

G U R P S

MODERN FIREPOWER



BY HANS-CHRISTIAN VORTISCH

STEVE JACKSON GAMES

GURPS™

MODERN FIREPOWER



Barrett M107 sniper rifle with Unertl scope. Body armor is Point Blank OTV, PASGT helmet, and SPECS eyewear.

BY HANS-CHRISTIAN VORTISCH

USEFUL ASSISTANCE BY THE HELLIONS: RUPERT BOLEYN, HAROLD CARMER, DOUGLAS COLE, THOMAS ENGEL, PAULI HAKALA, SAMI HYYPIÄ, ANDI JONES, MATT JONES, NIGEL MCCARTY-EIGENMANN, ONNO MEYER, KENNETH PETERS, AND PAUL VISSING

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STEVE JACKSON GAMES



INTRODUCTION

ABOUT GURPS

Steve Jackson Games is committed to full support of the **GURPS** system. Our address is SJ Games, Box 18957, Austin, TX 78760. Please include a self-addressed, stamped envelope (SASE) any time you write us! Resources include:

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The **GURPS Modern Firepower** web page is at www.sjgames.com/gurps/books/modernfirepower/.

Page References

Rules and statistics in this book are specifically for the **GURPS Basic Set, Third Edition**. Any page reference that begins with a B refers to the **GURPS Basic Set** – e.g., p. B102 means p. 102 of the **GURPS Basic Set, Third Edition**. Page references that begin with CI indicate **GURPS Compendium I**. AT refers to **GURPS Atlantis**, BE to **GURPS Bestiary**, C to **GURPS Cops**, CII to **GURPS Compendium II**, HT to **GURPS High-Tech**, TM to **GURPS Technomancer**, UT to **GURPS Ultra-Tech**, UTT to **GURPS Ultra-Tech 2**, VE to **GURPS Vehicles**, W to **GURPS WWII**, and W:HS to **GURPS WWII: Hands of Steel**.

For a full list of abbreviations, see p. CI181 or the updated web list at www.sjgames.com/gurps/abbrevs.html.

"Okay, what do you need – besides a miracle?"

"Guns. Lots of guns!"

– Tank and Neo in *The Matrix*

GURPS Modern Firepower is a catalog of state-of-the-art, man-portable combat equipment – an expansion of **GURPS High-Tech**, and a link to **GURPS Ultra-Tech**. Roughly covering the period from 1990 to 2010, it examines the developments at this threshold between TL7 and TL8, ideal for modern day **GURPS Cops**, **GURPS Espionage**, and **GURPS Special Ops** campaigns. It could also prove useful for action adventures using **GURPS Autoduel**, **GURPS Black Ops**, **GURPS Cyberpunk**, **GURPS Horror**, **GURPS Reign of Steel**, **GURPS Technomancer**, or others as a backdrop. The descriptions are detailed enough to allow the book to be mined for gadgets for use with other game systems as well.

ABOUT THE AUTHOR

Hans-Christian "Grey Tiger" Vortisch is a writer and translator living in Berlin, Germany. He grew up in the Black Forest and studied in Berlin, London (England), and Umeå (Sweden). He has been gaming for almost 20 years, and his ramblings have been published in *Challenge* and *Pyramid* magazines, his own fanzine, *The Armourer*, and several German *Call of Cthulhu* products. He compiled the *Delta Green Agent Armament Archives* on the Internet, co-revised the Third Edition of **GURPS Special Ops**, and contributed to **GURPS Cliffhangers**, *Second Edition*, **GURPS Cops**, **GURPS WWII**, and **GURPS WWII: Hand of Steel**. This is his first **GURPS** book. His interests include punk rock, tigers, science fiction, and languages.

1. AMMUNITION



"The streamlined plastic butt of an H&K didn't exactly hurt, either . . . Couldn't remember the model number, but it looked like the one with the magazine down the top of the barrel. Shot that caseless ammo looked like wax crayons, plastic propellant molded around alloy flechettes like big nails."

— William Gibson, *Virtual Light*

There are many kinds of ammunition; some options affect the entire cartridge, others only the projectile. Some can be combined, but many cannot.

BASIC AMMUNITION CLASSES

There are four basic classes of ammunition. They are not interchangeable; a gun is designed to fire one class, and cannot use others regardless of caliber.

CONVENTIONAL AMMUNITION (LATE TL5)

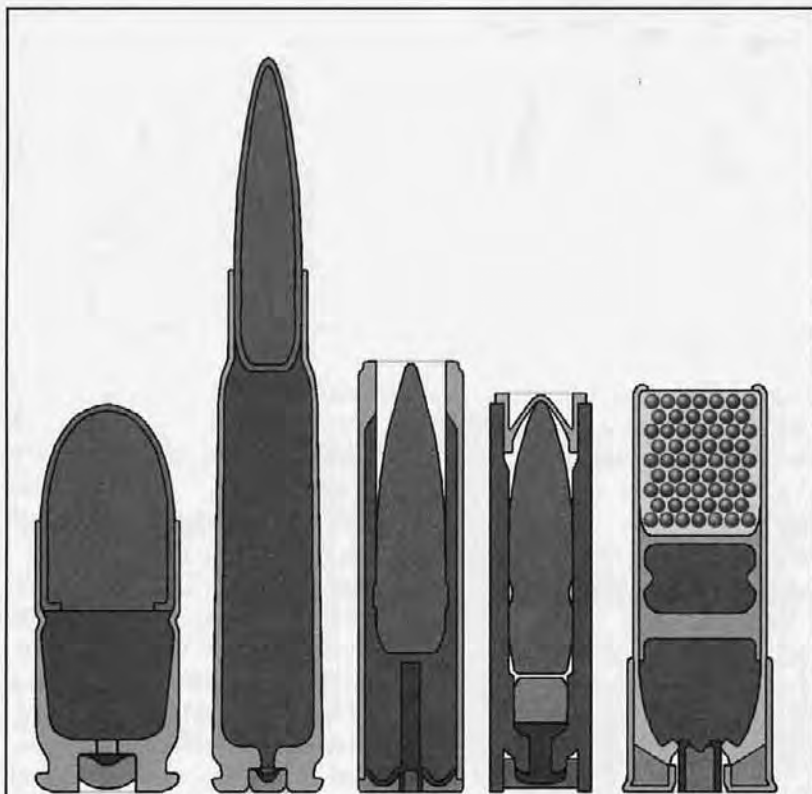
The majority of guns still fire ammunition with smokeless propellant (pp. HT26-27) and a metallic cartridge case (pp. HT64-66). Conventional rounds use brass or lacquered steel cases, although advances have been made with light alloys and plastic (p. VE110). Synthetic materials have yet to prove successful for conventional cartridge types, except for the non-stress hulls of shotguns shells and some low-powered training rounds.

CASED TELESCOPED AMMUNITION (CTA) (TL7)

Cased Telescoped Ammunition (CTA) has been under development since the 1940s. CTA rounds are can-shaped, the projectile being "telescoped" into the straight-walled case; this enables the round to be shorter than a conventional round of the same caliber. Most CTA rounds have a

greater diameter than equivalent conventional rounds, which, combined with the increased volume and high-energy propellants, means a CTA round is up to 50% more powerful. Handling and feeding in automatic firearms are simplified, increasing reliability and RoF. The drawback is that increased diameter results in fewer rounds in a conventional magazine, but they are lighter and more compact, so bulk stowage is more efficient.

CTA ammunition comes in two variants. Standard CTA uses metal cases, while Plastic-Cased Telescoped Ammunition (PCTA) employs a synthetic case for a 30% weight reduction. CTA and PCTA of the same dimensions are usually interchangeable.



Left to Right: Conventional (pistol), Conventional (rifle), Cta, CLTA, Shotshell

CASELESS AMMUNITION (CL) (LATE TL7)

Caseless ammunition lacks a cartridge case, which reduces weight and saves materials, without changing the shape of the round. Guns firing caseless rounds need no mechanism to extract and eject spent cases, improving reliability and RoF. (There is also no need to collect empty cases on the range, while hunting, or at a crime scene.)

CASELESS TELESCOPED AMMUNITION (CLTA) (LATE TL7)

The difficulty with caseless rounds is seating the projectile in the propellant. For this reason, most caseless ammunition is CLTA, with the projectile contained entirely *within* the block of propellant (pp. UT43-44, VE111). Combining the benefits of CL and CTA, CLTA rounds are lighter, smaller, and more effective.

CASELESS AMMUNITION: WHY DON'T WE SEE IT?

There have been many attempts to create viable caseless ammunition at TL7, some more successful than others. The absence of a case poses problems: Cases facilitate handling outside and inside the gun, act as a gas seal in the chamber, and protect the propellant from the elements and heat during firing. Early caseless rounds were brittle and susceptible to moisture. In automatic weapons, the biggest danger was cook-off; after a few bursts, the chamber got hot enough so that unfired rounds self-ignited. In the latest designs, such as the H&K G11 (p. 23), this seems to have been solved by using a high-temperature explosive instead of conventional propellant.

Technical issues aside, the adoption of caseless ammo poses an even greater logistical problem. Moving from TL7 cased weapons to TL8 caseless weapons is expensive, requiring new weapons, millions of rounds of ammunition, new training, etc.; only the wealthiest militaries could afford it. Currently, the advantages do not justify the expense. It is unlikely that caseless rounds will be adopted on a large scale in the period covered by *GURPS Modern Firepower* (see Chapter 5), and it may never happen (except for specialty weapons, such as the Voere VEC91, pp. 24-25).

This applies only to small arms. Functionally caseless ammunition has been used in vehicle guns for decades; the 120x570mmR rounds used in Western tank guns since 1979 are fully combustible except for a metal casehead, which contains the primer and serves as gas seal.

DIFFERENCES FROM EARLIER GURPS BOOKS

GURPS Modern Firepower introduces different rules for what some other *GURPS* books refer to as AP, APDU, APEX, HEDP, Baton, and EFP. The ammunition statistics and terms from books such as *GURPS Basic Set*, *GURPS High-Tech*, and *GURPS Vehicles* can be used where simplicity or compatibility is desired.

PROJECTILE OPTIONS

Most of these options are available for all types of rounds.

KINETIC ENERGY PROJECTILE TYPES

These rounds work by propelling one or more projectiles. The descriptions concentrate on small arms applications (including light autocannon) and grenades.

Non-Armor-Piercing Projectiles

Non-armor-piercing projectiles include a variety of designs, most of which are freely available on the market.

Solid (TL5): This is a solid bullet, also known as "Ball" (pp. HT6, VE100). From late TL5, the projectile is typically lead and enclosed in a sheath of harder metal such as copper alloy. These are also known as "Full-Metal Jacketed" (FMJ). Baseline damage and ranges apply to this type of ammunition except where noted otherwise. LC 4.

Hollow-Point (HP) (TL5): Hollow-Point is a generic name for any number of expanding projectiles (pp. C64, HT7, VE102), and includes "Jacketed Soft Point" (JSP) and "Jacketed Hollow Point" (JHP). They have Armor Divisor (0.5), and objects lacking DR get DR 1. Damage that penetrates is multiplied by 1.5. Low-velocity HP rounds such as those fired from handguns or submachine guns may fail to expand; modern HP is more likely to expand than older designs. On a roll of TL-3 or less on 1d, the round expands. Due to improved design, modern HP bullets do *not* increase Malf in

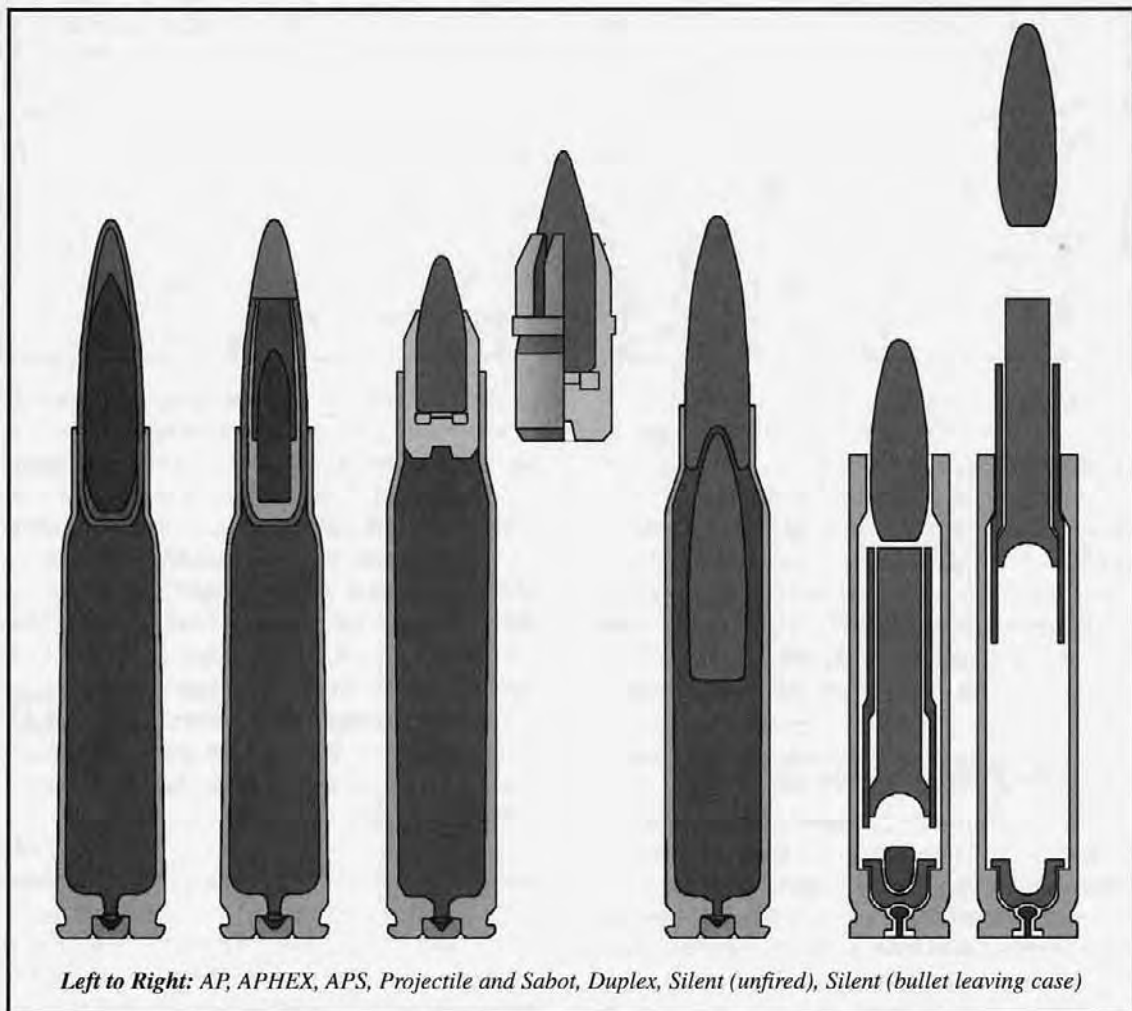
self-loading and fully automatic weapons of late TL7+ manufacture. Expanding bullets have been illegal for use in war since 1899, but have been standard for many police agencies and anti-terror units since the 1970s (being more effective and less likely to hit bystanders through ricochets or overpenetration). Hunters normally use HP (as opposed to Solid). Usually LC 4, but in some countries such as Germany it is LC 1 for nonhunting uses. 1.5× cost.

Incendiary (Early TL6): A Solid bullet with a small amount of incendiary material (such as white phosphorus) inside, first available in 1916. May ignite inflammable materials, especially fuels and volatile gases (counts as a flame attack as defined in pp. VE184-185). They are not normally available for handgun rounds and usually are illegal for civilians in any caliber. LC 1, 1.5× cost.

Since the 1930s, it has been possible to add an incendiary element to full-caliber AP and APHC rounds, resulting in *API* and *APHCI*. These combination rounds have all but replaced basic Incendiary ammo. Although the Soviets

used 7.62×25mm API rounds in their submachine guns during WWII, such projectiles are not normally available in pistol chamberings. 3× cost for API, 4× cost for APHCI.

Tracer (Early TL6): Tracer rounds contain an element in the base of the projectile which ignites upon firing and marks the path of the bullet with a bright streak. A tracer mix of one in five gives +1 Vision to *acquire the burst* (p. HT78); the bonus is +2 using all tracers. Tracers burn out at 1/2D range (no bonus beyond that distance). Firing tracers gives away the firer's position, except using *dark ignition tracers* (late TL6), which travel 100+ yards before igniting. *Dim tracers* (early TL7) emit in the IR spectrum and can only be seen with night vision devices. Tracers are treated as a flame attack (pp. VE184-185) as long as they burn. They usually suffer in range; multiply Max by 0.9. Available since 1917. Almost any projectile (except for frangible, multiple projectile, and less-than-lethal types) can be fitted with a tracer element, thus leading to SAP-T, APS-T, APHEX-T, HE-T, etc. LC 4.



AMMUNITION OPTIONS

Match-Grade Ammunition (TL6): By carefully matching projectile and propellant, a round's accuracy can be increased, especially when made for a specific model of gun or even a specific gun. This adds +1 Acc, or +2 Acc if matched to the gun. The former can be ordered in small lots from some ammunition producers; the latter must be laboriously handloaded using Armoury/TL (Small Arms). It *cannot* be combined with Extra-Powerful, and the projectiles must be Solid, AP, or APHC. Match-Grade ammo is used in sniper rifles or target weapons, not automatic firearms. LC 4, 3× cost.

Extra-Powerful Ammunition (TL7): By increasing the amount of propellant in rounds such as Solid or HP, damage and range are enhanced. Multiply damage by 1.2 and range by 1.1. Increase Rcl -1/2 to -1 and -1 to -2; otherwise multiply Rcl by 1.5 and round down. Extra-Powerful ammunition is often less accurate (-1 Acc). It is commercially available only for handguns, but rifle rounds can be handloaded to similar effect; use Armoury/TL (Small Arms). Note that some weapons, especially nonmilitary ones, cannot withstand the increased pressure in prolonged service (increase Malf by -1); this applies to all weapons of TL6 or below, and cheap TL7 guns. LC 4, 1.5× cost.

Subsonic Ammunition (TL6): Subsonic ammunition has a muzzle velocity below the speed of sound (1,086 fps at sea level), which lowers sound signature and increases effective-

ness of sound suppressors (p. 16). Some handgun chamberings, such as .32 ACP, .380 ACP, 9×18mm Makarov, .45 ACP, and a few rifle chamberings such as the 9×39mm, are already subsonic and don't need this option. Others, such as the .22 LR, the 9×19mm Parabellum, and all PDW and most rifle rounds, are supersonic and will benefit from Subsonic ammunition. Subsonic loads have less power, range, and accuracy. Subsonic handgun ammunition is -1 to Hearing rolls and -1 Acc, and range is multiplied by 0.8. Subsonic PDW and rifle loads are -2 (PDW)/-3 (rifle) to Hearing rolls and -2 Acc, Damage is multiplied by 0.6, and range is multiplied by 0.4. LC 4.

Silent Ammunition (TL7): "Silent" rounds use special cartridges that trap propellant gases (and much of the noise) in the case, the projectile being propelled by a piston. This lowers firing noise considerably and eliminates muzzle flash and smoke, reducing the danger of detection. Silent ammunition has an acoustic signature (AS) of only +12 (p. 16), but damage and range are halved. It has been introduced for a number of handguns since the early 1970s, including the 7.62×36mm round fired by the H&K P11 (p. 18). AAI developed Silent ammunition for 12-gauge shotguns in the 1960s and for 40×46mmSR grenade launchers in the 1990s; neither caught on due to shortened range. (Silent grenade cartridges are only truly silent when firing nonexplosive grenades.) LC 4, 4× cost.

Underwater Dart (UD) (Mid TL7): A finned underwater projectile for special weapons. Instead of reducing 1/2D and Max range to 1/20, they get 1/10 if fired underwater. Damage is impaling. UD ammo was introduced in the 1970s by both Germany (H&K P11, p. 18) and Russia (TsNIITochMash SPP-1, p. AT63, and TsNIITochMash APS; both are also covered in Chapter 5 of *GURPS Special Ops*). LC 1, 10× cost. Also see pp. AT61-63 for underwater combat.

