles. Modern smart materials mean that this can be done on the fly, both manually (quick action) or automatically with a smartlink (no action required). Chokes are rated for distance; starting at 0-10, then continuing up to 10-20, 20-30, and so forth out to the end of Medium Range for the shotgun (shotgun pistols have access to a 20-30 meter choke, full-length shotguns have access to a 70-80 meter choke, and flak cannons can emulate a 240-250 meter choke).

A shotgun attacking a target that is closer than its choke's optimal distance loses the Reliable quality. Targets within the choke's optimal distance take normal damage from the shotgun. Targets beyond the choke setting of the shotgun take 1d10 less damage from the shot, which is cumulative with shotguns' damage loss at long and extreme range.

Shotgun Ammunition Types

Shotguns typically use flechette ammunition. This allows them to do consistent damage to targets. However, it is also possible to use slug and shot ammunition, which each have their own special rules.

Firing a shotgun or flak cannon with slugs increases its AP by 4, adds +2 to its DV, and makes it lose the Reliable quality. Additional ammunition type modifications can be applied on top of this, including smart ammunition if appropriate.

Firing a shotgun or flak cannon with shot reduces its AP by +4. Against unarmored targets, a positive AP value has

no effect. Shot is typically considered inferior to flechettes, but is favored for its ability to be used with materials that render it less lethal.

Special Shotgun Ammunition

In addition to the standard ammunition types, shotguns can fire frag rounds (treated as slugs), which are available in regular and zap configurations. Frag rounds add the Area (2) quality to the weapon, and their damage is resisted as energy damage. Otherwise, they function like their parent rounds (either regular slugs or zap slugs). Smartlinks allow frag rounds to airburst, making them effective against swarms. Flak cannons cannot use frag rounds, as they tend to disintegrate at high velocity, discharging early. [**low** per 100 rounds].

Dragon's breath shotgun rounds turn a shotgun into an improvised flamethrower. Dragon's breath attacks gain the Saturation 10/40 quality, lose Reliable, and are blocked with energy weapon armor. On a critical failure on the evasion attempt, any targets caught in the area catch aflame, taking 1d10 damage that follows the usual rules for being on fire (p. 198, *EP*) and is considered a class B fire.

Beam Weapons

EMP Weapons

When dealing with nanoswarms, it is useful to bring along specialized EMP weapons that are highly effective against them. In addition, EMP weapons are used as a means to sabotage communications; they cannot disrupt optical electronics' function, but radio communications devices hit with an EMP attack are reduced to 1/10th of their normal operating ranges (p. 341, *EP*). This may be prevented with the EMP hardening upgrade, which specifies a minimum DV for an EMP weapon attack to impact the equipment. Nanoswarms take full damage from EMP weapons.

EMP weapons typically are built with a Marx generator or vircator as their primary source of electromagnetic radiation. This allows them to use radio waves, microwaves or x-rays, though the range on the electromagnetic spectra is secondary to the EMP weapon's function of causing sudden and great levels of electromagnetic radiation very quickly. It is possible to find analogue variants of these weapons, especially in arsenals of people who are concerned about digital subversion threats, especially TITANS. The Jovians have stockpiles of these used both for information suppression and as a safeguard against dreaded nanotechnological attacks.

Since EMP weapons often function without visual cues, many models can be set to create either a flash of light or a low-power laser beam when activated, to let users without enhanced vision see the shots they are firing. Some, though not all, EMP weapons can pull double-duty as microwave agonizers, causing pain, though they lack a "roast" setting. EMP weapons use Laser Pulsar ranges.

EMP Pistol: Primarily used to subvert personal communication equipments or as a backup for hostile nanoswarm management, the EMP Pistol is not capable of attacking hardened gear, but works decently against nanites and unhardened radios. [Moderate]

EMP Rifle: More powerful, EMP rifles are almost always used for combat against nanoswarms. Capable of dealing significant damage to a swarm, they are also used as a directed alternative to EMP grenades. This is a two-handed weapon. [High]

EMP Saturator: EMP saturators look like a device out of twentieth-century science fiction, with an adjustable reflector dish at the end. Capable of firing in a cone, these powerful EMP devices can tear through nanoswarms and disable all but the most hardened devices. [Expensive]

Enhanced Radiation Weapons

Enhanced radiation weapons are terrifying and dangerous, as well as highly illegal in most places. They set off radiation detectors unless they are incredibly well made, and they tend to be the tools of assassins, rather than soldiers.