Armor-Piercing Projectiles

Armor-piercing ammunition is used vs. armored vehicles or personnel in body armor. Except for SAP, it is often illegal for civilians.

Semi-Armor-Piercing (SAP) (TL7): Some bullets are inherently better at penetration than basic Solid, without being "true" AP. They perform better against armor because of a steel insert, or the

projectile's shape and velocity. SAP has Armor Divisor (1.25), but after penetration, it is treated like a normal bullet; there is no Damage Multiplier.

The most common example is the 5.56×45mm FN SS109 round, which has been the NATO standard since 1980 (designated M855 by the U.S. military). SAP also applies to the baseline 4.6×30mm and 5.7×28mm PDW rounds, which are not available as Solid. LC 4, except for PDW rounds, which are LC 1.

Armor-Piercing (AP) (Early TL6): An AP bullet features a hardened tip or core, typically made of steel. Multiply basic damage by 0.66; AP has Armor Divisor (2) and Damage Multiplier 0.5. First available for autocannons in the 1880s and available for small arms since 1916. LC 1, 2× cost.

Armor-Piercing Hardcore (APHC) (Late TL6): APHC rounds achieve better penetration using a heavy metal core (such as tungsten alloy)

or other advanced construction. Use the standard **GURPS** rules for AP rounds (pp. B209, HT7, VE188) with Armor Divisor (2) and Damage Multiplier 0.5. Most small arms armor-penetrating rounds in service throughout the 20th century are not of this type, but rather of the simpler, cheaper, less effective AP type. Available since the 1930s, APHC was not widely used in small arms until the 1990s. LC 1, 3× cost.

Armor-Piercing Depleted Uranium (APDU) (Late TL7): Similar to APHC rounds, but using depleted uranium as core material. DU is not dangerously radioactive, but is pyrophoric if penetrating metal armor (counts as a flame attack, pp. VE184-185). Multiply basic damage by 1.2. APDU gets Armor Divisor (2) and Damage Multiplier 0.5. The United States and Russia have experimented with APDU in small arms, but none has been introduced for service. LC 0, 6× cost.

Armor-Piercing Explosive (APEX) (Early TL6): Based on late 19th-century naval APLE rounds, this is an AP projectile with a small explosive charge in the base to enhance the behind-armor results (also known as APHE, APSE, or APC/HE). The explosive also has incendiary effects (pp. VE184-185). It was the main anti-tank and anti-shipping round of WWII, mostly in large calibers, but has been available in calibers down to 15mm from the 1930s. It is not normally used in small arms, because the amount of explosive is too small. Use the rules for AP rounds. Concussion and fragmentation damage depend on the specific round and are given in the descriptions. LC 1, 4× cost.

Armor-Piercing Hardcore Explosive (APHEX) (Mid TL7): This combines the enhanced armor penetration of APHC with an explosive charge. APHC ammo's heavy metal core long prevented this combination, but in the 1970s, the Norwegian Raufoss company introduced a successful fuzeless design; it is also known as *Multipurpose (MP)*. It consists of a hardened steel bullet with a tungsten carbide core, a band of incendiary particles, and an explosive plug around the core. Forward of the penetrator is a cone of incendiary material. The tungsten core punches through the armor, the impact's heat and pressure igniting the incendiary element and setting off the explosive charge. It explodes 8-12 inches behind the armor (inside the target), scattering fragments and sparks which ignite explosive gases such as those found in a fuel tank. It has Damage Divisor (2) and Damage Multiplier 0.5 and counts as a flame attack (pp. VE184-185). Concussion and fragmentation damage are listed with the

specific round. It explodes only against rigid armor (typically DR 3+; the rigid armor plates of certain animals may be enough). Against targets with soft armor, treat as APHC. If it explodes *inside* a creature, concussion damage is multiplied by 5. Minimum rifle caliber is currently around 10mm; it is not available for handgun rounds. LC 1, 5× cost.

Armor-Piercing Saboted (APS) (Late TL7): By fitting a subcaliber hardcore bullet with a discarding sabot, a faster projectile with higher cross-sectional density is created. This results in better armor penetration and range; multiply basic damage by 1.28 and range by 1.5. APS gets Armor Divisor (2) and Damage Multiplier 0.5 (pp. UT44, VE188). Essentially an APDS round (p. VE101) for small arms, it was available from the 1980s, but military use didn't commence prior to the 1990s. Aircraft weapons (including weapons on helicopters) should not use APS, as the sabots pose a flight hazard. The U.S. military calls this *Saboted Light Armor-Piercing (SLAP)*. Minimum caliber is 5mm. LC 1, 4× cost.

Flechette (Mid TL7): Not to be confused with a *Multiple Flechette* round (p. 8), this replaces a bullet with a sabot flechette, or finned dart (diameter around 2mm or less), fired at high velocity. Multiply basic damage by 1.28 and ranges by 1.25. Flechette gets Armor Divisor (2) and no Damage Multiplier, since it is also impaling. Experimentally used since the 1960s, but none have been introduced for service. (There is some evidence that Flechette rounds are far less effective than initially believed. The GM may assign a Damage Multiplier of 0.5.) LC 1, 3× cost.

Frangible Projectiles

Frangible projectiles are intended to break up upon impact.

Frangible (Late TL6): Designed to break apart on hard surfaces, Frangible rounds are made of a mix of powdered metal and plastics or clay. They were originally intended for training, but since the 1990s they have seen use in situations where overpenetration or misses are dangerous, either to innocent bystanders or because the scenery is prone to damage (such as aircraft, museums, or industrial facilities). Shotgun shells loaded with frangible slugs are used as breaching rounds to destroy locks, door hinges, etc. Frangible rounds break up (one-fourth damage) against hard surfaces (rigid DR 2+, including glass and thin aluminum plate), but behave normally against flesh or flexible armor (including Kevlar); there is no Damage Multiplier. Multiply all ranges by 0.33. LC 4, normal cost.

Prefragmented (PF) (Mid TL7): Like Frangible ammo, these bullets shatter on rigid surfaces (quarter damage against rigid DR 2+). However, in flesh they break into fragments (or more precisely, tiny shot pellets). Damage in flesh is doubled, but only if the projectile bursts. For low-velocity rounds fired from handguns or submachine guns, roll 1d – if the result is TL-2 or less, the round bursts. Range is halved. Typical examples are the Glaser Safety Slugs for handguns and rifles introduced in 1974. Usually LC 4, but LC 1 in jurisdictions that restrict expanding projectiles; 6× cost.

Multiple Projectiles

Multiple projectile loads consist of a number of projectiles instead of one single bullet. Also see pp. B119, HT17-19, UT51, and VE189.

Shot (TL5): Shot is available in many sizes and loadings; see pp. HT18-19 for a detailed treatment. Use the table on p. HT19 to calculate damage for handguns. Rifles get one level more damage. LC 4.

Semi-Armor-Piercing (SAP) Shot (Mid TL7): A shotload with tungsten pellets instead of lead or steel, increasing armor penetration (compare pp. UTT52-53). Armor Divisor is (1.25), but there is no Damage Multiplier. LC 1, 2× cost.

Multiple Flechette (MF) (Mid TL7): These rounds are similar to Shot, but replace the shot pellets with finned flechettes (pp. HT19, UTT52). Only available for low- and extra-low-powered weapons, MF ammo was experimented with in shotguns and grenade launchers – mainly by the U.S. military – for decades before being introduced. The only current small-arm application is the 40×53mmSR M1001 grenade adopted by the U.S. Army in 2001. Treat as Shot, but damage is impaling and the flechettes cannot penetrate more than DR 2 of rigid armor. Multiply 1/2D by 0.9 and Max by 0.8. LC 1, 4× cost.

Duplex (Late TL6): Developed in Germany in 1944 to double the RoF of machine guns, this round features two projectiles head to tail in the same cartridge (pp. HT17-18, UTT51). During the second half of the 20th century, the concept was revisited several times in the (unsuccessful) search for increased hit probability; the Colt ACR prototype (p. 39) fired Duplex ammunition as standard. The bullets of Duplex ammo are lighter than normal projectiles for a given round, with reduced damage and range; halve all ranges and multiply Basic Damage by 0.85. Increase Malf by one level (e.g., Crit. becomes 16). Treat each single shot as a 2-round group of automatic fire; for fully automatic weapons, simply double RoF. LC 4, 2× cost.

Less-than-Lethal Projectiles

These are projectiles with reduced lethality, usually used by law enforcement, but also available to the military. Most are dangerous at close ranges.

Baton (Mid TL7): Designed for low- or extra-low-powered weapons such as grenade launchers or shotguns using reduced loads, batons are large-caliber projectiles made of solid wood, plastics, or rubber, propelled at low velocities to stun rioters (pp. C66-67). Multiply Basic Damage by 0.25 and 1/2D by 0.2; Max is 1/2D multiplied by 7. Batons double damage for purposes of Knockback (p. B106). DR is doubled against Batons, and unarmored humans are treated as DR 1. Acc is reduced by -2 and Malf. lowered by one level (e.g., Crit. becomes 16). Introduced in 1967. LC 5, 2× cost.

Beanbag (Late TL7): This ammunition is a fabric sack filled with metal or plastic shot (pp. C66-67). The sack is folded up in the cartridge but expands once out of the barrel, spreading the impact over a large area to prevent serious damage. It is typically fired from shotguns or grenade launchers, but also available in some revolver chamberings. Multiply Basic Damage by 0.25 and 1/2D by 0.1. Max is 1/2D multiplied by 7. Beanbags double damage for purposes of Knockback (p. B106). DR is tripled against Beanbags, and unarmored humans are treated as DR 1. Acc. is reduced by -3 and Malf. lowered by one level. LC 5, 2× cost.

Rubber Shot (Late TL7): This replaces the metal pellets of Shot with large rubber balls, for use against rioters (pp. C66-67). Each pellet does 1d-2(0.25), and unarmored humans are treated as DR 1. Halve range. LC 5, 2× cost.

Paint (Mid TL7): Used in training, Paint ammunition fires light plastic or gelatin bullets filled with water-soluble paint. "Paintball" guns use compressed air for propulsion (see FN M303, p. 28). Other Paint ammo can be fired from service firearms, which must be converted with a special colored barrel, to preclude mix-ups with live ammunition. Paint ammo such as the 9mm Simunition FX brand has Damage 1d-4(0.25), 1/2D 10, Max 200; unarmored humans are treated as DR 1. It can be fired from a number of temporarily modified handguns, submachine guns, rifles, and shotguns. LC 6, 2× cost for the types that can be fired from firearms.

Riot Gas (Mid TL7): A large-caliber shell fired from grenade launchers, which releases a cloud of gas such as tear gas (p. B132). More detailed rules can be found in *GURPS Cops* (pp. C69-70). LC 5, 2× cost.

EXPLOSIVE ENERGY PROJECTILE TYPES

The main element of these rounds, also called *chemical energy* rounds, is an explosive charge designed to deliver certain effects. Most of these types cannot be applied to small arms and will only be useful as warheads for grenades, missiles, etc.

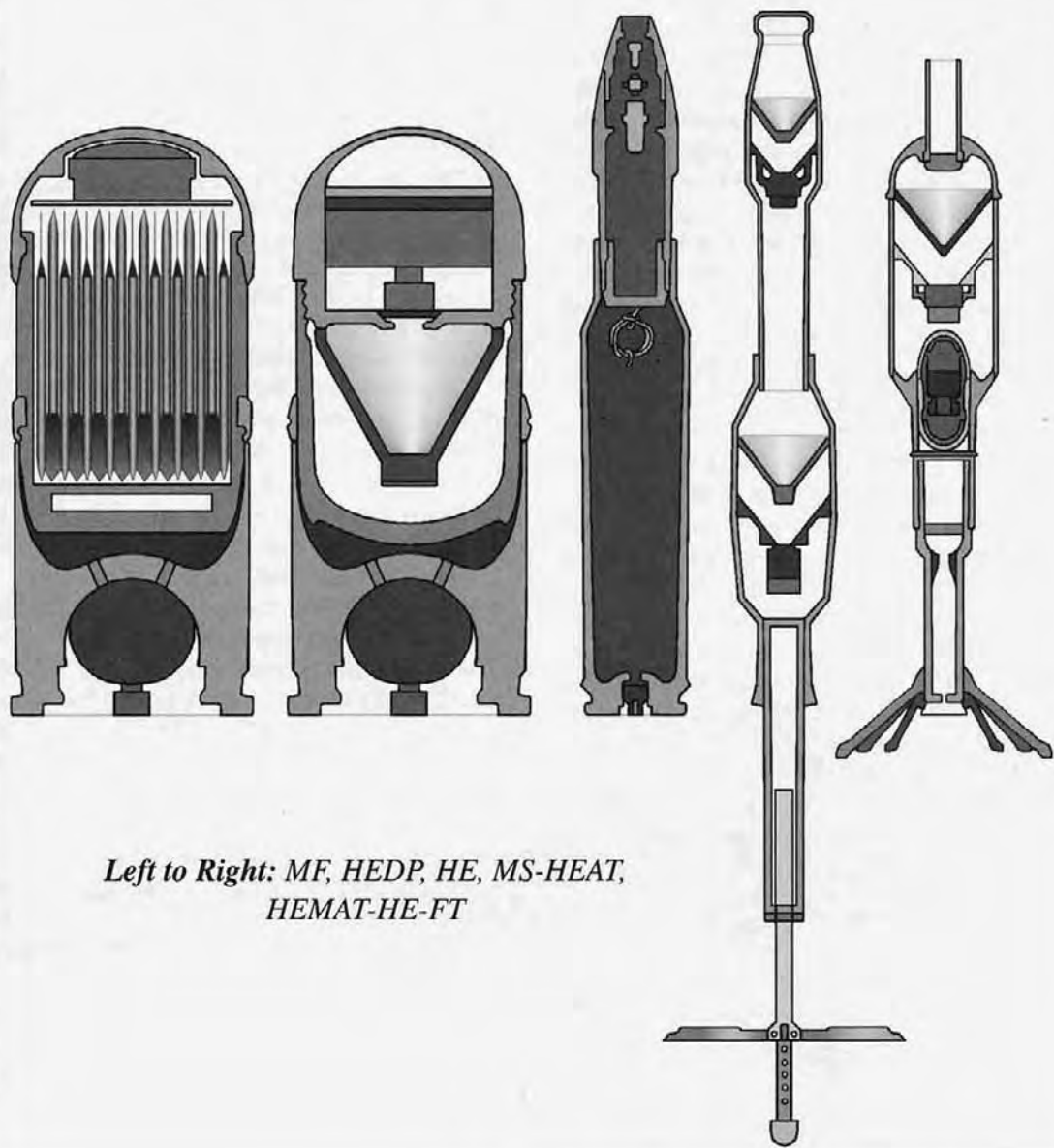
Constant improvement, especially in the miniaturization of fuzes, is gradually decreasing the minimum calibers required.

Explosive Warheads

High Explosive (HE) (Early TL6): An exploding shell filled with TNT or some other high explosive, inflicting both concussion and

fragmentation damage. They are the standard warheads for grenades and artillery shells (see pp. B121-122, HT22-24, VE190-191). Minimum caliber 15mm. LC 0, 2× cost.

Fuel-Air Explosive (FAE) (Early TL7): FAE warheads do damage through powerful concussion and incendiary effects by detonating aerosol clouds of hydrocarbon-based fuel (pp. HT26, VE113). Available for bombs since the 1960s, the technology was refined by Russia to develop *thermobaric* slurry explosives that have a similar effect. This new generation of *vol-umetric* explosives was used for man-portable rocket applications in the late 1970s and small arms grenades in the 1990s. Minimum caliber 40mm. LC -1, 5× cost.



Left to Right: MF, HEDP, HE, MS-HEAT, HEMAT-HE-FT

Shaped Charge Warheads

High Explosive Anti-Tank (HEAT) (Late TL6): HEAT rounds (pp. HT101, UT66-67, and VE104) feature a shaped charge which, upon detonation, forms a high-pressure, extremely high-velocity gas jet tipped by the molten metal of the shaped charge liner. The liner is an inverted cone made of a high-density metal, usually copper. Heavy metal such as tungsten or depleted uranium increases performance by 50%. The jet punches through the armor, doing damage through both the super-hot jet and the armor fragments. The penetration is deep (400-1,000% of caliber, depending on design), but very narrow (5-30% of caliber). Modern *precision shaped charges* tend toward the upper limit in penetration. Armor Divisor is (10). Minimum caliber 15mm. LC 0, 3x cost.

Hemispherical Anti-Tank (HEMAT) (Late TL6): HEMAT warheads, sometimes known as *flat-cone shaped charges*, work like HEAT warheads, except that their liners use a hemisphere or flat cone instead of a pointed cone. This leads to less penetration depth (200-300% of caliber), but increases the width (25-50% of caliber) and behind-armor effect. Armor Divisor is (5). HEMAT warheads were in use before "true" HEAT rounds (although, back then, they were simply called shaped charges), which explains the low performance of many WWII shaped charge rounds. HEMAT rounds are less adversely affected by projectile spin, which hampered early shaped charges fired from spin-stabilized weapons such as tank guns and artillery. Today, HEMAT is used when penetration depth is not as important as the effects getting through, such as against lightly armored APCs or bunkers. LC 0, 3x cost.

High Explosive Anti-Tank, Multipurpose (HEAT-MP) (Mid TL7): This is a HEAT or HEMAT warhead with enhanced fragmentation, employed both as an anti-tank and as an anti-personnel round. Tank guns, which also fire dedicated anti-tank munitions such as APFSDS, use HEAT-MP in anti-personnel fire and against buildings and fortifications. Armor penetration is only 50-60% of that of dedicated HEAT rounds, but concussion damage and fragmentation rival those of a HE shell of the same caliber. Armor Divisor is (5). LC 0, 3x cost.

High Explosive Dual-Purpose (HEDP) (Mid TL7): This is a HEAT warhead with enhanced fragmentation, serving as an anti-tank and anti-personnel round. They have replaced standard HE rounds in certain applications. Armor penetration is unchanged, but the concussion and

fragmentation damage is only about 75% of that of HE. Armor Divisor is (10). One of the first was the 40x46mmSR M433 grenade introduced by the U.S. Army in 1974. Minimum caliber 15mm. LC 0, 4x cost.

Multistage High Explosive Anti-Tank (MS-HEAT) (Late TL7): Also known as *tandem warheads*, MS-HEAT rounds were introduced in the 1980s to counter increasing use of reactive armor plate (RAP, p. VE92). They consist of two (or three) HEAT charges in a row: The first one blows a path through the RAP, allowing the main charge to attack the armor behind the RAP. If no RAP is present, the charges work as one; add damage together. The diameter of the precursor charge is about 60% of the diameter of the main charge. Minimum caliber 50mm. LC 0, 4x cost.

Hemispherical Anti-Tank, High Explosive, Follow-Through (HEMAT-HE-FT) (Late TL7): Like MS-HEAT, this warhead has two warheads, but reversed: a full-caliber HEMAT warhead is in front, with a smaller HE warhead behind it. On impact, the HEMAT charge blows an entry hole through the armor, through which the smaller HE warhead is propelled, exploding a few yards behind the armor. The diameter of the follow-through charge is usually about 45% (or less) of the main warhead. Armor Divisor is (5). Introduced in the 1980s, this type of round is especially effective against infantry behind fortifications. Minimum caliber 50mm. LC 0, 4x cost.

Explosively Formed Projectile (EFP) (Late TL6): Also known as a *Self-Forging Projectile (SEFOP)*, this is a shaped-charge munition; instead of forming a jet, the liner is formed by the explosion into a high-velocity projectile. It penetrates armor like any other KE round; Armor Divisor is (2). Although penetration is inferior to that of HEAT (40-120% of caliber), it has the advantage that the projectile is not disturbed by RAP. It also has a better stand-off range. While HEAT is only effective if it explodes a few inches or feet in front of the armor, EFP can explode up to 200 yards away and still penetrate. It is ideal for top-attack munitions, including SICM artillery shells (p. VE106). EFP warheads were first introduced in the 1990s for missile and grenade warheads, but were developed for land mines in the 1940s. Minimum caliber 20mm. LC 0, 3x cost.

Explosively Formed Projectile, High Explosive, Follow-Through (EFP-HE-FT) (Late TL7): This is a multistage warhead like HEMAT-HE-FT, but uses an EFP charge for penetration; Armor Divisor (2). It produces a hole about 40-60% of the warhead's diameter. It was introduced in the late 1990s. Minimum caliber 50mm. LC 0, 4x cost.

2. WEAPON ACCESSORIES AND MODIFICATIONS



"The one item you need is always in short supply."

— Murphy's Rules of Combat

Note that all batteries mentioned in this book are real-world batteries, not **GURPS** power cells (pp. B247, UT10-11, and UTT13); e.g., an AA cell is a common 1.5V battery, not a TL8 AA power cell.

ACCESSORY RAILS AND P-RAILS

Many modern weapons feature integral mounting rails for accessories, such as the rails under the muzzle of the H&K USP series (p. 20). In 1995, NATO standardized a rail based on the Weaver dovetail mount. Approved by the U.S. Army Picatinny Arsenal prior to NATO agreement MIL-STD-1913, it is known as the Picatinny or

P-rail. Strips of this simple rail mount can be attached to any suitable weapon surface, especially the top of the receiver for sights and around the forearm (the part of the weapon around the barrel, forward of the action) for other accessories. When not in use, forearm rails can be covered with panels. Rails typically mount a single accessory, although long rails will accept more (e.g., scope and night-sight attachment).

Integral rails have no weight, but if a gun is not designed with integral rails, adding them will increase weight, typically 0.2 lbs. per facing. Adding P-rails to the top, bottom, and both sides of the forearm of a rifle costs \$300. A single-position P-rail is \$100; a triple-position (bottom and sides) P-rail is \$200. In 1998, the U.S. military adopted four-position (top, bottom, sides) P-rail handguards for the Colt M4A1 carbine (pp. 26-27) and M16A4 rifle (p. 22). Aftermarket P-rails are available for most weapons.

Colt M4A1 assault carbine with Colt M203A1 under-barrel grenade launcher, Aimpoint M68 collimating sight and AN/PEQ-2 targeting device. Body armor is ProMax Level IIIA vest, PASGT Helmet, and Oakley goggles.



WEAPON SIGHTS AND AIMING AIDS

Improved Visibility Sight

The difficulty of acquiring a gun's sights in the dark can be reduced by painting them white; this adds +1 Acc to negate darkness penalties. This bonus is +2 with "3-dot sights," standard on modern handguns such as the H&K USP-series (p. 20), which use three dots or lines of light-colored paint. Self-illuminating sights employ materials (such as tritium) that glow, increasing the bonus to +3 Acc. Glowing sights are standard on some weapons and can be ordered for all others at a cost of \$75-100.

Tactical Lights

Tactical lights are standard with all special military and police units (p. C67). These compact lights are attached to the frame under the

muzzle (pistols) or forearm (longarms). Targets can be clearly identified at an effective range of 25 yards (no darkness penalties, SS penalty only -2); a lighted area will be visible at greater distances, but will not confer combat benefits. Lights with greater effective range are available, but at increased weight and bulk. The disadvantage is that others can see where the light comes from, so some models have optional IR filters to make the light visible only by night-vision aids or Infravision.

Favored worldwide for small arms are *SureFire* tactical lights (1988). They project a beam of light (effective range 25 yards) using a halogen bulb and two 15-kWs lithium batteries for 1 hour's operation (the latest models get 2 hours). Mounts for nearly all firearms are available or can be made, readily attaching to integral mounting rails (p. 11). On the H&K MP5 series, the mount is integrated into a replacement forearm. IR light filters are available for \$50. \$200 (including mount), 0.4 lbs. (depending on weapon), -1 to Holdout modifier.

The *Visible Light Illuminator (VLI)* (1998) used by the U.S. military on longarms has an effective range of 110 yards and is powered by six 4-kWs AA cells. It is waterproof down to a 65' depth. \$250, 0.5 lbs., -1 to Holdout modifier.

Targeting Lasers

Targeting lasers provide +2 Acc and reduce SS penalty to -1 up to 50 yards and to -2 at 50-100 yards (pp. CII31, HT103). Targeting lasers for handguns have evolved into fingertip-sized devices, useful at ranges up to 200-300 yards. For rifles and other longarms, they are the size of a flashlight and have ranges up to 9,000 yards. The beam's color depends on wavelength, red being most common. Red lasers are best in low-light conditions, but suffer as lighting improves. More expensive orange lasers perform better in

H&K G36K assault carbine with NSA80 II night sight, 100-round Beta C-Mag and SureFire M900R tactical light. H&K HK69A1 grenade launcher is slung on back.



daylight. Laser beams are normally invisible, but in smoke or fog (and similar conditions) the beam is easily seen, betraying the shooter's position. IR lasers are entirely invisible, seen only with night vision devices or Infravision; these are used only by military and governmental agencies. Many countries don't permit citizens to own targeting lasers.

One of the smallest designs is the *LaserMax* (1989), installed inside a pistol by replacing the recoil spring guide rod. The *LaserMax* is available for many pistols and could be made for more. Four 1-kWs lithium coin batteries power it for 2 hours' continuous use. Effective range of a red laser is 150 yards under low-light conditions, or 50 yards in daylight. \$500; weight negligible. (An orange laser is \$650 and increases daylight range to 75 yards.)

The *AN/PAQ-4C* for use on rifles and machine guns has been in service with the U.S. military since 1995. It emits an IR laser to 700 yards (2,000+ yards under optimum conditions). Two 4-kWs AA cells power it for 50 hours. It is waterproof down to a 65' depth. \$850, 0.3 lbs., -1 to Holdout modifier.

Combined Laser/Tactical Lights

Available since the 1990s, these devices combine targeting lasers and tactical lights.

The *AN/PEQ-2 IR Target Pointer/Illuminator/Aiming Light (ITPIAL)* (1996) combines an IR light (600 yards) with a powerful IR laser (2,200 yards minimum). Navy SEALs mount it via P-rail on the Colt M4A1 carbine (pp. 26-27) and other weapons, and in 1999 it was also adopted by the Army. It is powered by two 4-kWs AA cells for 10 hours and is waterproof down to a 65' depth. \$1,500, 0.6 lbs., -1 to Holdout modifier.

The *AN/PEQ-6 Laser Aiming Module (LAM)* (1996) attaches under the muzzle of the H&K MK23 MOD 0 pistol (see *GURPS Special Ops*) – a commercial variant is offered for the H&K USP and some Glock models (p. HT109). It combines a visible light (25 yards effective range), an IR light (50 yards), a visible laser (50 yards in daylight, up to 750 yards in low light), and an IR laser (200 yards). It is powered by two 4-kWs AA cells for 10 hours and is waterproof down to a 65' depth. \$2,400, 0.45 lbs., -1 to Holdout modifier.

Collimating and Reflex Sights

Collimating and reflex sights involve a lens on which a bright red or yellow dot is projected, coinciding with the weapon's point of aim. In a

collimating sight (often called a "red dot sight"), the lens is incorporated into a tube, like a scope. In a reflex sight, the lens is fitted into a small frame. The dot is generated electronically, or from a tritium or other light source. These sights improve situational awareness by allowing the shooter to keep both eyes open, and target acquisition is faster; instead of aligning fore and aft sights, the shooter simply superimposes the dot with the target (-2 to SS number at ranges up to 300 yards). These sights also make aiming under low-light conditions easier, negating darkness penalties up to -3. Note that unlike a targeting laser, this dot is not projected and is seen only in the lens by the shooter. Both designs can be used with night vision devices. Some weapons have integral collimating sights (e.g., H&K G36, pp. 25-26) or reflex sights (e.g., FN P90, p. HT116).

Aimpoint of Sweden has made collimating sights since the 1970s. One was adopted by the U.S. Army in 1997 as the *M68 Close Combat Optic (CCO)*. It is powered by a 2-kWs lithium photo battery for 500 hours. It is attached via P-rail. \$250, 0.6 lbs., -1 to Holdout modifier.

The U.S. military also uses the tritium-illuminated *Trijicon ACOG Reflex* sight, adopted in 1996 for special ops units and mounted on carbines via P-rail. \$400, 0.5 lbs., -1 to Holdout modifier.

Reflex sights can be very small. Fire Point of England makes a handgun model that is barely larger than targeting rear sights. \$250, negligible weight.

Telescopic Sights (Scopes)

For each doubling of magnification, a scope adds +1 Acc for aimed shots – scopes do not affect unaimed shots (p. HT102). Since they magnify light, most scopes add a further +1 Acc to negate darkness penalties only. Scopes may have an illuminated reticle (battery-powered or self-illuminated) to aid aiming under low-light conditions, giving up to +3 Acc to negate darkness penalties. High-power scopes (better than 4x) make target acquisition slower: +1 to SS. Modern scopes are sturdier than those in *GURPS High-Tech*, especially low-magnification scopes mounted on assault rifles; roll on the table on p. HT103 at -1.

The Canadian *Leitz C79 ELCAN* introduced in the 1980s is a 3.4x scope for assault rifles and light machine guns. It gives +1 Acc, is self-illuminated for +3 Acc in darkness, and is rubber-armored for -1 on the damage table. \$800, 1.5 lbs. (including mount).

DARKNESS PENALTIES



The GM will assign Vision penalties based on the lighting level of the environment. An overcast day is -1 to no penalty, twilight is -2 to -3, a full moon is -3 to -4, an overcast night with a moon is -5 to -6, and a clear night with no moon is -7 to -8, while an overcast night with no moon is -9. Reserve -10 for complete darkness, such as inside a cellar with no windows. Indoors, treat warehouse lighting, emergency stairways, and poorly lit interior spaces as -1 to -2. An area lit by street lamps is also -2.

Image-Intensifying Night Sights

Available for small arms since the 1960s, image-intensifying sights (also called light amplifiers or "starlight scopes") electronically amplify ambient light to generate a monochrome (usually green) night-vision picture. They do not work in total darkness. These devices are rated in generations; the higher the generation, the lighter, smaller, and more expensive the device is. The first generation, such as the AN/PVS-2 STABO (1965), is the least effective: +5 to negate darkness penalties. Second-generation devices such as the AN/PVS-4 STANO of 1978 provide +7. Third generation devices appeared in the late 1980s and add +9 (they are still restricted to government agencies). Image intensifiers can detect IR light. They emit ultrasonic noise which startles animals (and can be heard with Ultrahearing). Like high-powered scopes, they add +1 to SS.

The German *Hensoldt NSA80 II* is a second-generation sight (1996) able to be mounted as an

attachment on a scope already fitted to a weapon (e.g., H&K G36, pp. 25-26). Two 32-kWs C cells power it for 30 hours. \$7,600, 2.6 lbs., -1 to Holdout modifier. (The NSV80 II is similar.)

The Russian *Novosibirskij Priborostroitelny Zavod PN-6K* second-generation sight (1999) can be mounted on most Russian long arms fitted with a scope mount. Integral 4× magnification provides +2 Acc. It requires a 4-kWs AA cell for 12 hours of operation. \$1,320, 2.05 lbs., -1 to Holdout modifier.

The U.S. military's *AN/PVS-14 Pocket Scope* (1998) is a small third-generation device that fits into a uniform pocket and can be mounted on a weapon or combat helmet (p. 34), or used as a stand-alone monocular. Powered by two 1-kWs N-cells and submersible to 8'. \$3,500, 0.8 lbs., -1 to Holdout modifier.

Thermal-Imaging Weapon Sights (TWS)

Available since the 1990s, these passive electronic IR imaging sights are used for target acquisition at night. IR emissions are enhanced into a monochrome television image. Treat as Infravision (p. C152), but with an extra +1 to Tracking and without the -1 combat penalty. It is also effective in fog and rain, and an Electronics Operation (Sensors)/TL roll will "see" through light to medium foliage, but not walls. A TWS needs 2 minutes to reach operational status after being switched on. It increases the SS number by +1.

The U.S. military's *AN/PAS-13B* (2000) is typical. The 5× magnification provides +2 Acc. It will identify a human-sized target at 1,800 yards (Scan Rating 15). A 75-kWs lithium battery powers it for 5 hours. It features a video channel outlet for use with Land Warrior (p. 38) or a recorder. \$20,000, 4.5 lbs., -2 to Holdout modifier.

The Raytheon W1000 is similar, but lighter at 3.3 lbs. Identification range is 1,000 yards (Scan Rating 14), and a 75-kWs lithium battery powers it for 4 hours. It is also available as a non-magnifying attachment, to be fitted to an existing scope, such as the optics provided on the H&K G36 (pp. 25-26). In that configuration, it weighs 3.1 lbs.; -2 to Holdout modifier.

Computer Sights

Complex full-solution fire control systems with integral ballistic computers were introduced in the 1990s for use on infantry weapons, typically rocket launchers and grenade launchers, which profit from improved rangefinding and programming.

The *CDC Lightweight Video Sight (LVS)* (2001) developed in Canada is a compact, video-based system for direct-fire crew-served weapons such as the GD-Bofors MK47 MOD 0 Striker (pp. 31-32) or Browning M2HB (pp. HT119, W97). It includes a 9× video imager (+3 Acc), laser rangefinder (+2 Acc, 2,200 yards range), weather sensors, third-generation image intensifier (+9 Acc to negate darkness), and ballistic computer (small TL8 computer, compact, hardened, Complexity 2, with Datalink and Targeting+3) capable of handling 10 different ammo types. The battery lasts for 8 hours. The gunner points the laser at the target and in 2 seconds the computer calculates the aiming point, seen on an integral display or Heads-Up Display (HUD). Spend two turns of Aim to receive +3 to Gunner/TL skill. \$25,000, 8.8 lbs.

OTHER ACCESSORIES AND MODIFICATIONS

Magazine Options

Synthetic Magazines: Introduced in the 1970s and common since the 1980s, synthetic magazines are often translucent, allowing the shooter to see how many shots remain. This does not change cost or weight.

Clamped Magazines: In the 1970s, H&K introduced the dual-magazine clamp, a removable bracket that connects two magazines side by side, initially for the MP5 series (\$35, 0.35 lbs.). This has been copied for other weapons as well. In the 1980s, SIG designed a magazine with integral studs and brackets, a method that has also been copied. Taping together two or more magazines will give similar results. All methods save 1 second on reloading (p. B96). A successful Speed-Load roll can save another second. The magazine not in use may get dirt inside, and taped magazines, where one points down, may get their feeding lips damaged if handled carelessly (-1 Malf at the GM's discretion).

Extended Magazines: Extending the magazine length will give more ammunition capacity, up to three times as much. Examples are the 20-rounder for the FN-Browning HP-35 (AWt 0.75, \$30), 31-rounder for the Glock 17 (AWt 1.1, \$50), 42-rounder for the Steyr AUG (AWt 1.5, \$60), and 50-rounder for the IMI Galil ARM (AWt 2.2, \$60). Extended magazines are heavy, expensive, and sometimes unreliable (-1 Malf at the GM's discretion) and make the weapon unwieldy. Shooting prone may become difficult

or impossible. Increased capacity gives a worse Holdout modifier (-1 for 1.5× capacity). A simpler solution modifies the magazine follower and floorplate, adding more rounds. For example, there are 8-round magazines (AWt 0.5, \$20) for the Colt Government and 19-round magazines (AWt 0.6, \$25) for the Glock 17 that are barely larger than the standard ones.

Drum Magazines: Drums stow the ammo more compactly than extended magazines. The most successful current design is the *C-Mag* (1989), a 100-round twin drum magazine. It protrudes no farther than a normal 20-round magazine, allowing easy use while prone. The C-Mag is currently available for several 5.56×45mm weapons, including the Colt M16 series, H&K G36-series, and Steyr AUG (AWt 5, \$225). As of 2000, there were variants for the 9×19mm Colt CAR-15 and H&K MP5 series (AWt 4.8, \$300).

Slide-Locks

A slide-lock fitted to a semiautomatic firearm prevents it from cycling the action. This reduces the mechanical noise of the gun when used with a sound suppressor (-1 Hearing). It effectively converts the gun to a single-shot weapon (RoF 1), which has to be cycled by hand after every shot. Slide-locks are found on specialized weapons, such as the Izhmekh PB and S&W MK22 MOD 0 (see *GURPS Special Ops*). Bolt-action and single-shot weapons count as having slide-locks.

Sound Suppressors

Sound suppressors (popularly called "silencers") reduce the sound of a firearm by containing propellant gases and/or slowing projectile velocity to below the speed of sound. Subsonic ammunition (p. 6) keeps overall noise low, but a suppressor works for supersonic projectiles. It doesn't completely negate the firearm's report, but reduces the range at which it is heard and identified as a gunshot. There are two basic types of suppressors:

Baffle Suppressors work by diffusing the muzzle blast and firing gasses inside a baffled expansion tube. The original Maxim suppressor of 1908 is of this type, as are most current designs. Most last hundreds or even thousands of shots. The integral suppressor of the H&K MP5SD3 (pp. C64, HT116) has a service life of at least 10,000 shots.

Wiper Suppressors consist of a tube divided into compartments by "wipes" placed perpendicular to the barrel. The bullet passes through a subcaliber hole in each wipe, while the blast and gases are trapped in the compartments.

ACOUSTIC SIGNATURES

To hear a sound, particularly a gunshot, use the following roll: $IQ + \text{Hearing Bonus/Penalty} + \text{Acoustic Signature} - \text{Range} - \text{Background Signature}$. Bonuses or penalties to Hearing include the Acute Hearing and Alertness advantages and the Hard of Hearing disadvantage.

Note that sound propagation is far more complex than these rules provide for: GMs should feel free to add or subtract heavily from this roll, or disregard it altogether, as sounds can be focused or diverted.

Acoustic or Background Signature Values

-6	Human hearing limit
-4	Stalking person, unusually quiet area
+0	Whisper, rural area at night
+2	Walking person, suburban area at night
+6	Weapon action (cocking bolt, hammer falling, etc.), heavy rain, conversation, urban area by day
+7	Gale force winds, car
+10	Shouting, dog bark, very busy street, white water rapids
+12	Air rifle, Silent ammunition (7.62x36mm, 7.62x42mm)
+14	Rock concert, chainsaw
+16	.22 LR rifle
+17	Grenade launcher, pneumatic drill
+18	Subsonic or light pistol (.32 ACP, .380 ACP, 9x18mm), subsonic rifle (7.62x37mm, 9x39mm)
+19	Propeller engine (human pain threshold)
+20	Supersonic or heavy pistol (9x19mm, .40 S&W, .45 ACP), submachine gun, PDW, shotgun, jet engine, siren
+21	Supersonic rifle, machine gun, very heavy pistol (.357 Magnum, .44 Magnum, .50 AE)
+26	Large-caliber rifle, heavy machine gun, flash-bang grenade
+30	Artillery fire
+34	Grenade, explosion

Range

Consult p. B201 for Range Modifier. Each level of Parabolic Hearing halves the range before the modifier is looked up. Sound also

attenuates with distance: use a further -1 per 100 yards over 300 yards as a base.

Modifiers

Both sound source and listener are indoors	+2
Gun not fired toward listener	-3
Slide-lock or bolt-action weapon	-1
Sound originates in light vegetation (grass or carpet)	-1
Sound originates in medium vegetation (woods)	-2
Sound originates in heavy vegetation (jungle)	-5
Subsonic ammunition for pistol/SMG	-1
Subsonic ammunition for PDW	-2
Subsonic ammunition for rifle	-3
Suppressors	-1 to -10*
* Typically -2 to -6.	

Intervening Terrain

Light wall	-1
Medium wall	-4
Heavy wall	-9
Bunker wall	-15

Indoors

Limit the range modifier to 2x the distance to the nearest wall, so long as there is an air sound path.

Example: An H&K UMP (p. 29) with attached suppressor has a net acoustic signature of (+20-4 = +16). At 100 yards distance on a quiet rural night, it can be heard by somebody with IQ 10 on a roll of $(10+16-10 = 16)$ or less, or $(16-3 = 13)$ if not fired toward the listener. Under the same conditions, but at a distance of 500 yards, the same listener would need to roll a $(10+16-15-2 = 9)$, or a $(9-3 = 6)$ if the weapon is not fired toward the listener.