Radiation has potentially lethal effects against synthmorphs, biomorphs, and nanites, but leaves most things physically intact. In some cases, enhanced radiation weapons may be favorable due to the fact that they do not cause physical damage (i.e. they won't put a hole in the habitat wall).

That said, they have their purposes; ER weapons can penetrate almost any armor, and only things intentionally designed for radiation exposure tend to have any sort of resistance against them. They will decimate nanoswarms, so I've heard people argue for them as backup weapons against TITANs.

One of the advantages of ER weapons is their ability to have late-onset effects; hitting someone with a full graser array may not cause meaningful instantaneous harm other than some burns that would be unpleasant though not particularly concerning. Minutes later, the target will be dead.

Synthmorphs tend to fall foul of the effects quicker, though they generally have a greater tolerance.

If you plan on entering a battlefield with ER weapons, have backups—they can toast cortical stacks entirely.

Melee Weapons

Clubs

Power Sledge: The Power Sledge is built to smash spacecraft hulls and other hardened surfaces. With adjustable smart materials in its head and a variety of features, the power sledge is often used in boarding actions or to break apart ore samples when a machine to do so is unavailable. Used against morphs, it can do massive damage, but it is so heavy as to encumber its user. [Moderate]

Exotic Weapons

Exotic Melee Weapons

Kinetic Gauntlets: An alien or TITAN artifact with unknown relationships to the Casimir force. Shaped like long cylinders with two open ends, they are not quite shaped for human forearms, but can be adapted for wear by adding cushions and straps. The final rig usually extends beyond the user's hands, limiting their ability to manipulate other objects. Objects within the generated field are moved by aligning the paired gauntlets and extending one or the other. Studies of the few known specimens of kinetic gauntlets have revealed nothing about their nature and mechanics. Kinetic gauntlets are similar to fixors, though their ability to exert force on outside elements poses a significantly greater threat.

Users of kinetic gauntlets can make a number of attacks, crushing their target with pure force or flinging them about like a bug in a tin can being shaken by a wrathful fury. More frightening for warriors is the ability of a kinetic gauntlet to affect a ten-by-ten-by-ten meter volume. Use of kinetic gauntlets is particularly effective at smashing swarms, which they seem almost purpose designed to do. The area of effect of a Kinetic Gauntlet attack forms a cube placed directly in front of the user (they cannot inadvertently harm themselves). It respects large, heavy objects with a mass of more than 2700 kilograms, though they will still be crushed if caught in the way. Items on the other side of walls, floors, or ceilings are not effected, though the kinetic gauntlets will effect things visually obscured from the user. [Expensive (Minimum 50,000)]

Scour Sword: If you somehow manage to find one of these, send it my way. Some intrepid artifact dealer figured out

a way to warp and refract the fields created by a scour ring around the edge of a foot-long blade (really more of a dagger than a sword). The result is a weapon with almost unstoppable cutting power which doesn't care at all about any sort of armor and severs limbs like a hot knife going through butter.

Since it demolishes target matter to component atoms, scour swords largely disregard armor, weapons used to block them, or the morphs that they are inevitably used against when they are swung. Likewise, they can create hull breaches on spaceships or habitats with less than a foot of matter separating them from vacuum with very little effort. If a habitat knows about scour swords, they are likely banned.

A critical hit with a scour sword causes a wound immediately (rather than bypassing armor, as scour swords already bypass all armor). [**Expensive (Minimum 30,000)**]

Exotic Ranged Weapons

Archery

Archery is a tried and true martial discipline, often overlooked. The bow and crossbow are simple designs that can be made in a pinch with readily available materials, and with smart materials and clever designs you can nanofabricate a bow that would make Odysseus look like a slouch.