To identify a sound, especially to correctly identify a sound as a gunshot, an IQ roll may be required, modified by appropriate skill and familiarity (p. B43). On an especially successful roll, a character with the necessary familiarity may even identify certain weapons by their sound alone (e.g., the infamous "AK-clack").

The projectile slows considerably, but wiper suppressors are generally more effective than baffle suppressors. The wipers are made of elastic materials such as oiled leather, rubber, or polyurethane, designed to close behind each bullet. They lose effectiveness quickly, however, and need to be replaced after a few dozen

shots. The suppressor on the S&W MK22 MOD 0 (see *GURPS Special Ops*) is such a design, having a life of 30 shots. Damage is multiplied by 0.66 for handgun/SMG rounds, or halved for rifle/PDW rounds. Expanding projectiles such as HP and PF cannot be used in wiper suppressors.

*H&K MK23 MOD 0 Pistol
with suppressor and AN/PEQ-6
laser aiming module*



Baffles and wipes may be combined for maximum effectiveness. The integral suppressor of the Enfield Sten Mk IIS submachine gun (pp. W96, W:HS20) had baffles and rubber wipes (-4 Hearing). It was good for a few hundred shots in single fire, but full auto accelerated the deterioration, rendering it useless after some 60 shots.

A “wet” suppressor is designed to have liquid added (water, oil, or grease). Doing so further improves function (-1 Hearing), but tends to foul the weapon, especially self-loading guns. At the GM’s discretion, these may lose Acc or Malf.

Integral suppressors with gas bleed (holes in the barrel) further increase suppression (-1 Hearing), but at the cost of a reduction in muzzle velocity. Both the Sterling L34A1 (-5 Hearing) and the MP5SD3 (-4 Hearing) use such systems. Damage is multiplied by 0.66 for handgun/SMG rounds or halved for rifle/PDW rounds.

An add-on suppressor requires a means to attach it—usually an elongated barrel with a thread or attachment lugs. Attaching or removing a typical suppressor with thread takes 5 seconds. Modern quick-detach models take 3 seconds.

Home-Built Suppressors: Anyone can build a suppressor; information is on the Internet, in survival books, and in military manuals. An Armoury/TL (Small Arms) roll can be substituted. Some suppressors are built from common household items such as plastic bottles and chicken wire, while others require metalsmithing. Home-built suppressors cannot be used in automatic fire; attempting to do so will destroy the suppressor.

Poor quality home-built suppressors are free, but only yield -2 Hearing and last for 1d shots. They also give -1 Acc and -1 Malf. They are bulky but comparatively light at 0.5 lbs. Holdout is at -3. They require no skill roll and can be built in 30 minutes.

Average quality suppressors require an IQ roll to work out a design and 2 hours and a Scrounging roll to put one together. These units provide an unobstructed path for the bullet, negating the Acc and Malf penalties of poor suppressors, and may give -3 Hearing. They are smaller and last longer (2d shots). They are 0.5 lbs. and -2 to Holdout. After half of the shots are fired, reduce the suppressor to poor.

Good suppressors are homemade copies of production models and require metalworking tools and an Armoury/TL (Small Arms) roll. Increase the weight of production suppressors by 25% and halve the price (see Chapter 3 for examples). A failed Armoury/TL roll results in a unit of average quality, and a critical failure is poor. It takes 8 hours to build a good home-built suppressor.

Cinematic Sound Suppressors: The rules given in this book represent realistic sound levels, not the cinematic fiction of nearly silent gun shots. In a cinematic campaign, the GM may wish to improve suppressor effectiveness dramatically, for instance, by doubling the Hearing penalties.



3. INFANTRY WEAPONS OF TODAY

"Let's rock!"

— PFC Jeanette Vasquez,
U.S. Colonial Marines, in *Aliens*

The weapons described here are arranged as in **GURPS High-Tech**, chronologically based on appearance on the market and in the field. All dates pertain to the first year of actual availability (to PCs who are *not* inventors or armourers involved in preproduction field tests), as opposed to the year of invention or first appearance in trials.

Weight assumes a loaded weapon unless noted otherwise; cost given is always for an unloaded weapon or magazine.

Guns typically come with 1-4 empty magazines (normally 2 for a pistol). Spares tend to be expensive: a 30-round M16-type magazine is \$15, a 12- or 13-round USP magazine \$30, a 25- or 30-round for the UMP \$40, a 4- or 5-round for the AWM \$70.

WEAPON IDENTIFICATION

Weapon Type: On a successful Vision roll, a character will be able to identify a weapon's color, type, and size. If he is familiar (p. B43) with the weapon, it will be immediately identified. In other situations a roll against an appropriate skill related to guns (such as Armoury, Guns, Law Enforcement, or Soldier) will be required. If the weapon is not in profile (e.g., pointed at his face) or is not distinctive (e.g., very rare or identical to several dozen other brands), penalties of -1 to -5 should be assessed.

Ammunition: It may be important for a character to correctly identify the caliber, type, and make of a round of ammunition, e.g., when he obtains a gun loaded with specialty ammunition. A successful roll against an appropriate skill (as above) will identify all but the most obscure or unmarked ammunition types and determine if they are safe to fire.

PISTOLS

Pistols are the weapons of choice in law enforcement, as well as for law-abiding citizens and criminals. Their place in the military is dwindling, except with military police, aviators, officers, and special ops troops.

H&K P11, 7.62×36mm H&K, Germany, 1976 (Holdout -2): Top secret until the 1990s, this underwater weapon was developed for German navy Kampfschwimmer ("combat divers"). It uses only Silent ammunition firing UD projectiles, which come in preloaded 5-round, 5-barreled pepperbox-style cylinders. Two 18-kWs 9V batteries located in the grip are required for the electric ignition (sufficient for 5,000 shots). After all shots have been fired, the complete cylinder (AWt 1.5, \$75 loaded) has to be replaced (and the empty one returned to the factory for reloading – the rounds are not sold individually). Underwater, 1/2D becomes 30 and Max 175 (it is waterproof down to 30'). Because of its low firing signature (AS +12), it can be used instead of a suppressed pistol. It has self-illuminated sights (p. 12). The gun was supplied to European naval special ops units such as the British SBS, Danish Frømandskorps, Dutch 7 NL SBS, and Italian COMSUBIN.

Hämmerli 280, .22 LR, Switzerland, 1988 (Holdout -2): A Very Fine (Accurate) target pistol designed for competition shooting, featuring a synthetic frame and magazine, adjustable trigger, micrometer rear sights, and provision for balancing weights under the muzzle. Since the magazine housing is forward of the trigger guard, the adjustable wooden grip can be sculpted or replaced to perfectly match the user (+1 Acc). Production ceased in 1998 in favor of the SP20, which is very similar.

Lorcin L-25, .25 ACP, United States, 1989 (Holdout +2): One of the most common guns used in crime in America during the 1990s, a Cheap (Unreliable) pistol with no outstanding features except its low price and high availability. It is a very small weapon firing a ridiculous round, but it can still kill. Available in fancy finish options (including black/gold, chrome/pearl,

AUTOMATIC WEAPONS: LIMITED AND CONTROLLED BURSTS

Limited Bursts: To discourage soldiers' tendency to switch to full automatic fire and "rock 'n' roll" during combat, the burst-limiter was invented in the 1960s. Setting the selector on burst prevents the weapon from firing more than a preset number of rounds. The number varies according to model (between 2 and 10), but 3-round bursts have long been accepted to be most efficient in terms of hit probability. Since the early 1990s, 2-round burst-limiters have appeared. Some weapons fire only single shots and bursts, while others still allow fully automatic fire. Burst-limiters are installed primarily in weapons with a high cyclic rate.

Burst-limiters can be retrofitted by exchanging the trigger assembly; replacing it on an H&K MP5A3 changes the gun to an MP5A5, which offers bursts in addition to single shots and full auto (see pp. C64 and HT116, and *GURPS Special Ops*).

Controlled Bursts: Also in the 1960s, burst-controllers were designed that improved accuracy by firing a short burst at a cyclic rate high enough so that the rounds exited the barrel before the shooter was affected by recoil and muzzle climb. The burst-controller requires a specially engineered weapon with a mechanism fine-tuned to the burst; it cannot be added to an existing weapon. An example is the Izhmash AN-94 (p. 27), which fires a 2-round controlled burst at 30 rounds per second.

In game terms, limited and controlled bursts may be fired three times per turn, as if the weapon were firing single shots. Guns skill specialization remains either (Light Auto) or (Machine Pistol). For purposes of hits and recoil, limited bursts are treated as "groups" in a full-auto burst. Three bursts fired in a turn would get Rcl, 2 x Rcl, and 3 x Rcl, and so on. Hits and recoil work differently for controlled bursts, due to their high cyclic rate. A

burst-controller increases hits with a group of rounds; use the following table instead of the one on p. B120. Recoil for controlled bursts is 0 for the first group, but subsequent groups are affected by recoil normally, beginning with 2 x Rcl for the second group, 3 x Rcl for the third, etc.

Rounds in Burst	Roll Made by						
	-2	-1	0	1	2	3	4+
2	0	1	1	1	2	2	2
3	0	1	2	2	3	3	3
4	0	1	2	3	3	4	4
10	1	2	5	5	7	7	10

Walking Bursts: If set for controlled or limited bursts, the weapon cannot be used for *Walking the Burst* (p. HT78).

In military parlance, burst limiters and controllers fire a single burst with each pull of the trigger. By the above rules, each of these bursts is a separate to-hit roll. *GURPS* also defines a burst as multiple shots fired by one trigger-pull (p. B119), but uses the term *group* to define the subdivision of the burst that constitutes each attack. Limited and controlled bursts are, in effect, also groups. On full-auto, it is recommended that all groups consist of 4 rounds, except for remainders, as in the case of RoF 10; this is more realistic, and makes the recoil rules more consistent.

Notation: Weapons equipped with a burst-limiter are noted with "***" and those with a burst-controller are noted with "#." RoF 3** means that a weapon fires three single shots or three limited bursts per turn. RoF 12** means three single shots, three limited bursts, or full automatic at 12 shots per second. And RoF 8# means it fires three single shots, three controlled bursts, or full automatic at 8 shots per second. Burst lengths are listed in each weapon's description.

camouflage, and chrome/pink – the Lady Lorcin), hundreds of thousands were sold before the company folded in 1999.

The *Jennings J-25* (1981), *Phoenix Raven* (1992), *Raven Arms MP-25* (1984), and *Sundance A-25* (1989, Shots 7+1) are almost identical.

TsNIITochMash P-9 Gyurza, 9x21mm Gyurza, Russia, 1994 (Holdout -1): The Gyurza ("snake") is a high-capacity service

handgun for use against armored opponents. APHC and APHC-T rounds are issued as service ammunition, as are HP and Frangible. One of the first Russian pistols with a synthetic frame, the Gyurza has been the sidearm of the Russian intelligence services FSB and GRU since 1996. It is also used by Russian SWAT units (MVD OMON). It has recently been renamed the SR-1 Vektor. Not sold to civilians.

Glock 27, .40 S&W, Austria, 1995 (Holdout +1): This subcompact version of the Glock 22 (pp. C63, HT109) has a shorter barrel and grip, making it more easily concealable. It has a 9-round magazine, but also takes the 13-round (AWt 0.6) and 15-round (AWt 0.65) magazines of its larger cousins (Glock 22, 23, 24, and 35). Larger magazines impair concealability (Holdout 0). The Glock 27 is used as an off-duty and backup gun by the FBI and other agencies.

The **Glock 26 (1995)** is identical, but chambered for the 9×19mm Parabellum round; Damage 2d+1, Wt 1.6, Shots 10+1. It can use the magazines of the Glock 17, 18, 19, and 34. A small suppressor designed for it lasts for 20 shots before the wipes have to be replaced (+0.17 lbs., -6 Hearing for net AS +14, -1 Holdout, p. 16).

The **Glock 28 (1996)** fires the 9×17mm (.380 ACP); Damage 2d-1, Wt 1.6, AWt 0.3, Shots 10+1, ST 9, Rcl -1. It can use the 15-round magazine of the Glock 25 (AWt 0.45).

The **Glock 33 (1998)** fires the .357 SIG; Damage 3d-2. It can take the 13-round (AWt 0.6) and 15-round (AWt 0.65) magazines of the Glock 31 and 32.

The **Glock 36 (1999)** is chambered for .45 ACP, made slimmer by a single-stack magazine; Damage 2d-1+, Wt 1.7, AWt 0.4, Shots 6+1, ST 11, Rcl -2, Cost \$700.

Kel-Tec P-11, 9×19mm Parabellum, United States, 1995 (Holdout +1): This double-action only pocket pistol has a synthetic frame and features magazine interchangeability with the S&W Model 5900-series service pistols, which are popular with Canadian and U.S. police agencies; carried concealed as a backup weapon, it can use the same 15-round magazines as the main gun (AWt 0.6).

The **P-40** is the same gun in .40 S&W; Damage 2d+, Shots 9+1, Cost \$330. It can take the 11-round magazines of the S&W M4000-series (AWt 0.6).

FN Five-seveN, 5.7×28mm, Belgium, 1996 (Holdout -1): This double-action service pistol was designed as a companion to the P90 PDW (p. HT116). It fires SAP rounds (see table), but SAP-T and Subsonic (Damage 1d+2-) are also available. It has an accessory rail beneath the barrel (p. 11), and a suppressor is available (+0.4 lbs., -5 Hearing for net AS +16, AS +14 with Subsonic ammo, -1 Holdout, p. 16). The Five-seveN was adopted by Belgian, British, Cypriot, and Thai special ops units and is not available to civilians.

Walther P99, 9×19mm Parabellum, Germany, 1996 (Holdout 0): A modern pistol with a synthetic frame and steel slide with a hammerless action capable of double- and single-action operation. The grip has a replaceable backstrap that allows it to be modified for small, medium, or

large hands. It has an integral accessory rail under the barrel (p. 11). The P99 is sold to American civilians with a 10-round magazine (AWt 0.4). A barrel threaded for a suppressor (as used by James Bond) is available for \$395 (+1 lb., -4 Hearing for net AS +16, -1 Holdout, p. 16). The P99 has been adopted by police agencies in Canada, Poland, Thailand, and the United Kingdom.

Since 1998, it has also been available in .40 S&W; Damage 2d+1+, AWt 0.5, Shots 12+1. The civilian 10-round magazine is AWt 0.5.

The **P99 La Chasse (1998)** is a Fine (Decorated) sidearm for wealthy hunters, with a green frame, walnut backstrap, lanyard, and lavishly engraved silver slide; \$2,150.

Smith & Wesson produce the **SW99 (2000)**, which mates the P99's frame with a modified slide made by the American firm; \$770.

The **Walther CP99 (2000)** is a 4.5mm (0.177") air pistol virtually indistinguishable from the P99; Damage 1d-2-, 1/2D 15, Max 200, Wt 1.7, Shots 8, ST 7, Rcl 0, Cost \$150, LC 5. It is powered by a 12g CO₂ cartridge (0.4 oz., \$2) in the grip, good for 70 shots. Although a training gun, it is capable of doing harm, especially to the eyes. The pellets also can easily be made by hand (Armoury/TL) from exotic materials such as silver; see **GURPS Horror**, p. 30. HP pellets are Damage 1d-2.

H&K USP Compact, .40 S&W, Germany, 1997 (Holdout 0): A compact version of the Universelle Selbstlade-pistole ("universal self-loading pistol," p. HT109), respected for its reliability and accuracy. It features an integral underbarrel accessory rail (p. 11). The gun was adopted as a service sidearm by U.S. Customs and DEA and is popular with other American law enforcement agencies as well. Civilian 10-round magazines are AWt 0.5.

Several variants exist. The USP Compact in 9×19mm Parabellum (1997) is issued by the Danish police, the Spanish police, and several German state police forces (designated P10); Damage 2d+1, Shots 13+1, ST 9. Civilian 10-round magazines are AWt 0.45.

In .357 SIG (1998) it has Damage 3d-2.

In .45 ACP (1998) it has: Damage 2d+, 1/2D 180, Max 1,700, Wt 2.1, AWt 0.6, Shots 8+1, ST 11, Rcl -1.

Izhmekh PYa, 9×19mm Parabellum, Russia, 1999 (Holdout -1): The Pistolet Yarygina, previously known as the **MR-443 Grach**, was adopted by the Russian army in 2001 to replace the Makarov-designed Izhmekh PM. It is a conventional double-action pistol. The Russians issue it with an APHC round, but it can fire all other munitions in this caliber as well.

REVOLVERS

Revolver use is on the decline. Few military or law enforcement agencies in the industrialized world still use revolvers, except specialized types such as backup revolvers for concealed carry or stainless steel Magnum revolvers for combat divers. Many are still made for private customers, however. Generally, these differ little from the models in *GURPS Cops*, *GURPS High-Tech*, *GURPS Special Ops*, and other books.

Phillips & Rodgers Model 47 Medusa, multicaliber, United States, 1993 (Holdout -1): Functionally identical to modern S&W double-action revolvers, this weapon has a cylinder equipped with spring retainers, accepting most handgun cartridges in the 9mm/.38-caliber range (both rimmed and rimless). The most powerful is the .357 Magnum (see table), but others include the .38 Special (Damage 2d-1), .38 S&W (Damage 1d+2), .38 Super (Damage 2d+1), 9×17mm Kurz (Damage 1d+2), 9×19mm Parabellum (Damage 2d+1), and 9×25mm Mauser (Damage 3d-2). The less-than-perfect fit reduces damage, range, and accuracy. A number of smaller rounds in the 7.65mm/.32-caliber range can also be fired, but with further reduced range and accuracy. It will not chamber the 9×18mm Makarov or 9×21mm Gyurza. Special ammunition includes .38 Beanbag (Damage 1d(0.25), 1/2D 5, Max 15). While a compromise, the design might prove useful when ammo is scarce, as in postapocalypse or time-travel campaigns.

KBP U-94 UDAR, 12.3×50mmR, Russia, 1994 (Holdout 0): UDAR is a Russian acronym for any self-defense device discharging an irritant aerosol. This weapon, however, is a compact double-action revolver developed for law enforcement.

Ammo includes Solid (see table), APS (Damage 1d+2(2)), Shot (Damage 1d+2, +1 to hit), Baton (Damage 1d+2(0.5), 1/2D 15), Paint (Damage 1d-3(0.5), 1/2D 15), and an irritant round, which sprays a liquid chemical agent from the muzzle (Acc 3, Max 5, +1 to hit, roll under HT+2 to avoid being blinded and Stunned for (20-HT) seconds; see p. C69 for detailed rules). The aerosol cartridges are of simple construction and could easily be hand-loaded (Armoury/TL) with one dose of another liquid – e.g., holy water, DMSO (pp. CI142, UTT68-69), spitting venom (p. CI149), or magical elixirs (p. TM49). The weapon was adopted by the Russian Ministry of the Interior (MVD).

SHOTGUNS

While double- and even single-barreled shotguns remain popular with hunters and competition shooters, most combat users require pump-action or semiautomatic weapons. Shotguns are widespread in law enforcement, especially in the United States, but restricted to special applications in the military. Many European police forces issue them only to SWAT-type units.

Franchi SPAS 15, 12-gauge, Italy, 1988 (Holdout -5): A combat shotgun based on the SPAS 12 (p. HT112), keeping two selective modes of operation: pressing a button permits either semiautomatic (RoF 3~) or pump-action fire (RoF 2~). Semiautomatic is faster, but some less-than-lethal munitions don't generate enough pressure to cycle the action and must be fired pump-action. In contrast to the earlier weapon, the SPAS 15 features a side-folding stock, carrying handle, and detachable box magazine. It was adopted in 1999 by the Italian military and Hong Kong SWAT, but had long since been in service with European counterterrorist units such as the Austrian GEK, Italian GIS, and Yugoslavian units.

TsNIITochMash KS-23 Drozt, 23×75mmR, Russia, 1993 (Holdout -6): The Drozt ("thrush") heavy pump-action weapon fires the largest shotgun rounds currently available. Besides Shot, it can also fire a Solid slug (Damage 5d++, 1/2D 150, Max 500, -2 to hit), Rubber Shot (Damage 1d-2(0.25), 1/2D 25, Max 65, +1 to hit), Riot Gas, and others. It was adopted by Russian MVD troops and Spetsnaz.