Archery is a little difficult, though. You will want a smartlink on your bows to help you adjust to environmental factors, and the motions are different enough that you need to learn archery as a separate skill. Bows tend to fare poorly against modern armor, and they're not as good at putting holes in things as a firearm. In addition, most bows are pretty large; a compound bow can be more than five feet long, easily matching a sniper rifle in dimensions. Smartbows and advanced bows may have mechanisms to allow them to either retract parts to decrease size or be disassembled. Disassembling a bow takes two complex actions, and unless stated all bows can be disassembled (smartbows disassemble themselves once ordered to, requiring no additional effort).

Arrows, however, tend to carry a meaner payload than firearms do. Able to be equipped with everything from full sized nanite hives to microgrenades, archery can be a clever way to deliver payloads without detection. Bows lack the same firing signature that firearms and energy weapons have, making them stealthy without the need for (often illegal and only marginally effective) silencers and flash suppressors. In

addition, arrows or bolts dipped in an injection-vector toxin can apply it to their target, so long as the projectile does at least one point of damage when it hits.

It is a quick action to grab an arrow and draw a bow, and a complex action to reload a crossbow with more bolts. Defenders being attacked with archery weapons use their full Fray score to dodge, as if they were being attacked in melee.

Bow: Bows are available in a number of different configurations, including smartbows and compound bows that would make turn-of-the-century warriors very jealous. That said, a run of the mill bow is cheap and easy to fabricate, even in habitats with more tough arms restrictions. [**Trivial** (unfinished parts), **low** (assembled bow)]

Compound Bow: Compound bows use advanced composite materials and manufacturing techniques to create a set of pulleys and simple mechanisms to allow a user to leverage their strength and fire arrows with a surprising amount of force behind them. [**Low**]

Smartbow: Smartbows use smart materials to transform from an inconspicuous cylinder into a moderately sized bow; somewhat shorter in length than a normal bow, they have just enough complexity to perform similarly. They are integrated with a smartlink by default, and are subject to more legal controls than other bows. [**Moderate**]

Automatic Bow: A cross between a bow and crossbow, the automatic bow is a compound bow with a self-powered mechanism that allows it to emulate the effects of being fired by a stronger morph, even if the user is not particularly strong. The limbs of the bow partially retract when the bow is not in use, giving it the same carrying profile as a carbine. [**Moderate**]

Crossbow: Crossbows have the unique ability to function as kinetic weapons with the aid of a smartlink. Crossbows come in both automatic and manual forms. Manual crossbows leverage a transhuman's strength, and are generally built with adjustable poundage to let anyone use them without too much exertion, while automatic crossbows require either a token effort or will cock themselves without any effort on the user's behalf. Crossbows fire bolts that are functionally similar to arrows (but are not interchangeable), and may be attached to a magazine for rapid shots. [**Low** (manual), **Moderate** (automatic)]

New Augmentations

Warriors use a vast variety of augmentations, but there's a number of things that I have seen on the battlefield that you need to be aware of. Some high-end augmentations are available exclusively for combat, and you should know about them before you go onto a battlefield where you might tangle with them.

Bioware

Whiplash Tendril: The Whiplash Tendril is a unique transgenic augmentation that lets you reach out and touch someone on the other side of a room. Capable of extending ten meters in less than a quarter of a second, whiplash tendrils are made of a tension tolerant myomer that is highly flexible and durable. Barring the potential applications for Asyncns, Whiplash Tendrils are capable of both making basic unarmed attacks at a distance (including touch only attacks, with the bonus those bring), and **Redirect** close combat maneuvers. It uses its own Exotic Melee Weapon skill. [**Moderate**]

Cyberware

Daedalus Discharger: Daedalus discharger cyberware is designed to provide rapid bursts of power for cybernetic augmentations or robotic enhancements that require a power source, as well as allow users to power energy weapons and railguns without requiring an external source.

Daedalus dischargers have integrated nuclear batteries, capacitors, and traditional batteries that allow them to output about four kilowatts (80 energy weapon shots an hour), and store five times that amount in rapid discharge batteries. This power output allows them to serve as a valuable tool for users of power-hungry gear, especially those operating in environments where recharging facilities are not available. [**Expensive**]

Mjölfnir System: The Mjölfnir system is intended to give morphs an advantage in speed and maneuvering. Using a series of physical reinforcement points the Mjölfnir system integrates a number of boosters (typically some sort of jet boosters) with vectored thrust. The end result is to allow the user to "jump" a distance of about fifty meters (any direction) in a 1.0 g environment, or significantly further in microgravity and low-gravity environments. The thrusters in a Mjölfnir system are built to safely direct the exhaust, often using magnetic containment and plasma jets. Using a Mjölfnir system is a complex action.

Mjölfnir systems also have combat functionality: making a melee attack from a distance. Mjölfnir systems function as a smartlinked weapon, using a special Exotic Melee Weapon skill. A successful hit causes $3d10 + (SOM \div 5)$ damage. If the user decides not to make an attack in this manner, the Mjölfnir system can slow them to safe speeds instead. Attacking an object that can't be knocked back (like a bulkhead) inflicts $2d10$ damage on the user, but does an additional $1d10$ damage to the target.

The Mjölfnir system requires a power source; either connection to a recharging station or a nuclear battery can suffice, and the charging process requires about an hour. Wireless recharging is possible, where such facilities are available, but the process takes eight hours. It is possible to store a nuclear battery indefinitely in the augmentation, allowing for regular usage. [**Expensive; High** if a morph already includes Thrust Vector movement]

Nanoware

Jackglue: A favorite of the paranoid or those who like to be absolutely secure, jackglue is able to be applied to cyberbrain or other digital access ports. More advanced than its name implies, Jackglue creates a diamond-like surface that is nigh-impentable. The user can have the surface removed so that they can use access jacks, a process that takes about fifteen minutes. They can also have the nanites permanently scour the access ports, which requires them to be repaired prior to use. [**Moderate**]

Robotic Enhancements

Internal Fusion Plant: Designed for Large or larger morphs, an internal He-3 fusion plant can be used to provide nigh-unlimited power to a morph without the need for nuclear batteries or other fuel sources. However, although fusion creates largely inert byproducts, the reactor core itself becomes highly radioactive during use, requiring a second layer of shielding and making overly miniaturized reactors impractical.

A synthmorph or robot with an internal fusion plant can charge energy weapons, devices, and batteries rapidly. In addition, any augmentations that require power can be operated on the power from the fusion plant, rather than internal batteries. The limitations on this are minimal, limited only to applications beyond the usual limitations of an individual morph. Although fusion reactions shut down harmlessly if the reactor is breached, many habitats find the prospect of transhumans and robots walking around with both

the ability to power large energy weapon arsenals and expose bystanders to radioactive material troublesome, meaning that this implant may be restricted in many habitats. [**Expensive (Minimum 40,000)**]

Mesh Insert Disconnect: Used in cyberbrains that are expected to see combat use, mesh insert disconnect systems allow for the cyberbrain to be shut off from the mesh inserts in case of suspected hacking or other concerns. Of course, this shuts down their PAN, making it impossible to use things like smartlinks wirelessly; skinlink and other direct wired contacts are rerouted directly to the cyberbrain through a secondary "mesh" insert without wireless capabilities. [**Low**]

New Mechanics

Saturation Attacks

Some weapons attack a broad area, but not like a blast. These "saturation attacks" include traditional flamethrowers, dragon's breath shotgun rounds, and a variety of energy weapons, plus some exotic weapons.

Saturation attacks work differently from normal attacks; weapons with a saturation quality have two ratings: width and distance. A final saturation quality on a weapon might look like: "Saturation: 10/40". Ratings are assumed to be in meters, unless otherwise stated. Attacks made with a saturation weapon do not require a roll.