Benelli M1014, 12-gauge, Italy, 2002 (Holdout -6): The joint-service shotgun of the U.S. military, this is a derivative of the civilian M4 Super 90 gas-operated semiautomatic shotgun (1999). It has a retractable stock and a P-rail to mount sights such as the Aimpoint M68 (p. 13). Adopted in 1999, it entered service in 2002 and is also employed by the U.S. Coast Guard and federal agencies such as the Immigration and Naturalization Service (INS). Service ammunition includes Shot, Beanbag (Damage 1d(0.25), 1/2D 5, Max 35), Baton (Damage 1d(0.25), 1/2D 10, Max 70), Rubber Shot (Damage 1d-2(0.25), 1/2D 25, Max 65, +1 to hit), and a Frangible slug for breaching (Damage 4d++, 1/2D 50, Max 150). It will also chamber 12-gauge 3" Magnum shells (not issued by the military); Damage 4d+2, Wt 8.65, AWt 1.1, Shots 6+1. A 4-round speedloader is available.

RIFLES

The rifle is still the primary weapon of the infantryman, in both full-size and carbine formats. Use of the assault carbine – a short-barreled assault rifle – has risen since the 1980s, with some units and even entire armies using it exclusively. Although it lacks the rifle's range, the carbine is lighter and more compact and has better handling in airborne, mechanized, and urban operations. It has also started to replace the submachine gun in many applications.

An alternative to the carbine is the bullpup rifle. Although it was developed in the 1940s, the first model to see widespread use was the Steyr AUG (p. HT115), introduced in 1978. The action is behind the pistol grip, allowing a full-length barrel in a compact weapon: the maneuverability of a carbine, without loss of range or power. This configuration is impossible to fire left-handed, as casings would be ejected into the shooter's face. Some can be modified with an Armoury/TL or Guns/TL roll, though changing the firing position – a requirement for combat in built-up areas – is impractical, and many armies and special police units prefer a conventional weapon.

Colt M16A2, 5.56×45mm NATO, United States, 1984 (Holdout -6): A much-improved variant of the M16A1 rifle (p. HT115), the M16A2 (AR-15A2 R645) was adopted by the U.S. military in 1982, entering service with the Marines in 1984 and the Army in 1985. Improvements include a 3-round burst-limiter, new ammunition, a case deflector for left-handed shooting, a heavier barrel, and better sights. The rifle was widely adopted by federal agencies such as the DEA and FBI and is used by many police departments. Export versions of the M16A2 were adopted by the British SAS, SBS, and Royal Marines, as well as special ops units in Colombia, France, Greece, Israel, Italy, Jordan, Thailand, and Turkey. There were complaints about the 3-round burst-limiter, and some units disabled it, allowing fully automatic fire. It is issued with SAP ammo, but APHC (Damage 5d(2), since 1996) and Frangible (Dam 5d, 1/2D 250, Max 1,100) are also available. Solid (Damage 5d) and HP (Damage 5d(0.5)) are mainly used by civilian shooters.

The AR-15A2 R702 (1984) is the same weapon with fully automatic fire instead of limited bursts (also see p. C64); RoF 13*.

Semiautomatic versions are for sale to civilians; the HBAR-15A2 R6600 (1986) is a competition rifle with extra-heavy barrel. It can-

not mount the Colt M203 grenade launcher (p. HT121) and is sold with a 5-round magazine; Acc 12, Wt 8.35, AWt 0.35, RoF 3~, Shots 5+1, \$1,200.

The M16A4 (AR-15A3 R905) is an updated model (1999); as with the Colt M4 and M4A1 carbines (pp. 26-27), the carrying handle can be removed, to reveal a P-rail for the attachment of an optical system (p. 11). It usually also features P-rails on the top, bottom, and sides of the forearm (hidden beneath removable panels) to accommodate a number of accessories. The M16A4 is a standard weapon with U.S. Army mechanized infantry.



TsNIITochMash AS Val assault rifle

Diemaco of Canada have produced licensed versions of the M16 family since 1985. The C7, adopted by the Canadian military, is identical to the M16A2, except that it fires full-automatic instead of limited bursts; RoF 13*. The C7FT (1990) has a P-rail on the receiver, which is usually fitted with a C79 ELCAN scope (p. 13). The C7FT has been adopted by the Canadian (as the C7A1), Danish, and Dutch militaries.

TsNIITochMash AS Val, 9×39mm, Russia, 1987 (Holdout -5): The Avtomat Spetsialny ("special assault rifle") is based on the Kalashnikov action. Known as the Val ("shaft"), it features a folding stock and built-in baffle suppressor (-4 Hearing, for net AS +14, p. 16). It fires a Subsonic APHC round as standard. The suppressor has a life of several hundred rounds.

The VSS Vintorez ("thread-cutter") is the sniper rifle variant; Damage 2d, SS 12, Acc 10+2, 1/2D 200, Max 2,000, Wt 6.5, AWt 0.8, RoF 10*, Shots 10, ST 9, Rcl -1, Holdout -6. It has a wooden skeleton stock and mounts either a 4× scope (+1.3 lbs., p. 13) or an image intensifier (p. 14). While it can fire the same APHC round as the AS, it is intended to use a Match cartridge (+1 Acc). It feeds from a 10-round magazine, but can use the 20-round magazine of the AS (and vice-versa).

Both models are employed by Russian army and navy Spetsnaz units, as well as special ops units of the Russian Ministry of Internal Affairs (MVD OMON) and intelligence (FSB Spetsgruppa Alfa).

A WEAPON BEFORE ITS TIME: THE H&K G11 SERIES

One of the most talked-about firearms of the past two decades, the revolutionary Gewehr 11, was the culmination of more than 25 years of research and five decades of wishful thinking. The G11 was planned as the West German army's successor to the H&K G3 series. It was approved for service following field trials, but in 1990, shortly before it entered production for a 1992 service introduction, East Germany reunified with the West. Priorities changed and funds for the weapon were withdrawn. Fewer than 100 guns (including ACR prototypes, p. 39) were made in various stages of development. The estimated procurement cost was \$1,500 in 1990. The G11 remains popular in *GURPS Cyberpunk* and other near-future settings, and might also appear in *GURPS Alternate Earths* campaigns.

H&K G11, 4.73×33mmCLTA, Germany, 1990 (Holdout -5): The G11 was the first small arm chambered for a CLTA (p. 4) cartridge to reach production status. The projectiles were encased in small, rectangular blocks of high explosive, in the shape of orange wax crayons. The bullpup G11 was boxy, sheathed entirely in smooth black plastic. It looked clumsy, but the ergonomics were good and the gun had little recoil; when fired, the entire mechanism – including the magazine, breech, and barrel – “floated” backward inside the receiver into the empty stock. The pistol grip, located at the center of gravity, had a knuckle-protecting loop. The 45-round magazine was inserted from the top front, parallel to the barrel, rounds pointing down. A revolutionary new breech rotated each round 90°, aligning it with the barrel. Single-shot fire was very accurate, and full-auto took advantage of light recoil and low cyclic rate. The G11's standard fire mode, however, was the

3-round controlled burst (p. 19), for which the cyclic rate rose to 33 rounds per second. The detachable carrying handle had an integral 1× optical sight for quick target acquisition and could be replaced with a night sight (p. 14). An attachment point below the gun's muzzle took a knife/bayonet (p. HT99), bipod, or targeting laser (pp. 12-13).

Rails mounted two magazines alongside the one in use (3 seconds to reload), giving the gun 135 rounds. Each man was to be issued 24 additional 15-round sealed reload units.

H&K MG11, 4.73×33mmCLTA, Germany, n/a (Holdout -6): A companion to the G11, this squad automatic weapon used the same bullpup configuration and ammo as the rifle, but internally it was different. The MG11 used a “floating” revolver breech-action with three rear-loading rotating chambers, allowing a high rate of fire in 3-round controlled burst mode. The ammunition – an impressive 300 rounds – was loaded from a disposable cassette into the empty stock (requiring 5 seconds), from which it was fed to the breech using a linkless lever feed. The stock hinged downward for loading. The MG11 also featured a carrying handle with integral collimating sight and a folding foregrip. It was not fully developed when the program was canceled, but could have been ready by the late 1990s.



H&K G11K3 caseless assault rifle

A GUN FOR ALL OCCASIONS: THE TSIB 500 OTS-14 GROZA ASSAULT SYSTEM

A new modular design fielded by Russian special ops units, the Groza ("thunderstorm"), uses components of the Izhmash AKS-74U carbine (see *GURPS Special Ops*), but in a bullpup configuration. Available in two calibers, the gun can be set up as a rifle or carbine, with sound suppressor or integral grenade launcher; the weapon ships in a case with all possible parts. It cannot be configured for left-handed use.

TsKIB 500 OTs-14 Groza-9, 9×39mm, Russia, 1994 (Holdout -5): This was adopted by the Russian Ministry of the Interior (MVD) for the OMON special ops units. The rifle version (OTS-14-4A-01) has a carrying handle and a vertical front grip for better control. It fires Subsonic APHC ammo.

The OTs-14-4A-02 carbine has a shortened barrel without foregrip, threaded for a sound suppressor. Without the suppressor, stats are as follows: Damage 2d-1(2), 1/2D 300, Max 2,000, Wt 7.4, Holdout -4.

Fitted with the baffle sound suppressor (1.9 lbs., -4 Hearing for net AS +14, p. 16) and a 4× telescopic sight (0.8 lbs., p. 13), the carbine is

called the OTs-14-4A-03; Damage 2d-1(2), 1/2D 300, Max 2,000, Wt 10.1, Holdout -5.

The full-size rifle can integrate a modified 40mm GP-30 underbarrel grenade launcher (p. 31), which uses the same trigger. This combination is known as the OTs-14-4A-04 Groza-9/40. Loaded weight is 10.2 lbs.

TsKIB 500 OTs-14 Groza-7.62, 7.62×39mm, Russia, 1998 (Holdout -5): In 1998, a version chambered for the cheaper and more powerful cartridge of the old AK-47 (pp. HT114-115) was adopted by Russian airborne and combat engineer troops, including Spetsnaz. The OTs-14-4B-01 is slightly longer than the OTs-14-4A-01 and takes AK-47 series magazines. Ammo includes Solid (in the table), Tracer, API (3d+2(2)), and Subsonic (3d+2).

The OTs-14-4B-03 with baffle sound suppressor (-4 Hearing, for net AS +14 including Subsonic ammo bonus, p. 16) is Damage 3d, 1/2D 300, Max 2,000, Wt 9.9, Holdout -6.

The OTs-14-4B-04 Groza-7.62/40 with grenade launcher weighs 11.2 lbs. loaded and is Holdout -6.

Accuracy International AWM Super Magnum, 8.6×70mm (.338 Lapua Magnum), Great Britain, 1990 (Holdout -7): Designed by British Olympic gold medalist Malcolm Cooper, this bolt-action precision weapon is chambered for a powerful medium-caliber round. It has a heavy free-swinging barrel, synthetic adjustable thumbhole stock, adjustable bipod, 10× scope, and detachable magazine. In 2000, it was adopted by the British military as the L115A1 Long-Range Rifle. Other users include the French GIGN, French Legion Étrangère, and Italian COMSUBIN.

This weapon is also available chambered for the 7.62×66mmB (.300 Winchester Magnum) round; Damage 8d+1, SS 15, Acc 12+3, 1/2D 1,300, Max 5,000, Wt 15.8, AWt 0.8, RoF 1/2, Shots 5+1, ST 12B, Rcl -2. It is in service with Italian and Russian (FSB Spetsgruppa Alfa) special ops units.

The G22 adopted by the German Army in 1997 is a customized variant of the AWMF in 7.62×66mmB (.300 Winchester Magnum). It features a folding stock and variable 3-12× scope; 21 lbs., Holdout -6 with stock folded. Each G22 is issued with a detachable sound suppressor (+2 lbs., -4 Hearing for net AS +16 including bolt-action bonus, p. 16). It can be fitted with the

NSV80 II night sight on a P-rail in front of the scope (+2.6 lbs., p. 14). Solid Match and APHC ammunition are standard issue.

The basic AW (1990) and AWF (1992, Holdout -6 with stock folded) in 7.62×51mm NATO are currently two of the commonest sniper rifles; Damage 7d, 1/2D 1,200, Max 4,200, Wt 15, AWt 1, Shots 10+1, ST 11B, Rcl -2, Cost \$5,200. They have been adopted by military and police units in Australia, Belgium, the Czech Republic, Germany, Great Britain, Ireland, Italy, Malaysia, Mexico, the Netherlands (AWF), New Zealand, Norway (AWF), Oman, Papua New Guinea, Spain, Sweden (issued with APS ammo), and Switzerland.

Voere VEC91, 5.7×26mmCL Usel, Austria, 1991 (Holdout -6): The first small arm chambered for caseless ammunition to enter production, this rifle is unique in being intended solely for civilian users. It is a conventional bolt-action hunting weapon with expensive wooden furnishing and detachable box magazine, except for its electrically fired CL ammo and the two 1-kWs lithium photo batteries in the stock (good for 5,000 shots). The electric ignition guarantees instantaneous firing with no moving parts for increased accuracy (p. 37). It fires a HP round as standard. The VEC91 has so far not been very

successful, being too expensive for the marginal gain over a conventional weapon.

TsNIITochMash MA Vikhr, 9×39mm, Russia, 1992 (Holdout -3): The Malogabaritnyi Aytomat ("small assault rifle"), nicknamed Vikhr ("whirlwind"), is based on the AS Val, using the same Subsonic APHC rounds and magazines. Its folding stock makes it very concealable. It was redesignated the SR-3 in the late 1990s.

KAC SR-25, 7.62×51mm NATO, United States, 1993 (Holdout -7): Based on Eugene Stoner's ArmaLite AR-10, this weapon resembles a large M16 but is actually a purpose-built semiautomatic match rifle with integral folding bipod (+1 Acc if fired prone) and P-rail to mount a scope (p. 13). It is in service with special ops units such as the U.S. Army Rangers, AFSOC Pararescuemen, Danish Frømandskorps, and Israeli Sayeret Mat'kal.

In 2000, a shorter version was adopted by the U.S. Navy SEALs as the **MK11 MOD 0** Sniper Support Weapon, with P-rails, 6× scope, and detachable sound suppressor (+1.9 lbs., -4 Hearing for net AS +17, -2 Holdout, p. 16); 15.4 lbs., \$9,000.



Top to Bottom: NORINCO 95 Shi, TsKIB SOO OTs-14-4A-04 Groza-9/40

SIG SG551 SWAT, 5.56×45mm NATO, Switzerland, 1993 (Holdout -5): This is a special carbine version of the SG550 assault rifle. It has a folding stock and offers 3-round limited bursts in addition to semi- and full-auto. Magazines are made of translucent plastic and can be clipped together side by side (p. 15). The steel components are stainless and coated with plastic, while other parts are made of corrosion-resistant synthetics for use in maritime or tropical environments. It can mount the 40×46mmSR SIG GL5140 grenade launcher, which is similar to the Colt M203A1 (p. HT121). The SG551 SWAT was adopted by the GSG9 and other German police units as the G37. It is also in service with the French COFUSCO naval commandos, GIGN, and Swiss police units.

The even shorter **SG552 Commando** (1998) serves with the Spanish GEO counterterrorist unit and others; Damage 4d, SS 10, Acc 8, 1/2D 300, Max 2,500, Wt 8, Cost \$1,500, Holdout -4.

NORINCO 95 Shi, 5.8×42mm, China, 1995 (Holdout -5): The new Chinese service rifle is a bullpup design with large carrying handle. The 95 Shi ("type 1995") is chambered for a unique round and offers 3-round limited bursts in addition to semi- and fully automatic fire. Ejection can be changed from right to left. It is part of the Qing Buqiang Zu 95 ("light rifle family 95"), which includes carbine (Damage 5d-1, SS 10, Acc 8, 1/2D 400, Wt 7.6), sniper (fitted with a 3× scope, Acc 10+1), and LMG (see table) variants. It can mount the 40×46mmSR NORINCO 95 Shi underbarrel grenade launcher, a copy of the Colt M203 (p. HT121). The rifle has been in service with elite units of the People's Liberation Army since 1997.

Dan-Inject JM Standard, 11mm, Denmark, 1996 (Holdout -6): A bullpup, smoothbored air rifle firing darts for animal control, employed by wildlife conservationists, zoo veterinarians, etc. around the world. The weapon features a 4×

scope, and is powered by a 72g CO₂ cartridge (0.25 lbs., \$2.50) under the barrel, good for 40-50 shots. The 11mm dart consists of a feather-finned 0.05-oz. syringe with the sturdy 2mm needle required for large animals from lions to elephants. One dose of liquid anesthetic can be injected, although larger syringes for up to six doses are available.

Correct use of the drug with no harm to the animal (apart from the sting) requires Veterinary/TL, or other applicable Medical skill if used on humans or xenomorphs (see pp. BE87-88 for effects of a failed roll). A typical drug requires a HT-3 roll. For each point the HT roll is failed by, the animal takes 1d of Fatigue. It usually takes a few seconds or minutes to take full effect. Fatigue is recovered at 1 every 10 minutes.

H&K G36, 5.56×45mm NATO, Germany, 1996 (Holdout -5): The new assault rifle of the German Bundeswehr is a conventional weapon with folding stock, kept light and rugged by widespread use of synthetic materials. The translucent magazines can be clipped together side by side (p. 15).

Its unique features are its twin optical sights. A nonmagnifying collimating sight is used for snapshots at short ranges (SS 10, Acc 12, p. 13, requires a 26-kWs lithium battery). Beneath this is an integral 3× telescopic sight for aimed shots at longer distances (SS 12, Acc 12+1). An NSA80 II image-intensifier (p. 14) can be attached in front of the scope for use at night. Only the scope can be used when the night sight attachment is fitted; the collimating sight is obstructed. German service weapons fire semi- or full automatic, but it can also be ordered as single-fire (*G36SF*; RoF 3~) or with semi- and 2-round limited burst modes (RoF 3**). The G36 accepts the 6Kh4 knife/bayonet (p. HT99) of the AK-74, thousands of which were inherited from the former East German Army.

The export *G36E* (1997) has a simple 1.5× sight instead of the twin optics; SS 11, Acc 12, Wt 8.3, Cost \$950. It entered service with the Spanish military in 1999 and in Nepal in 2002; it is made under license in Spain.

The *G36K* (1997) assault carbine used by German military special ops units such as the KSK has a shortened barrel and removable attachment points for a tactical light (Sure-Fire, p. 12) and targeting laser (use AN/PAQ-4C, p. 13); Damage 4d+2, SS 8/10, Acc 9/9+1, 1/2D 400, Max 3,200, Wt 8.3, Cost \$1,200, Holdout -4. The Capitol Police and various U.S. SWAT teams also employ it. Police agencies in England, including those of London, adopted the semiautomatic *G36KSF* (RoF 3~) in 2001.

Even more compact than the G36K, the *G36C* (2001) approaches the handiness of the MP5A3 submachine gun; Damage 4d-1, SS 10, Acc 8, 1/2D 300, Max 2,500, Wt 7.3, Cost \$1,100, Holdout -4. It lacks the twin optics, substituting open sights and a P-rail (p. 11).

The *MG36* light machine gun (1996) is almost identical to the rifle, but has a heavier barrel and detachable folding bipod (+1 Acc if fired prone). It is delivered with a 100-round C-Mag drum (p. 15), but also takes standard magazines.

The *Selbstladebüchse 8* (1998), or SL8, is a sporting version for sale to German civilians. It has a whitish finish, thumbhole stock with adjustable cheekpiece, and match trigger, but no flash-hider or carrying handle, and uses only 10-round magazines. The SL8 features a P-rail over the full length of the top for the attachment of sights; SS 12, Acc 12, Wt 9, AWt 0.4, RoF 3~, Shots 10+1, Cost \$1,600, Holdout -6. The SL8-1 (2000) is gray, for sale in the United States.