Instead, a character targeted with a saturation attack makes an REF*SPD test to avoid the harm. This only applies if the character can move out of the effect's area entirely, or if there is some sort of cover available within a couple meters. Characters who anticipate a saturation attack and get out of the way can take cover as a quick action to avoid the attack. Moderate and major will completely negate any incoming fire, while being in minor cover provides a +20 modifier to the REF*SPD roll to avoid the attack.

Radiation

People often come into contact with radiation in space, especially when radioactive materials leak into a sealed habitat or when radioactive weapons such as nuclear bombs or enhanced radiation weapons are deployed to the battlefield. Poor radiation containment in nuclear reactors, including both fission and fusion reactors, can also cause high levels of irradiation to morphs and equipment, as can exposure to stellar bodies and other natural, alien, and transhuman-made phenomena.

Radiation in Biomorphs

Transhuman medicine can reduce or entirely negate most of the health factors of long-term radiation exposure, sometimes automatically as a result of the modifications made to even the most basic splicer to prepare them for space colonization, or sometimes with the assistance of healing vats or other nanotechnology, as well as drugs designed for that purpose. As even basic biomods empower morphs to fight off cancer to an extent that would be a miracle by early twenty-first century standards, the largest threat comes from acute radiation sickness.

Acute radiation sickness tends to come about as a result of exposure to very high amounts of radiation very quickly. Speed of exposure plays a critical role in the development of symptoms. ARS has four levels: Minor, Major, Critical, and Extreme. Morphs with basic biomods suffer ARS at thresholds equal to twice those at which flats suffer it. The radiation resistance augmentation (p. 189, *Rimward*) multiplies these thresholds by a further 30 times their original ratings, making ARS significantly less likely. Medicines can protect against infection and some of the other side-effects of radiation sickness, but do not help with symptoms by themselves, partly because exposure to radiation will damage them as well.

Minor radiation sickness occurs at 4 grays for most biomorphs. One to two hours after exposure, morphs experience nausea and vomiting, and have a small chance of suffering diarrhea, as their gastrointestinal tract is thrown into disorder; this lasts for a day or two. This is followed by headaches beginning 3-8 hours after exposure, which are accompanied by cognitive impairment and fever, which last for a day and cause a -10 penalty to all rolls, including tests involving a morphs durability or mental resistance. At this point, radiation poisoning tends to be fatal after a month or two without care, mostly due to infections and hemorrhage; bruise-like features called purpura and the loss of hair are obvious signs of minor radiation sickness.

Major radiation sickness occurs at 12 grays. Ten to sixty minutes after exposure, morphs suffer nausea and vomiting, likely having diarrhea as well. Headaches, fever, and cognitive impairment follow, which last for multiple days, conferring a -10 penalty to all rolls and decreasing all aptitudes by -5. Death is likely even with care, barring a healing vat or medicines. In addition to hemorrhage and hair loss, major radiation sickness includes dizziness, disorientation, and immune system failure. Death usually occurs after 2-4 weeks.

Critical radiation sickness occurs at 16 grays. Within minutes of exposure, nausea and vomiting begin. Within an hour, diarrhea follows. Within an hour, morphs also suffer severe headaches and incapacitating CNS function loss, preventing them from taking actions and conferring a -10 penalty to all aptitudes. Any rolls they must take suffer an additional -20 penalty. Death is certain without medical care, and permanent damage will likely result even with the assistance of a healing vat. Medicines are insufficient to provide care, if they even survived the exposure to ionizing radiation that impacted the morph.

At exposures to more than 60 grays, extreme radiation poisoning occurs. Patients become nauseous and vomit within minutes of exposure, and suffer diarrhea, headaches, fever, and loss of CNS function within an hour, accompanied by seizures, tremors, and loss of motor control. Cortical stacks are typically corrupted beyond repair, any implants fail, and attempts to prevent the morph's inevitable death are pointless.

Radiation in Synthmorphs

Attacking Thresholds

EMP weapons used against communications, firefighting gear, and certain other weapons attack thresholds. If the target's threshold is exceeded by the attack's damage, then the target is "destroyed" (in the case of communications equipment, antennae are damaged, decreasing their range to a tenth of normal, while most other threshold attacks are instantaneous).

Extinguishing Fire

Extinguishing fire is done with a threshold attack, or by taking special actions to extinguish flame on a morph (akin to the "stop, drop, and roll" popular in habitats with enough gravity to permit such things).

Fighting fires is very different in microgravity; one advantage that many vacuum-surrounded habitats have is the ability to vent portions of a habitat to deprive flames of oxygen; habitats may also use air mixtures that have less propensity to feed flames and have lower environmental pressures to limit the amount of oxygen available to fires.

Water foam and "fog" extinguishers are used in microgravity, at least on class A fires. Microgravity fires have wildly different profiles, and can be frighteningly hard to spot in well-lit environments. Thermal vision and scanners are used to spot fires or chemicals are added to the air supply that provide

distinctive smoke when fires are burning to allow for more rapid responses to fire.

Any fire on a station or asteroid with microgravity will almost certainly be dealt with in an automated or wide-scale manner; it is practically impossible to extinguish an individual who has caught flame in vacuum; small fires may be smothered by touch, but attempts to smother larger flames have the undesirable side effect of sending ignited matter scattering. CO₂ based systems are not uncommon among older habitats, while more advanced flame retardants are used on later habitats.

On any habitat with at least half of Earth's gravity (simulated or not), it is possible to "stop, drop, and roll" (special variants exist for non-humanoid morphs as appropriate) to extinguish a flame; this is a complex action that does 1d10 + (REF ÷ 10) damage against the fire. Synthmorphs have an inherent resistance to flame, and gain an additional +5 damage on this test.

Ordinary Combustibles (A)

These fires consist of the majority of fires; your traditional burning trash barrel or wood campfire, for instance, are fires made with ordinary combustibles. They do 1d10 ÷ 2 damage per turn, and can be extinguished normally. Combustible fires can spread in microgravity, but may not cause secondary fires if their temperature is lower than the flashpoint of the things that they come into contact with. These fires have an extinguish threshold of 5.

Flammable Liquid/Gas (B)

These fires have liquid or gaseous fuel, which makes it necessary to fight them using different methods. Applying water, even NotWater, can spread the fuel around, spreading the flames. In order to fight these fires, a dry chemical extinguisher or smothering foam agent must be used. These fires typically cause 1d10 damage per turn. Fires involving cooking oils, fats, or other high-flashpoint liquids can be extinguished using a liquid mist of water or NotWater, though pouring water or NotWater straight on them is not recommended. These fires have an extinguish threshold of 8.

Electrical Fire (C)

Caused by electrical equipment short circuits or sabotage, electrical fires have the additional threat of electrocution. Water, NotWater, and foam should not be used to fight electrical fires, because they may conduct electricity back to the user and cause shocks or electrocution. Shutting off

electrical power to the source of the fire will reduce these concerns. Electrical fires typically cause 2d10 damage per turn. Otherwise, electrical fires can be fought using any non-conductive firefighting agent, such as dry chemical extinguishers. These fires have an extinguish threshold of 12, which is reduced to 5 if power is removed; unpowered class C fires can usually be treated as class A fires; otherwise they usually are handled as class B fires.

Metal Fire (D)

Metal fires are caused by flammable metals conducting. Typically, large bodies of metal will conduct heat away from a single point, so metal fires are common where there are shavings, sawdust, or other small metal particles present. Metal fires cause 2d10 damage per turn, and require special dry powder extinguishers (distinct from dry chemical extinguishers). The extinguish threshold of these fires is 12.

Firefighting Gear

Firefighting gear usually belongs to the Spray Weapons category. Each piece of gear is effective against different fires, which is an important consideration for the installation of new habitat modules and their fire suppression systems. Using firefighting gear is a complex Spray Weapons action, and uses up one point of ammunition from the tank.

Each of the following is available as a tank for a sprayer (*p. 341, EP*); each is effective in different volumes and therefore has different ammunition counts. Extinguishing material tanks do not require a sprayer, however, having a built-in nozzle that has a third the range of a normal sprayer.