Based on the SL8-1, the *SL9 Schalldämpfer* (2000) is a sound-suppressed short-distance sniper rifle. It fires a 7.62×37mm Subsonic HP

round (-6 Hearing for a net AS +12, p. 16), and features a bipod (+1 Acc if fired prone) and a P-rail over the full length of the top (typically fitted with a 6× scope); Damage 3d-1(0.5), SS 13, Acc 10+2, 1/2D 160, Max 2,000, Wt 10.8, AWt 0.7, RoF 3~, Shots 10+1, Cost \$2,500, Holdout -7. The SL9SD is used by the GSG9 hostage-rescue unit.

Colt M4A1, 5.56×45mm NATO, United States, 1997 (Holdout -5): With its short barrel and telescopic stock, the Colt M4A1 (CAR-15A3 R927) assault carbine is the descendent of the XM177 Commando (CAR-15A1 R609) dating to 1967 (p. HT115). Unlike the otherwise identical M4 (CAR-15A3 R920) for service with non-special-ops units, which can fire only 3-round limited bursts, the M4A1 is capable of fully automatic fire. It features a detachable carrying handle with a P-rail beneath, allowing the installation of various sights (pp. 13-14). Accessories include the Colt M203A1 grenade launcher (p. HT121), M9 knife/bayonet (p. HT99), and MK3 MOD 0 SOPMOD quick-detach baffle suppressor (+1.5 lbs., -6 Hearing for net AS +15, -1 Holdout, p. 16). The M4A1 is the main weapon of all U.S. military special ops units and a standard weapon of the U.S. Border Patrol and Secret Service and was adopted as the standard weapon for all Israeli forces from 2002.

The *CAR-15A3 LE6291* (1995) is a semi-automatic variant (RoF 3~) intended for law-enforcement agencies.

The *M4A1 SOPMOD* (1998) issued to special ops units is the M4A1 fitted with four P-rails on the handguard, allowing the attachment of accessories such as the AN/PEQ-2 IR targeting laser (p. 13) or Colt M203A2 quick-detach grenade launcher (p. HT121); Wt 7.6. Apart from all U.S. military special ops units, export versions are in service with the Australian SASR, Italian COMSUBIN, New Zealand SAS, Polish GROM, and many others.

The M4A1 displayed a tendency to overheat, and was superseded by the *M4A1HB* (CAR-15A3 R921HB) in 2000, which features a heavier barrel; Wt 7.7 or Wt 8.0 with the SOPMOD modifications.

The *M4A1 (Crane)* (similar to the CAR-15A3 R933 Commando) has an even shorter barrel and is used by the SEALs for close-quarter battle; Damage 4d, SS 10, Acc 8, 1/2D 300, Max 2,500, Wt 6.5, Holdout -4.

Manufacturers such as ArmaLite, Bushmaster, and Eagle Arms produce similar weapons; Diemaco of Canada is the only one licensed by Colt. Their *C8FT* carbine (1990) is almost identical to the M4A1. It was adopted by

Canadian (designated C8A1), Danish, and Dutch forces, usually with a C79 ELCAN scope (p. 13). The C8SFW carbine (1998) is essentially the M4A1 SOPMOD with detail improvements. It was adopted by the British SAS and SBS, the Danish Frømandskorps, and the Norwegian Jæger.

Izhmash AN-94, 5.45×39mm, Russia, 1997 (Holdout -5): This is the long-awaited replacement of the Kalashnikov series for the 21st century. Type-classified by the Russian Army in 1994 and officially adopted in 1997, the Avtomat Nikonova obrazets 1994g is currently only used by special ops units, including the SWAT-type MVD OMON troops; it has seen action in Chechnya. Externally, the rifle resembles the AK-74 (pp. HT114-115); it uses the same magazines and a similar highly effective muzzle brake, adding recoil only after every second shot or full-auto group. The whole barrel group moves backward inside the receiver with each shot, further reducing recoil. In order to increase hit probability, the AN-94 fires the first two rounds of automatic fire as a controlled burst (p. 19). If the trigger is further depressed the gun will fire full automatic at a slower rate; it fires single shots, 2-round controlled bursts, or full automatic with a 2-round controlled burst as the first group. In burst mode, the first 2-round burst has no recoil, the second 2-round burst gets -1 Rcl, and the third also has -1 Rcl. On full-auto, the first group will be a 2-round controlled burst with no recoil, and the second group will be a normal 4-shot group with -1 Rcl, followed by a 4-shot group at -1 Rcl, a 4-shot group at -2 Rcl, etc. The AN-94 has synthetic furnishings and a folding stock. It can also use the 45-round extended magazine (AWt 1.65) and 90-round drum magazine (AWt 4.55) of the Molot RPK-74 (pp. HT114-115).

Steyr Scout, 7.62×51mm NATO, Austria, 1997 (Holdout -6): This light multipurpose rifle features a smooth bolt-action, synthetic stock (gray, but available in other colors, as well as camo pattern), detachable magazine, adjustable trigger, P-rail (p. 11), and integral folding bipod (+1 Acc if fired prone). The P-rail is factory-fitted with a 2.3× long-eye relief scope, farther forward than normal, for fast acquisition, but it can accept a variety of devices. A spare magazine is stored in the stock. It is popular with hunters, and a few were used in the fighting in the former Yugoslavia.

Izhmash SV-99, .22 LR, Russia, 1999 (Holdout -6): The Snaiperskaya Vintovka obrazets 1999g is a specialized sniper rifle based on a biathlon weapon. It features a straight-pull

bolt-action with toggle joint, allowing for very quick repetition of shots. It has a fully adjustable wooden buttstock, which stores two spare magazines. The weapon was adopted by Russian Spetsnaz units and is issued with a 4× scope and detachable sound suppressor (+1 lb., -6 Hearing, for net AS +9 including bolt-action bonus, -1 Holdout, p. 16). The SV-99 is a short-range weapon, but owing to the low-report ammunition and suppressor, it is very quiet and is used to kill watchdogs and shoot out streetlights. It can be quickly disassembled and stored in a small case or bag (Holdout -3).

Similar (if less fancy) weapons such as the civilian Ruger 10/22 semiautomatic rifle (1964) can also be fitted with scopes and suppressors and are in service with special units such as the Israeli border guards' Ya'm'am and the LAPD SWAT. Such a weapon can easily be assembled at home for animal control, recreational shooting, or more sinister uses.

Mechem NTW20, 20×82mm Mauser, South Africa, 1999: This bolt-action anti-materiel rifle is chambered for a low-powered autocannon cartridge. To cope with recoil, it features an internal hydraulic/pneumatic buffer system, bipod (+1 Acc if fired prone), and large muzzle brake. It takes a detachable box magazine, and a 8× scope is standard. The 2-yard-long weapon is easily disassembled and transported in two special backpacks (weighing 26 and 33 lbs., respectively, including spare magazines). It fires API (see table) or SAPHE; Damage 12d(0.5) + 1d-3 [2d]. The NTW20 is in service with the South African Recce Commandos.

Alternatively, the gun can be set up to fire the more powerful Russian 14.5×114mm APHCI round, requiring a longer barrel; Damage 15d+2(2), 1/2D 2,000, Max 8,900, Wt 65, AWt 1.8, ST 15B, Rcl -3. The NTW14.5 is used by the Indian army.

Barrett M107, 12.7×99mm (.50 Browning), United States, 2001 (Holdout -7): The U.S. military variant of the Model 95 bolt-action bullpup rifle commercially available since 1995. The difference is its ability to be broken down into two components for better transportability. Lighter and more accurate, with a bipod (+1 Acc if fired prone) and a P-rail mounting a 10× scope, the M107 replaces the Barrett M82A1. It typically fires APHEX ammunition (see table); other ammo includes Solid (Damage 11d+1+), Match (Damage 11d+1+, +1 Acc), and API (Damage 7d+2(2)+). A sound suppressor is available (+4.5 lbs., -8 Hearing for net AS +17 including bolt-action bonus, -2 Holdout, p. 16). The original Model 95 is in service with the Spanish military.

FN F2000 assault rifle with LG1 under-barrel grenade launcher and integrated fire control system.



FN F2000, 5.56×45mm NATO, Belgium, 2001 (Holdout -5): A bullpup weapon with superior ergonomics, the Fusil 2000, marked Fabrique Nationale's entry into the 21st century. Unlike most bullpup weapons, it is truly ambidextrous; all controls are on both sides, and the casings are ejected to the front instead of to the side, achieved by channeling them through a tube parallel to the barrel. The magazines are of the M16 type. The gun has a P-rail (p. 11) on top, normally fitted with a 1.6× optic (already figured into SS and Acc). A 50-kWh lithium battery in the stock powers the electronics, including the rate controller, which has high (RoF 14*) and low (RoF 6*, Rcl -1/2) settings. The forearm can be exchanged for a replacement unit with integral targeting laser (pp. 12-13) or tactical light (p. 12), FN LG1 underbarrel grenade launcher (p. 32), or FN M303 air gun.

FN M303, 18.5mm Paintball, Belgium, 2001: This air gun is designed to attach under the barrel of the F2000 rifle (adding -2 Holdout), although it can also be fitted to other assault rifles such as the Colt M4A1 (adding -3 Holdout) or even fitted with a shoulder stock as a stand-alone weapon (Wt 5.1, Holdout -5). It uses a 72g CO₂ cartridge (0.25 lbs., \$2.50) mounted parallel to the barrel to propel 18.5mm nonlethal rounds from a 15-round drum magazine. A gas cartridge will last for 65 shots. There are several different ammo types apart from Baton, including Musk (same damage, p. UTT69), Paint (same damage, various colors and paint types), and Pepper (actually OC, an irritating pepper extract; same damage, and in addition treat the hex as if hit by Riot Gas, p. 8). Paint and Musk are for marking rioters.

SUBMACHINE GUNS AND PERSONAL DEFENSE WEAPONS

Modern submachine guns differ little from older models, although use of synthetic materials has made them lighter, and a wide selection of accessories has improved effectiveness. By 1992, following the introduction of the FN P90 (p. HT116), the classic submachine gun received competition from a new class of firearm, the *Personal Defense Weapon (PDW)*. Similar to the submachine gun in size, and developed in response to body armor, the PDW fires a round that lies between pistol and assault rifle in effectiveness.

Colt CAR-15 R635, 9×19mm Parabellum, United, 1985 (Holdout -5): This is a 9×19mm version of the CAR-15 series of assault carbines (p. 26), with a telescoping stock being standard. The similarity to the M16 family means that only a -1 penalty applies if the user is unfamiliar with this particular model. A 20-round magazine is available (AWt 0.9). With a 3-round burst limiter (RoF 3**), it is called the *CAR-15 R639*. Aimed at the law-enforcement market and intended to compete against the H&K MP5 series, it has never been as popular as the German design, despite being cheaper. Nevertheless, it has been adopted by the DEA, the U.S. Marshals' Service, the U.S. Department of Energy, and several SWAT units, including those of Atlanta, Miami, and Washington, D.C.

The *CAR-15 R633* (1987) has a shorter barrel; Damage 2d+2, Acc 6, 1/2D 150, Max 1,850, Wt 6.7, RoF 15*, Rcl -2, Holdout -4. It was

replaced in 1992 by the *R633HB* with hydraulic buffer; RoF 13*, Rcl -1.

H&K MP5/10A3, 10×25mm Auto, Germany, 1992 (Holdout -4): A variant of the popular MP5 series (pp. C64 and HT116 and *GURPS Special Ops*), this gun uses straight, clear plastic magazines and features a retractable plastic stock. (The *MP5/10A2* has a fixed stock; Wt 7.4, Holdout -5.) Offered with several trigger configurations, the standard model fires single shots, full-auto, and 2-round limited bursts. It was adopted in 1994 by the FBI for the Hostage Rescue Team and SWAT units (both types of stocks). Field agents use a semiautomatic-only (RoF 3~) version. Production ceased in 1999 in favor of the UMP.

The more common *MP5/40A3* (1992) is identical, but chambered for the .40 S&W cartridge; Damage 2d+1+, 1/2D 160, Max 1,900, Wt 7.6, AWt 1.3, ST 10, Rcl -1. It was adopted by Arizona State Troopers SWAT teams and the Capitol Police, among others.

Izhmash Bizon-2, 9×18mm Makarov, Russia, 1996 (Holdout -4): Developed by Viktor Kalashnikov (son of the legendary Mikhail Kalashnikov), the Bizon-2 is a simple blowback-operated gun based on Kalashnikov components. The major departure from other Russian designs lies in the use of a 64-round helical drum magazine

located below and parallel to the barrel. It is often used with Extra-Powerful ammunition (Rcl -2) firing either SAP (Damage 3d-1(1.25)) or HP (Damage 3d-1(0.5)) bullets. It can be bought as a semiautomatic carbine known as the *Bizon-2-04* (RoF 3~).

The *Bizon-2-03* has an integral baffle sound suppressor (-4 Hearing for net AS +14, p. 16); Wt 8.5, Holdout -5.

It is also available in other pistol chamberings. The *Bizon-2-01* fires the 9×19mm Parabellum; Damage 3d-1, 1/2D 160, Max 1,900, Wt 8, AWt 2.2, Shots 53.

H&K UMP, .45 ACP, Germany, 1999 (Holdout -4): The Universelle Maschinenpistole ("universal submachine gun") is the new-generation SMG from Heckler & Koch, designed specifically for American SWAT teams. The UMP is a light, simple blowback weapon with

mostly synthetic components. It has a folding stock and integral P-rails for a vertical foregrip, a targeting laser (pp. 12-13), a tactical light (p. 12), and an optical sight (pp. 13-14). A quick-detach baffle sound suppressor (pp. 15-16) is +1 lb., -4 Hearing for net AS +16, -1 Holdout, \$700.

Chambering the .40 S&W (1999), it has Damage 2d+1+, 1/2D 160, Max 1,900, Wt 5.8, AWt 1.2, Shots 30+1, ST 10, Rcl -1. This version entered service as the standard SMG for the DEA in 2001 and is also used by the U.S. Border Patrol.

The UMP in 9×19mm Parabellum (2000) has Damage 3d-1, 1/2D 160, Max 1,900, Wt 5.8, AWt 1.2, Shots 30+1, ST 10, Rcl -1.

The *USC* carbine (2000) in .45 ACP was introduced for civilian sales. It has a much longer barrel, a fixed thumbhole stock, and a 10-round magazine; Damage 2d+1+, SS 11, Acc 9, 1/2D 185, Max 1,800, Wt 6.7, AWt 0.7, RoF 3~, Shots 10+1, Holdout -5, Cost \$1,200.



H&K MP7 personal defense weapon

H&K MP7, 4.6×30mm, Germany, 2001 (Holdout -2): Adopted by the German KSK and the British SAS, this ambidextrous PDW looks like a large black plastic pistol, with the magazine in the grip. An extended 40-round magazine is available, but sticks well out of the grip (AWt 0.9, -1 Holdout). The action is based on the H&K G36 rifle. A folding foregrip allows the use of both hands; firing it one-handed doubles recoil. A retractable stock is used for aimed shots (+3 Acc, Guns/TL (Rifle) skill), though it is typically kept retracted in favor of the foregrip. The MP7 has only small iron sights, but a P-rail (p. 11) over the entire top of the receiver mounts other optics. The standard sight is a tiny reflex sight (0.2 lbs., p. 13), which reduces SS to 8. Ammo includes SAP (see table), HP (Damage 4d(0.5)), AP-T (Damage 4d(2)), and Frangible (Damage 4d-, 1/2D 70, Max 650).

MACHINE GUNS

Most machine guns in current service are old designs, many dating to the mid-20th century. Few new guns have been adopted in recent years, a trend expected to persist. In continued development, however, are light MGs, the majority of which are little more than heavy-barreled assault-rifle variants (see above). These all use Guns (Light Automatic)/TL skill except if mounted on a tripod or vehicle, in which case Gunner (Machine Gun)/TL would be the proper skill.

CIS 50MG, 12.7×99mm (.50 Browning), Singapore, 1988: While this gun performs like the old Browning M2HB (pp. HT119, W97), it introduced the dual feeder to the infantry MG. It allows the gunner to switch between two disintegrating belts inserted from either side of the receiver, one usually loaded with Solid, the other with APS (Damage 17d(2), Max 8,400). APHCI is also available (Damage 13d+1(2)+). Another improvement is its quick-change barrel. The barrel should be left to cool after 200 rounds have been fired in quick succession; alternatively, it can be exchanged. A spare barrel weighs 24 lbs.; it takes two men 10 seconds and a Gunner/TL skill roll to swap them. The gun mounts on the M3 tripod (44.5 lbs.) or a vehicle. In service with the Singaporean military, the 50MG is now made by STKinetics.

General Electric GAU-19/A, 12.7×99mm (.50 Browning), United States, 1991: This three-barreled, externally powered Gatling-type weapon is scaled up from the GE M134 minigun (pp. HT119-120). Developed in the early 1980s and originally known as the GECAL50, it was put into production after adoption by the U.S. Air Force as the door gun for special ops helicopters (mainly the Sikorsky MH-60G Pave Hawk). It has two selectable firing rates, RoF 16 or 33*, and fires 10-round limited bursts or full automatic (no single shots). The power requirement is 3 kW at RoF 33. The GAU-19/A feeds from disintegrating belts or unlinked ammunition tanks, depending on installation. On the MH-60G's pintle mounts, it is fed from a 750-round belt in the rear of the cabin. In the late 1990s, it was removed from the helicopter because of problems with recoil. (Its replacement is the Ramo GAU-18/A, a variant of the Browning M2 with RoF 13, pp. HT119, W130.) A more promising installation is in the chin turret of the Bell-Boeing CV-22A Osprey, in which it has RoF 20 and feeds from a 750-round linkless ammo container. There is also a mount for ground vehicles.

It is not found on a tripod. The gun fires all ammo types, including Solid, API (Damage 8d+1(2)+), APS (Damage 16d(2), Max 8,000), and APHEX (Damage 12d+2(2) + 1d-4 [1d]); it is now made by General Dynamics.

TsNIITochMash 6P41 Pecheneg, 7.62×54mmR Mosin-Nagant, Russia, 1998 (Holdout -7): The Pecheneg is a variant of the Kovrov PK design (p. HT120), with a heavier barrel and revised bipod arrangement (+1 Acc if fired prone). It was introduced in 2000 by the Russian military to replace the older weapon. Ammo includes Solid, API (Damage 5d(2)), APHCI (Damage 7d(2)), and APS (Damage 9d(2), available since 1999). A 200-round belt is 17.6 lbs. in the ammo can. The barrel should be left to cool or be exchanged after every 400 rounds fired in quick succession (this requires 10 seconds and a Guns/TL skill roll).

FN MK46 MOD 0, 5.56×45mm NATO, Belgium/United States, 2001 (Holdout -6): A product-improved variant of the FN MINIMI (p. HT120), adopted by the U.S. Navy SEALs. Teflon-coated against corrosion, it has a shortened barrel to make it more compact and maneuverable. To improve reliability, the troublesome magazine feeder was removed – the MK46 MOD 0 can only use belts, typically 100-round lengths in soft packs (AWt 3.5). The bulkier 200-round plastic container (AWt 7) tends to rattle when carried (-2 Stealth). P-rails are fitted to the receiver top and around the forearm to mount various accessories such as a night sight (p. 14), a foregrip (+0.5 lbs.), and/or the AN/PEQ-2 laser (p. 13). It has a detachable bipod (+1 Acc if fired prone; -1 lb. if removed) and can take the MK3 MOD 0 SOPMOD sound suppressor (+1.5 lbs., -6 Hearing for net AS +15, p. 16). Issue ammo includes SAP (see table) and APHC (Damage 5d(2)). The barrel should be left to cool after every 500 rounds fired in quick succession.

The similar *MINIMI-Para SPW* (1997) with retractable stock is in use with the Israeli Sayeret Mat'kal; Wt 19.3, Shots 200, Holdout -5.

H&K MG43, 5.56×45mm NATO, Germany, 2002 (Holdout -5): This LMG was introduced as a competitor to the FN MINIMI (p. HT120) in the market for squad automatic weapons. It features a folding stock, bipod (+1 Acc if fired prone), and a P-rail to accept a night sight or scope (p. 11). The barrel should be left to cool or be exchanged after every 500 rounds fired in quick succession (this requires 10 seconds and a Guns/TL skill roll). A spare barrel weighs 3.7 lbs.