Dry Chemical: Dry chemical extinguishers attempt to interrupt the chemical reaction that is part of the combustion process. They are effective against class A, B, and C fires, though some old pre-Fall models may not work on class A fires. [**Low**]

Water/Foam: Water and foam extinguishers take away heat and sometimes oxygen from a fire. Although only recommended for use on class A fires, synthmorphs or particularly desperate biomorphs can use them on class C fires, incurring the risk of a Shock attack on a critical success or failure. Sprayers protect against this. [**Trivial**]

Carbon Dioxide: Carbon dioxide extinguishers remove the heat and oxygen from an area, and can cause frostbite to biomorphs. Class B and C fires respond well to carbon dioxide extinguishers; Class A fires can be "extinguished", but often smolder and reignite. [**Low**]

Halogen/Clean Agent: Useful against A, B, and C fires, Halogen or "clean agent" extinguishers interrupt the chemical process of combustion. Their poor capacity is a limitation to their effectiveness. [**Low**]

Dry Powder: Dry powder extinguishers are used on metal fires, removing heat and oxygen from the fuel. Unfortunately, they are entirely ineffective against other fires. [**Moderate**]

Water Mist: Purified deionized water is used in these extinguishers, which prevents the risk of electronic conductivity. Otherwise, they function as a Water/Foam extinguisher. [**Low**]

Combat Maneuvers

Combat maneuvers are special abilities unlocked when a character hits a certain rank with the appropriate weapon skills.

Kinetic Weapons

Combat Maneuvers and Recoil

After Fall weapons provide great benefits to a practical shooter due to their lack of recoil. As a general rule, weapons with the Recoil quality suffer a -10 penalty on all shots that occur after the first in a combat maneuver. The maximum distance that a recoiling weapon can perform combat maneuvers at is equal to the upper end of the weapon's Medium range. Typically, most of these drills are intended to be done with weapons that only require one hand, but recoilless weapons mitigate many of the concerns with using these with larger weapons.

Mozambique Drill

Two shots in the body, one in the head. The Mozambique drill originated with a mercenary fighting in Mozambique. The practice is simple; aim twice for center of mass, and then once against another point on the target that looks particularly squishy (the forehead or neck on most biomorphs, for instance). A Mozambique drill can only be attempted with a weapon with the semiautomatic firing mode, and consumes three rounds of ammunition. The attack is treated as if the weapon had the Reliable quality (if the weapon has the Unreliable quality, it loses it instead of gaining Reliable), and gains a +10 accuracy bonus as if it were a normal burst. All three shots are treated as a single attack.

El Presidente

The "El Presidente" drill was intended for bodyguards on earth to master and use in defense. Consisting of six shots against three targets, the El Presidente drill is typically practiced using two six-round magazines and doing two of the maneuver back-to-back. It requires a one-handed weapon with a semiautomatic firing mode, used with both hands. Each target must be within one meter of the prior target, and all targets must be within short range. Each attack against each target is rolled separately.

The El Presidente maneuver has two variants: one for less-skilled shooters that only allows one attack against three targets, and then one for more-skilled shooters that repeats the attacks and allows the shooter to reload between the two separate barrages. Shooters capable of using the El Presidente II maneuver may use the original El Presidente maneuver as a Simple Action. Reloading is optional, if the user has a full magazine, though choosing not to reload does not confer bonuses.

Dozier Drill

The "Dozier" drill was created as a counter-terrorism training technique; it requires users to take down five targets in the time it takes for a simulated terrorist to ready a sub-machine gun. The Dozier drill requires five rounds, and results in five separate attacks made against five different foes. Each attack against each target is rolled separately.