GRENADE LAUNCHERS

Grenade launchers have become very popular since the single-shot Colt M79 (p. HT121) was introduced in 1961. Most modern designs mount under the barrels of rifles, and those that don't are usually multishot systems. Heavy automatic grenade launchers are also widespread.

NORINCO 87 Shi, 35×62mm, China, 1987:

This unique automatic grenade launcher has a bipod and a wooden shoulder stock and feeds either from a top-mounted 6-round (AWt 5.5) box magazine or from a 9-round (AWt 6.6) or 12-round drum. A large muzzle brake keeps recoil down. A small 2× scope is also installed. The low

weight allows it to be carried and fired by a single man, though it can also be fixed on a tripod (17.7 lbs.). In addition to HE, it also fires HEAT grenades (Damage 6d(10)). It is in service with the People's Liberation Army of China.

KBP GP-30 Obuvka, 40mm, Russia, 1989:

A Russian underbarrel grenade launcher, which mounts under the Izhmash AK-74, the Izhmash AN-94, and various Kalashnikov clones (-2 Holdout for the host weapon). The Obuvka ("shoe") is a muzzle-loader, like a mortar, and the grenade is "caseless" in that the propellant is contained in the hollow rear of the grenade. In addition to HE, Baton (Damage 1d+1(0.5), 1/2D 40, Max 280) and Smoke and Riot Gas (both have a 6-yard radius) rounds are available.

KBP GM-94, 43mm, Russia, 1994 (Holdout

-4): This weapon resembles an over-sized pump-action shotgun, with pistol grip and folding stock. Its barrel lies below a 3-round tubular magazine, which is loaded from a gate on top. Apart from HE grenades, it also fires HEAT (Damage 5d(10)), FAE (Damage 7d(0.5)), Starshell, Riot Gas (6-yard radius), Baton (Damage 1d+1(0.5), 1/2D 40, Max 280), and Rubber Shot (Damage 1d-2(0.25), 1/2D 25, Max 65, +1 to hit). The GM-94 can take 4+1 Rubber Shot shells, as they are shorter than the grenades. It is in service with the Russian Ministry of the Interior (MVD).

H&K AG36, 40×46mmSR, Germany, 1999:

The Abschussgerät, Granate 36 is an underbarrel grenade launcher that can be fitted to the G36

and G36K (-2 Holdout for the host weapon). Alternate mounts are available. It has its own pistol grip and trigger and is side-opening, to accept all lengths of grenades of this caliber, including HEDP, HE (Damage 1d+2 [2d]), Smoke, Starshell, and various less-than-lethal loads. The AG36 is in service with the German and Spanish military.



H&KMP5/10A3 submachine gun with ISTEK ISL201 under-barrel grenade launcher

ISTEK ISL201, 40×46mmSR, Great Britain, 2000:

A very compact grenade launcher which mounts under the barrel of a H&K MP5 submachine gun by replacing the forearm (-1 Holdout). A side-opening design, it fires all current grenades of its caliber. If a removable subcaliber barrel is installed, it can even fire 12-gauge shotgun shells. It is in service with London's SO19 SWAT unit.

The ISL202 is the same weapon chambered for the 37×122mmR grenades, which include Beanbag, Riot Gas, Starshell, and other less-than-lethal loads.

General Dynamics-Bofors MK47 MOD 0 Striker, 40×53mmSR, United States/Sweden, 2001:

This automatic grenade launcher is the first to include a full-solution fire control, the CDC LVS (p. 15, included in Wt but not Cost). It is lighter than comparable weapons, but must still be fitted to the M3 tripod (44.5 lbs.) or a vehicle mount. The standard round is a HEDP grenade, which can be programmed via induction ring to explode at any distance, typically in the air over a target (pp. CII65, VE191). The gunner paints the target with a laser, and the computer moves the integral HUD's reticle accordingly, taking 2 seconds; this provides +3 to Gunner/TL (GL) skill. The airburst quarters concussion damage, but fragmentation distance increases to 10 yards, and only overhead cover protects. It also fires standard HEDP, as well as MF (Damage 4d+2 (imp.), 1/2D 100, Max 245).

The Striker was adopted by USSOCOM as the MK47 MOD 0 Advanced Light Grenade Launcher (ALGL). In Europe, it is marketed by Bofors as the CG40.

FN LG1, 40×46mmSR, Belgium, 2002: This underbarrel grenade launcher was designed to be fitted to the F2000 rifle (p. 28). It is less awkward to fire than other underbarrel designs, as it is integrated into the rifle's forearm (-1 Holdout) and its trigger is placed under the rifle's trigger, instead of well in front of it.

HAND GRENADES

Offensive grenades have little or no fragmentation; their smaller casualty radius allows their use by advancing troops. Defensive grenades propel fragments farther than they can be thrown, so that the thrower needs cover for protection.

Diehl HGR DM51 Offensive/Defensive Grenade, Germany, 1976 (Holdout -1): The German army's standard combat grenade, the DM51 can be used as an offensive grenade or with a fragmentation sleeve as a defensive grenade. The body consists of the fuze, a plastic container, and 2.1-oz. PETN filler; Damage 1d+2, Wt 0.3. The plastic fragmentation sleeve is filled with several thousand steel balls.

Essentially similar designs have been developed by other nations, including Brazil, Chile, France, and Spain.

SM HG 85 Defensive Grenade, Switzerland, 1985 (Holdout 0): The Handgranate 85 is a modern baseball-shaped grenade with a 4.4-oz. RDX/TNT filler and heavy fragmentation. It has been adopted by a number of armed forces, including those of the Netherlands, Switzerland, and the United Kingdom (issued as the L109A1).

The OHG 92 (1992) is an offensive-type variant; Damage 5d+1, Wt 0.6.

Bazalt RGN-86 Offensive Grenade, Russia, 1986 (Holdout 0): The Ruchnaya Granata Nastupatel'naya obrazets 1986g is a Russian offensive grenade with 2-oz. TNT filler and controlled fragmentation. In service with Bulgaria, Iraq, Russia, and others, it can be considered an updated RGN-5 (p. B209).

Precision Ordnance M452 Stingball Riot Grenade, United States, 1992 (Holdout 0): This less-than-lethal grenade has a soft rubber body and is filled with soft rubber balls. The 1d-4 blast of the explosion can stun, and the rubber balls inflict a painful sting over a 7-yard radius.

The M452C Comboball grenade is identical, but also spreads a 3-yard radius cloud of powdered CS or OC (effects as tear gas, p. B132, or see the detailed rules in *GURPS Cops*, pp. C69-70).



Top to Bottom: Diehl HGR DM51 (offensive), Diehl HGR DM51 (defensive fragmentation sleeve), SM HG 85 (sectioned), Bazalt RGN-86 (sectioned), and Precision Ordnance M452 stingball (sectioned).

ROCKET LAUNCHERS

Apart from new warhead types (see Chapter 1), there are two new developments in this area: most designs now use scopes, night sights, or even computerized sights, and many modern launchers can be fired from enclosed spaces, making them much more useful for urban combat.

KBP RPO-A Shmel, 93mm, Russia, 1984: The RPO-A is the FAE-equipped rocket in the Shmel ("bumblebee") family of rocket launchers. In combat service since 1984, it was officially adopted in 1988 by the Russian infantry, replacing the LPO-50 flamethrower and RPO napalm launcher. It became infamous in Afghanistan (nicknamed "Satan Stick") and the fighting in Chechnya. The disposable launch tube includes a simple flip-up iron sight or a clip-on OPO-1 1× optical sight. Setup takes 30 seconds. Each RPO-A comes with a padded shoulder strap, and two can be clipped together to make a backpack. This weapon has been adopted by China and India.

Variants include the *RPO-D*, which fires a smoke rocket (32-yard radius), and the *RPO-Z*, which fires an incendiary rocket (32-yard radius; treat as WP, p. VE190).

Bazalt RPG-27 Tavolga, 105mm, Russia, 1989: The RPG-27 Tavolga ("meadow grass") is a disposable light anti-tank weapon with an MS-HEAT warhead, in service with Russian forces. The 65mm precursor charge clears away RAP; the 105mm main charge will penetrate about 26" of armor behind it.

There is a variant called the *RShG-1*, which fires a 105mm FAE rocket; Damage 6d×9(0.5).

Dynamit Nobel PZF3, 60mm, Germany, 1990: The Panzerfaust 3 is a modern rocket launcher; the rocket is contained in a disposable launching tube, to which the reusable firing unit with integral 4× scope is attached (5.1 lbs., included in table). The scope can be augmented with the NSA80 II night sight attachment (p. 14). Reloads are 27.7 lbs. with transport protection and 23.3 lbs. without. The PZF3 employs the Davis principle, which uses powdered iron as countermass instead of propellant gas, thus reducing the danger area behind the weapon – it can be safely fired indoors, provided the next wall is more than 2 yards behind. The standard 110mm overcaliber grenade has a HEAT warhead that penetrates 28" of armor steel. The PZF3 was adopted by Germany, Italy, Japan, Portugal, South Korea, and Switzerland.

The Swiss, who call it the Panzerfaust 91, produce a MS-HEAT warhead; Damage 6d×4(10) + 6d×9(10).

RPG-7: MODERN PUNCH FOR AN OLD WARRIOR

The Russian 40mm Kovrov RPG-7 (p. HT121), introduced in 1962, is still widely used and remains in production in several countries. While the launcher and its simple 2.5× scope are virtually unchanged, many improved munitions appeared in the 1980s and 1990s. These over-caliber grenades include 75mm Starshell (illuminates 2,100-yard radius for 35 seconds, Max 1,650, WPS 4.8, CPS \$40), 93mm HEAT (Dmg 6d×8(10), 1/2D 300, Max 1,000, WPS 5.7, CPS \$70), 93mm MS-HEAT (Dmg 6d×2(10) + 6d×7(10), 1/2D 300, Max 1,000, WPS 6.4, CPS \$150), 93mm HEAT-MP (Dmg 6d×7(5) + 6d×3 [6d], 1/2D 300, Max 2,200, WPS 9.9, CPS \$120), 93mm FAE (Dmg 6d×9(0.5), 1/2D 200, Max 750, WPS 10.3, CPS \$410), and 100mm EFP-HE-FT (6d×2(2) + 7d [4d], 1/2D 300, Max 1,000, WPS 7.2, CPS \$290). Even firing the simple, original 85mm HEAT grenade it has proved useful against all sorts of targets, including infantry, armored money transfer trucks, and low-flying helicopters. Despite short effective range, it remains in service with dozens of armies and even more irregular fighting groups.

The *Bunkerfaust 1* (BKF1) is based on the PZF3, but uses a warhead optimized against fortifications: a 110mm HEMAT-HE-FT over-caliber grenade, which creates a 2"-wide hole through 0.7" of steel, 14" of concrete, or 1.5 yards of sandbags; Damage 3d(5), Min 11. The 47mm HE follow-through grenade explodes 2 yards behind the armor, doing 3d+2 [4d]. The BKF1 has the same dimensions as the PZF3 and uses the same firing unit. The German army has used it since 2000.

Lockheed Martin SRAW Predator, 142mm, USA, 2002: The Short Range Assault Weapon (SRAW) is a disposable rocket launcher intended to replace the 66mm Talley M72A3 LAW, 84mm Bofors M136 LAW, and 83mm MDHC MK153 MOD 1 SMAW in use by the U.S. Marines. It features a top-attack (p. VE116) EFP warhead which is initiated 3 yards above the tank via laser and magnetic sensors. It has a fold-down 2.5× scope and can accept any night sight (p. 14). The rocket's autopilot has an autofollowing tracking function; aiming the SRAW for 2 seconds will add +3 Acc on a moving target. The Predator is a soft launch weapon that can be fired from within enclosures.



4. BODY ARMOR

*Better safe than sorry.
— Street saying*

HELMETS

Helmets have been standard issue in military forces since World War I and in riot and SWAT-type police units since the 1970s. Most cover areas 3-4 and the back of 5. Since the 1980s, resin-bonded ballistic fibers have been replacing metals as the standard material for these helmets. Some have integral visors or attachment points for add-on visors.

The old Gentex *Personal Armor System, Ground Troops (PASGT)* helmet (1982), described on p. B211, was superseded in U.S. service in the late 1990s by improved PASGT models of polyethylene or improved aramid, giving PD 4, DR 10. \$225, 2.8 lbs.

The design is made by a number of contractors in the United States and has been widely copied abroad; the French army has used an almost identical model, the F1, since the early

1990s. The Schubert Gefechtschelm (1992) used by the Bundeswehr offers the same protection, but weighs 3.3 lbs.

The British army uses the NP Aerospace *Ground Service Helmet (GS) Mk 6* (1987), a nylon design. It gives PD 4, DR 5. \$150, 2.6 lbs.

The Russian Research Institute of Special Technics *Maska-1*, available since the early 1990s, is a titanium steel helmet with a replaceable armor glass insert for vision. It has an integral radio. The *Maska-1* protects areas 3-5 from all sides with PD 4, DR 15, while the faceshield is PD 4, DR 10. \$350, 7.7 lbs.

The *Modular/Integrated Communications Helmet (MICH)* is similar to the improved PASGT helmet, with PD 4, DR 12. It doesn't protect the rear of area 5, to allow raising the head freely when prone. It allows easy mounting of communication systems and night vision devices such as the AN/PVS-14 (p. 14). The MICH was introduced in 2001 for service with all U.S. special ops units. \$250, 3 lbs.

The French have proposed a fully integrated helmet that bears a striking resemblance to the



Left: Benelli M1014 shotgun. Armor is JHRG Overt Standard Type IIIA Vest. Right: H&K MP5/10A3 submachine gun with SureFire M628F tactical light. Armor is Type II vest, PASGT helmet, and Ballistic Shield.

Combat Infantry Helmet (pp. B211, UT74). Made of advanced synthetics, it includes a sealed visor with anti-glare protection against blinding lasers and nuclear flash (p. UT20), an integral NBC filter, and electronics such as audio sensors, a wide-field HUD, and radiophones. (The radio itself is not integral.) The helmet provides PD 4, DR 15, the visor PD 4, DR 10. Intended for France's equivalent to the Land Warrior program (pp. 38-39), it has been dropped for now.

FACE PROTECTION

Visors made of transparent plastics are available to attach to many combat helmets.

Ballistic Facemasks to be worn together with helmet and body armor are in limited use with close-assault units such as some SWAT teams. They protect area 5 from the front, except for the eyes.

Protective Eyewear in the form of light glasses that protect the eyes against fragments, ricochets, and shotgun pellets has been available since the late 1980s. Most forms also protect against ultraviolet rays, and increasingly often, lasers.

In the late 1990s, the U.S. military adopted two flip-down visor designs that attach to the PASGT helmets. Both are made of clear polycarbonate and cover area 5 from the front. The *Nonballistic Face Shield* protects against thrown objects (PD 1, DR 1) and adds +1.5 lbs. The *Ballistic Face Shield* protects against handguns (PD 3, DR 10) and adds +3.4 lbs.

The American Body Armor *TAC-100R* introduced in the 1980s is a full facemask of resin-bonded aramid, leaving only small eyelits (-2 Vision). It protects with PD 4, PD 10. \$200, 1.4 lbs.

One of the many manufacturers producing ballistic lens sunglasses is Wiley-X. Their sharp-looking sunglasses, such as the *Saber* line (1988), popular with federal agents and many others, have single-piece polycarbonate lenses with full protection against UV and considerable resistance against fragments: PD 1, DR 4. \$35, 1.1 oz. They are also available with silver mirror lenses and some can be fitted with correction lenses.

The *Special Protective Eyewear, Cylindrical System (SPECS)* was introduced by the U.S. military in 1999. It consists of a frame with interchangeable wrap-around lenses. Lenses are available in clear, sunglass, and laser-protective versions. All protect the eyes with PD 1, DR 4. \$15, 1.4 oz. (including a set of clear and sunglass lenses). Laser-protective lenses are \$120.

ARMOR VESTS

Armor vests covering the human upper torso (areas 9-10, sometimes 11, and 17-18) are the most widespread armor types. They are made of ballistic nylon, aramid ("Kevlar"), or polyethylene fibers, which are treated as flexible armor against impaling attacks: PD 1, DR 2. This does not apply to areas protected by rigid inserts, nor to fibers fixed in resin, such as used for inserts. If all damage in an attack is absorbed by flexible armor, damage die rolls result in 1 point of crushing damage ("blunt trauma") per 5 or 6 rolled (pp. HT8, VE22). Armor vests are usually designed to protect against different threats:

Fragmentation vests have been standard issue for all modern military forces since the 1980s, although they were introduced as "flak jackets" on a large scale as early as the 1950s. They are generally rather ineffective against firearms, but increase survival on the battlefield considerably. Fragmentation vests tend to be somewhat bulky and difficult to conceal, generally being worn over normal clothing, but under load-bearing equipment. Many have pockets and attachment points for combat equipment such as ammunition.

Bullet-resistant vests, commonly but inaccurately called "bulletproof" vests, are light vests intended to be worn concealed under normal clothing. They are widely used by security and law-enforcement agencies (see *GURPS Cops*, p. C61). The latest designs will protect against submachine guns and even the heaviest of handguns. Vests for women are usually custom-made because of the high variability of upper body shape in women.

Both types are increasingly found with optional *inserts* or *trauma plates*, stiff packets of metal, ceramic, or ballistic fibers to increase the protection over localized areas, usually the mid-torso (areas 9-10, 17-18). Placed *inside* the armor, they also help to reduce blunt trauma damage, cushioning the impact, and catch any projectiles ricocheting off the insert.

The Gentex *Personal Armor System, Ground Troops (PASGT)* fragmentation vest (1978) is the standard U.S. military body armor, and similar vests are widely used in other forces. It has 13 layers of aramid and protects with PD 2, DR 5. \$350, 9 lbs. (average size). Holdout -3. (This is an update from *GURPS Basic Set*; see pp. B211 and HT104. The Mehler *Splitterschutzweste MIL-120* of 1987 used by the German Army weighs 5.7 lbs. and offers the same protection, as does the Israeli military's Rabintex RAV-201 of 1981, which weighs 6 lbs.)

The Russian 6BZT officer's assault vest was adopted by Soviet airborne units in the 1980s. It is a ballistic nylon vest with integral, overlapping titanium steel scales in the front and back. Locations 9-10 and 17-18 are protected by PD 4, DR 20 from the front and PD 4, DR 8 from the rear. \$350, 20.9 lbs. Holdout -3.

The British Meggitt Bristol Type 18 vest is a heavy aramid design with ceramic inserts for protection against small arms. It has been in service with the KSK, security guards, and other high-risk units of the Bundeswehr since 1995. Similar designs by the same manufacturer are in use with GSG9 and others. The basic configuration protects locations 9-11 and 17-18 with PD 3, DR 12 and weighs 12.1 lbs. Fitted with the ceramic inserts, it protects locations 9-11 and 17-18 with PD 4, DR 40. Location 11 is only protected from the front. \$2,000, 29.7 lbs. Holdout -4.

The *Interim Small Arms Protective Over-vest (ISAPO)* was adopted by the U.S. military in 1996. It is designed to augment the PASGT vest against small arms. The ISAPO is worn over a PASGT vest. The system consists of a carrier overvest with two large ceramic plates (front and back), which will provide PD 4, DR 30 for locations 9-10 and 17-18 if combined with PASGT. \$330, 16.5 lbs. (plus the basic vest). Holdout -4.

The Point Blank *Street-Jac* introduced in the 1990s is tailored to resemble a common nylon windbreaker with concealable rainhood. Although it is a complete jacket, its aramid panels only provide protection to areas 9-10 and 17-18, at PD 3, DR 12. \$1,300, 5 lbs. Holdout -1.

The Point Blank *ATF SWAT* assault vest available since the late 1990s is popular with federal agencies. The basic aramid vest protects

locations 9-10, 11 from the front, and 17-18 with PD 3, DR 12 and weighs 8 lbs. With the removable ceramic insert, it is PD 4, DR 35 for 9-10, 17-18 from the front, total weight increasing to 14.3 lbs. \$1,700 (+\$400 for the plate). Holdout -4.