Kinetic Weapons

Firearms	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Heavy Machine Gun	2d10+9	-10	20	SA	100	Unwieldy
Anti-Materiel Rifle	2d10+18	-16	29	SA	5	
Assault Cannon	3d10+18	-20	34	SS	2	Unwieldy, Recoil
Railguns	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Heavy Machine Gun	2d10+11	-13	22	SA	100	Unwieldy
Anti-Materiel Rifle	2d10+20	-19	31	SA	5	
Assault Cannon	3d10+20	-23	36	SS	2	Unwieldy, Recoil

Firefighting Gear

Exotic Ranged Weapons	DV	Effective Classes	Notes	Ammo	Qualities
Dry Chemical	2d10	A, B, C	Archaic models may lack class A	5	
Water/Foam	2d10	A, C*		5	Saturation 5/10
Carbon Dioxide	2d10+2	B, C		3	
Halogen/Clean Agent	2d10+4	A, B, C	- 10 against class A fires	3	
Dry Powder	2d10+4	D		5	
Water Mist	2d10	A, C		5	Saturation 5/10

* Users attempting to use this against a class C fire may be subject to electrocution, treated as a shock attack, at the GM's discretion.

Ammunition

Chambering	DV Modifier	AP Modifier	Ammunition Capacity	Qualities
Small Caliber	-2	-1	Standard X 1.4	
Large Caliber	+2	—	Standard X 0.8	
Load	DV	AP	Range Modifier	Qualities
Subsonic	-2	+3	Standard x 0.8	
Hypervelocity	+2	-2	Standard X 1.2	Recoil*

*Firearms with hypervelocity adaptation negate this effect.

Melee Weapons

Clubs	DV	AP	Average DV	Qualities
Power Sledge	2d10 + 4 + (SOM ÷ 5)	-10	15 + (SOM ÷ 5)	Unwieldy
Exotic Melee Weapons	DV	AP	Average DV	Qualities
Kinetic Gauntlets	1d10+5 + (SOM ÷ 5)	-4	10 + (SOM ÷ 5)	Area (0-10)
Scour Sword	2d10+5	All	16	

Scour swords cause an additional wound on a critical hit.

EMP Weapons

Beam Weapons	DV	AP	Average DV	Firing Modes	Ammo	Qualities
EMP Pistol	2d10+4	—	15	SA	50	
EMP Rifle	2d10+6	—	20	SA	20	Reliable
EMP Saturator	3d10+8	—	24	SA	10	Saturation 10/40

EMP weapons only effect nanoswarms and radio communications equipment. Radio communications equipment damaged by EMP has its range reduced to 10 percent of its normal until it is repaired.

Shotguns

Firearms	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Underbarrel Shotgun	2d10	—	14	SA	1	Reliable
Shotgun Pistol	2d10	—	14	SA	2	Reliable
Hunting Shotgun	3d10	—	21	SA	5	Reliable
Assault Shotgun	2d10	—	14	SA/BF/FA	20	Reliable
Railguns	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Underbarrel Flak Cannon	3d10	-2	21	SA	1	Reliable
Flak Cannon	4d10	-4	29	SA	4	Reliable

All ratings given are for flechette ammunition.

Bows

Bows	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Bow	1d10 + (SOM ÷ 10)	-2	5 + (SOM ÷ 10)	SS	1	Reliable
Compound Bow	1d10 + (SOM ÷ 5)	-5	5 + (SOM ÷ 5)	SS	1	Reliable
Smartbow	1d10 + (SOM ÷ 5)	-3	5 + (SOM ÷ 5)	SS	1	Reliable
Automatic Bow	1d10 + 8	-5	13	SS	1	Reliable
Crossbows	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Crossbow	2d10 + (SOM ÷ 5)	-4	11 + (SOM ÷ 5)	SS	5	Multi-Mode*
Automatic Crossbow	2d10 + 8	-7	19	SA	5	Multi-Mode*

* These weapons can be used as kinetic weapons if the user is meshed to an attached smartlink (purchased separately).

Kinetic Weapon Maneuvers

Technique	Effect	Minimum Skill	Action
Mozambique Drill	Add Reliable or lose Unreliable, + 10 Accuracy, consume 3 rounds	30	CA
El Presidente	Make single attacks against three targets, consume 6 rounds	35	CA
El Presidente II	Make double attacks against three targets, consume 6 rounds, reload, consume 6 rounds.	45	CA
Dozier Drill	Make single attacks against five targets, consume five rounds.	40	CA