The Fort *Shturm ASP-2* is a Russian assault vest, adopted in 1998 by the FSB Spetsgruppa Alfa. The basic vest protects locations 9-11 and 17-18 with PD 3, DR 12. With the two removable ceramic inserts, it provides PD 4, DR 35 for locations 9-10 and 17-18. \$800, 16.9 lbs (with inserts). Holdout -4.

The Point Blank *Outer Tactical Vest (OTV)*, or *Interceptor*, was adopted by the U.S. military in 1999 in order to gradually replace the PASGT/ISAPO combination as part of Land Warrior (pp. 38-39). The basic vest is made of aramid and protects locations 9-11 and 17-18 with PD 3, DR 12. It weighs 9 lbs. with its detachable groin protector (0.7 lbs.). With the two removable ceramic inserts, it provides PD 4, DR 35 for locations 9-10 and 17-18. \$1,500, 15.5 lbs. Holdout -4.

The *Concealable Body Armor (CBA)* (2000) was adopted by the U.S. Army for use by military police investigators and bodyguards. It protects areas 10-11 and 17-18 with PD 3, DR 12. The vest can be upgraded with small ceramic inserts, which protect only areas 17-18. The front plate weighs 3 lbs., the back plate 4 lbs.

Over the inserts, protection is PD 4, DR 35. \$365 (+\$575 for the front plate and \$760 for the back plate), 6 lbs. (13 lbs. with inserts). Holdout -1.

The Israeli military issued the *KATA Unified Ceramic Vest* in 2000. The basic aramid vest protects locations 9-11 and 17-18 with PD 3, DR 12. With the removable ceramic insert, it is PD 4, DR 35 from the front for 9-10 and 17-18. \$1,000, 8.8 lbs. (17.6 lbs. with insert). Holdout -4.

EFFECTS OF ARMOR ON PERFORMANCE

All but the lightest armor vests impair the performance of the wearer. Their weight adds to encumbrance (p. B76), with negative effects on Move and Fatigue. They increase perspiration, and poorly fitting armor may chafe. Heavy weight, often compounded by uneven distribution, results in quick fatigue, backache, and similar problems. For armor weighing more than 4 lbs., increase fatigue loss by -1 point in addition to any losses due to encumbrance, per p. B134. Full-armor suits, armored raincoats, etc. increase loss by -2.

If an armor vest is of the wrong size, the wearer may suffer -1 on DX-based skills. Fatigue may also be further increased by -1.

In the 1980s, the first body thermostat garments became available. These are typically shirts made of a fabric that wicks away body moisture into ribbed ventilating channels that allow the moisture to evaporate, thus keeping the wearer cool in hot climates and warm in cold temperatures. The fatigue costs of armor, NBC suits, etc. are reduced by 1.

TL8 microclimate cooling systems are currently under development and will be in service in the 2010s.

5. THE EDGE OF TOMORROW



"Voilà: the ZF1. It's light. The handle's adjustable for easy carrying, good for righties and lefties. Breaks down into four parts, undetectable by X-rays, ideal for quick, discreet interventions. A word on firepower: titanium recharger, 3,000-round clip with bursts from 3 to 300. With the Replay button – another Zorg invention – it's even easier. One shot . . . and Replay sends every following shot to the same location. And to finish the job: all Zorg oldies but goldies. Rocket launcher; arrow launcher with exploding or poisonous gas heads – very practical; our famous net launcher; the always efficient flame thrower – my favorite; and for the grand finale, the all-new ice-cube system!"

*– Jean-Baptiste Emmanuel Zorg
in The Fifth Element*

Although not yet *that* advanced, the technological developments of the next ten years will see the introduction of many interesting armaments.

THE ELECTRONIC GUN

Electric cartridge ignition is widespread with vehicle guns, and also seen in small arms such as the H&K P11 (p. 11) and Voere VEC91 (pp. 24-25). In hand-held weapons, it may improve accuracy, and it is especially useful combined with an electronic fire-rate controller, allowing precise selection of RoF and burst length. Such a gun might also feature a round counter, loaded round indicator, and barrel temperature and battery power display. For these features, electrically primed ammunition is usually, but not always, required (see FN F2000, p. 28).

Since the 1990s, the Australian company Metal Storm Ltd. has been developing fully electronic guns. These consist of a barrel loaded with multiple projectiles in a row, interspersed with propellant and electric primers. An electronic command ignites the propellant charge nearest to the muzzle, propelling the first projectile out of

the barrel and at the same time pressing the second projectile slightly backward, to seal the second propellant charge against premature discharge. Then the second charge is ignited, and so on. Propellant charges differ slightly, to yield consistent muzzle results.

The main advantage of this system, besides weighing less than conventional weapons, is its mechanical simplicity – there are no moving parts, which gives very high reliability and a prodigious fire rate, up to RoF 17,000 (!) per barrel.

The high RoF means that the hit probability in autofire is increased considerably. Up to 1/2D, the rounds of these *precision* bursts will effectively all hit the same spot. The minimum RoF for precision bursts is 600; to get the number of shots in a precision burst, divide RoF by 300 and round down. Beyond 1/2D, use the rules for controlled bursts (p. 19).

Some Metal Storm guns can fire high-energy bursts at still higher rates. Here the first projectile is still in the barrel when the second round is fired, increasing the pressure and thus the

Damage of the first projectile by 50%. If three rounds are fired, the Damage of the first projectile is *doubled*, and the Damage of the second increased by 50%. The minimum RoF for 2-round high-energy bursts is 8,000, for 3-round bursts 16,000!

The drawback is the limited number of shots, since the gun cannot use belts or other high-capacity ammunition feed systems.

Most Metal Storm concepts use multiple barrel arrangements, how-

ever, which can be exchanged quickly for reloading. Also, because of the increased hit probability, Metal Storm guns need less ammunition than conventional guns to achieve the same or better results. The guns use only minimal amounts of power. The applications seem endless, including infantry rifles, grenade launchers (p. 41), area denial weapons, close-in weapon systems for anti-missile defense of ships and tanks, and helicopter armaments.



*Metal Storm 40mm/80mm
gun-pod*

O'Dwyer VLE SmartGun, 9mmELP, Australia, 2004 (Holdout -1): This handgun is the brainchild of Mike O'Dwyer, inventor of the Metal Storm concept. The Variable Lethality Enforcement SmartGun is initially intended to arm law enforcement officers and the military. It consists of a synthetic frame, which holds the solid-state microprocessor and an 18-kWs 9V battery in a case that slides out of the grip like a magazine. The floating barrel assembly simply clips to the frame. A typical setup is two lethal and two nonlethal barrels – two 9mm barrels, each loaded with six Solid or HP bullets, and two 15mm barrels loaded with three Beanbag loads (Damage 1d-1(0.25)). In precision burst fire, the barrels “float” backward to cope with recoil, effectively reducing Rcl to -1/2. In 2-round high-energy bursts, the first round has Damage 3d+3. The barrels can be reusable or thrown away after all shots have been fired. Theoretically, all barrels could be of different calibers, holding different types of ammunition. A small display gives weapon status (safe/armed), remaining rounds, barrel selection, ammo selection (stun/lethal), burst selection (typically single shot, 2-round precision burst at RoF 750, 3-round precision burst at RoF 1,000, or 2-round high-energy burst at RoF 8,333), battery condition, confirmation of authorized user, and a record of attempted unauthorized operation. Optionally, these details can be announced not only on the display, but also via audible signals (typically different beeps, but the merits of a voice announcing that the gun is now “armed!” or “lethal!” are being discussed). A voice command system is being considered, to replace manual selection. User authentication systems discussed include keypad with PIN, fingerprint, palmprint, voiceprint, or biometric sensors (see *Recognition Pad*, p. UT66). Should the battery become lost or go flat, the user can operate a slide device with which to generate and store electrical energy to enable it to be fired. Prototypes were available in 2000, but production is not expected to begin prior to 2004.

THE U.S. MILITARY LAND WARRIOR

Land Warrior is a complete outfit for the modern infantry soldier, including weapons, clothing, armor, radios, optics, and load-bearing equipment designed to optimize performance on the digital-era battlefield. Selected parts of Land Warrior are currently in service, the rest to

be fielded by 2004 and upgraded continuously. Other wealthy nations such as Australia, France, Germany, and Great Britain have similar programs, but none are as ambitious (and expensive); a complete set costs about \$20,000 without weapons and weapon accessories.



O'Dwyer VLE Electronic Pistol

WEAPONS

Land Warrior primary weapons include the Colt M4 carbine (p. 26), Colt M16A4 assault rifle (p. 22), Colt M203A2 grenade launcher (p. HT121), FN M249A1 squad automatic weapon (p. HT120), and FN M240B machine gun (p. HT120). The Beretta M9 pistol (pp. C63, HT108) and Benelli M1014 shotgun (p. 21) are also issued. All longarms are fitted with P-rails (p. 11) to mount accessories such as the VLI tactical light (p. 12), the M68 collimating sight (p. 13), the AN/PAS-13B TWS (p. 14), and a weapon video camera. A Multifunctional Laser (MFL) with integral digital compass is used for targeting (pp. 12-13), rangefinding (p. VE58), and illumination (p. 12) and as an Identification of Friend or Foe (IFF) interrogator (p. VE57); it will replace current devices such as the AN/PAQ-4C (p. 13). The MFL weighs 0.7 lbs. and has an effective range of 2,750 yards. Weapons, ammunition, and accessories make up about 24 lbs. of the soldier's load.

In a few years, the OICW (pp. 40-41) will replace some weapons and accessories. By 2012, the program will integrate the MFL, video camera, and TWS with a ballistic computer in one unit.

CLOTHING AND ARMOR

This consists of camouflage Battledress Uniform (p. UTT72), leather boots (PD 2, DR 2), OTV vest (p. 36), MICH helmet (p. 34), SPECS protective eyewear (p. 35), and M45 protective mask (p. HT93). Uniform and vest feature attachment points for modular load-bearing equipment (see the MOLLE LBV in *GURPS Special Ops*). Clothing, armor, and other personal equipment make up about 55 lbs.

FAILED EXPERIMENTS: CAW AND ACR

In the search for the perfect infantry weapon, the U.S. military funded a number of small arms programs during the late 20th century. The experiments provided valuable information on various ideas, but none led to a new service weapon.

In 1979, the U.S. military formulated a requirement for a *Close Assault Weapon* (CAW), a fully automatic shotgun feeding from a box magazine.

AAI CAW, 18.5×79mmPC, United States, 1985 (Holdout -6): AAI offered a weapon of conventional appearance, firing an MF load. The high-pressure plastic-cased shell could not be fired in other shotguns, but with an adapter, the CAW could use standard 12-gauge 3-inch Magnum rounds as well (Damage 4d+2). It had an integral reflex sight (p. 13).

In 1983, the U.S. military embarked on the ambitious search for an *Advanced Combat Rifle* (ACR), intended to offer twice the damage potential of the Colt M16A2 (p. 22). Four main contenders took part in the final trials in 1990:

AAI ACR, 5.56×45mm AAI, United States, 1990 (Holdout -6): An outgrowth of AAI's experience with the 5.6×57mm AAI M19 SPIV prototype, this conventional-looking rifle fired sabotaged Flechette ammo. It could not fire standard 5.56×45mm NATO rounds. The AAI ACR fired single shots or 3-round controlled bursts from a rotating breech with three chambers. A reflex sight (p. 13) was fitted as standard.

Colt ACR, 5.56×45mm NATO, United States, 1990 (Holdout -6): A product-improved rifle based on the M16-series, this gun was optimized to fire a Duplex cartridge, but could also fire conventional 5.56×45mm ammo. It fired single shots or full automatic, and featured ergonomically improved furnishing and a retractable stock. It had a detachable carrying handle like the M16A4 (p. 22) and was trialed with the 3.4× ELCAN scope (p. 13).

H&K ACR, 4.73×33mm CLTA,

Germany, 1990 (Holdout -5): A variant of the G11 (p. 23), it differed little from that weapon, except for the lack of rails for spare magazines and a 50-round instead of a 45-round magazine.

Steyr ACR, 5.56×45mmPCTA, Austria, 1990 (Holdout -5): This completely new design resembled the Steyr AUG, but was internally quite different, using a rising chamber. It was a bullpup weapon firing PCTA (p. 3) ammunition with a sabotaged Flechette. It fired single shots or 3-round controlled bursts and featured a 1.5× sight. Ejection could be changed from right to left. This weapon was judged the most reliable.

None of the above weapons provided the (unrealistic) 100% performance increase over the M16A2 that was hoped for, and the program was subsequently terminated.



Top: Colt ACR with Leitz C79 ELCAN scope. Bottom: Steyr ACR.

H&K-Olin CAW, 18.5×76mmB, Germany/United States, 1985 (Holdout -5): H&K developed this gun, with Olin of the United States designing the ammunition. It was a bullpup-configuration weapon chambered for a high-pressure belted shotgun shell loaded with SAP Shot. Each pellet does 1d(1.25). An MF load was under development. Alternatively, it could fire conventional 12-gauge 3-inch Magnum ammunition (Damage 4d+2). Ejection could be changed from left to right. The H&K-Olin CAW had an integral 1× collimating sight for quick target acquisition.

While both designs looked promising, the program was canceled in the late 1980s and neither gun entered production. Eventually, a conventional semiautomatic shotgun, the Benelli M1014 (p. 21), was adopted.

ELECTRONICS

The heart of Land Warrior is a computer system with two processors housed in a flat metal case carried on the back (compact, hardened, TL8 small computer, Complexity 2, with Computer Navigation, Database, and Datalink). This menu-driven system coordinates all electronics: a helmet-mounted, flip-down monocular Heads-Up Display (HUD, p. UT65) serving as monitor for the video camera or TWS (allowing the soldier to look around corners); miniature GPS (p. VE57 and *GURPS Special Ops*); inertial navigation (p. VE57); digital maps (p. VE62); and one or two short-range radios with boom mikes and enhanced earphones for squad (1,400 yards) and platoon communication (5,500 yards; only for leaders). It can send and receive encrypted voice messages, sound files, E-mail, maps, and documents, as well as real-time images from the video camera or TWS. The system greatly enhances situational awareness and small unit initiative. It is controlled from a palm-sized input device worn on the chest. The computer system is intended to be upgraded to full voice control. The electronics suite is powered by two 142-kWs advanced batteries (1.6 lbs.), each lasting 12 hours and fitting in an ammo pouch. In development are a fuel cell that lasts 16 hours and an ultra-low-emission 0.012 kW diesel microturbine with fuel for 40 hours, both the same size as a battery; the aim is for a 96-hour power source. There is also an IFF, consisting of the MFL, a radio interrogator, and four laser sensors (pp. UT79, UTT12) fixed to the helmet. An AN/PVS-14 image-intensifying monocular sight (p. 14) can also be mounted on the helmet. Electronics makes up about 13 lbs.

OBJECTIVE INDIVIDUAL COMBAT WEAPON (OICW)

The OICW is the U.S. military's key infantry weapon for the next decades, replacing the Colt M203-series grenade launcher and some Colt M4 carbines and Colt M16-series assault rifles with front-line troops.

Alliant-H&K OICW, 20×28mm and 5.56×45mm NATO, United States, 2009 (Holdout -7): This design, selected in 1998, is under development by an international consortium headed by Alliant and including Contraves-Brashear of the United States and H&K of Germany. The fully ambidextrous system con-

sists of a semiautomatic 20mm grenade launcher, a detachable, underbarrel 5.56mm carbine for close defense, and a sophisticated fire control system. The grenade launcher is built in bullpup configuration and feeds from a 6-round plastic magazine; ejection can be switched from right to left. It employs recoil-damping technology originally developed for the H&K CAW (p. 39).

Alliant-H&K OICW and Land Warrior assembly



The 20×28mm HE grenade has four fuse modes: airburst, impact, delayed impact, and "window." The airburst mode is especially important, as it allows attacks on foes behind cover. The grenade explodes in the air, showering fragments from above (pp. CII65, VE191); the shooter is able to select the distance at which it explodes. The delayed impact mode is used to shoot through light doors, etc. (Damage 3d), exploding immediately behind the obstacle. The "window" mode is used to shoot inside rooms, the grenade detonating 1.5 yards behind the window. With an accessory pistol grip, the grenade launcher can be used as a stand-alone weapon; SS 12, Wt 7 (w/o sight), Holdout -5. The grenade has a minimum range of 30 yards before it will be armed. Other airburst grenades under development include Musk (p. UTT69), Riot Gas (p. 8), and Stingball (compare p. 32). A HEDP round would do 4d(10) + 1d [2d], but is not planned.

The underbarrel weapon is a short-barreled 5.56×45mm carbine based on the H&K G36 (pp. 25-26). It uses M16-type magazines. Fire modes include single shots and 2-round limited bursts. The weapon can be used on its own. It then lacks a shoulder stock, but makes a compact and light self-defense weapon; SS 10, Wt 5.1 (w/o sight), ST 10, Rcl -2, Holdout -4.

The Fire Control System on top of the weapon includes a red dot collimator with 3× magnification (+1 Acc); a video channel with 6× magnification (+2 Acc); a sensor package to measure air temperature, crosswind velocity, weapon angles, etc.; a multipurpose range-finding/targeting laser; and a ballistic computer, which computes the flight path and moves the aiming reticle accordingly. The video channel includes a video motion tracker, which automatically tracks all moving objects in the scope, allowing quick engagement of multiple targets (the same technique as on fighter aircraft!). A thermal imager is also included. The camera can be used to send the images to the soldier's HUD or via radio to the upper echelons. The shooter chooses the grenade mode and uses a laser to determine range, the grenades are programmed by an induction ring in the chamber, the computer displays the new aiming point, and the grenadier can fire the weapon (with +4 to Guns/TL (Grenade Launcher skill), all within 1 second. The FCS is responsible for about 2/3 of the weapon cost.

After several reschedules, it is now planned for introduction in 2009. Upon adoption, it will receive a proper designation in place of the unwieldy "OICW" tag.

OTHER DEVELOPMENTS

Land Warrior and OICW are not the only high-tech military weapons under development.

IMPROVED ASSAULT RIFLES

Many militaries are quite content with their basic assault rifles, although further improvements in the ammunition and optronics fields are likely. For example, while the German military expects to field the H&K G36 rifle (pp. 25-26) until at least 2020, it intends to introduce a thermal-imaging night sight attachment (mounts on current optics) with integral multifunctional laser (p. 38), digital compass, and video link to a helmet-mounted HUD, starting in 2005. The British, the Canadians, and many others also hope to field new sights for their conventional weapons. Many militaries are also introducing SAP, APHC, and APS rounds for standard issue. The French weapon may serve as an example:

GIAT FA-MAS-5.56-F3, 5.56×45mm NATO, France, 2005 (Holdout -5): This weapon is based on the FA-MAS-5.56-F1 used by the French military for decades now (see *GURPS Special Ops*). Improvements include lighter materials, an M16-type magazine, and a P-rail

(p. 11) on the receiver instead of the carrying handle. It retains the bipod. The French military wants a stabilized full-solution fire control system (FCS) not unlike those of tanks. It consists of a 3× day camera with video channel to the soldier's helmet-mounted HUD. This has an optional gated targeting mode: once the target is selected and the shooter has pressed the trigger, the weapon will fire *when and if* the bore is aligned with the target (+2 Guns/TL). An image-intensifying night-sight attachment (p. 14) is mounted on the camera at night. The FCS also includes a laser rangefinder/designator (pp. 12-13, 38) and IFF system (p. 38). The gun can fire single shots, 3-round limited bursts, or full automatic.

It may even be that the H&K G11 (p. 23) or a development of it will be resurrected. And of course, manufacturers continue to develop new weapons, such as the FN F2000 (p. 28), which combines advanced concepts with conventional technology.

FOREIGN OICW PROGRAMS

Many people remain skeptical about the basic OICW premise, and quite a few believe it will never enter service. Nevertheless, a few countries have initiated their own programs to develop such a weapon, among them Australia and France.

ADI-Metal Storm AICW, 40mmELG and 5.56×45mm NATO, Australia, 2010 (Holdout -7): The Australian army's Advanced Individual Combat Weapon consists of a 40mm electronic grenade launcher using the Metal Storm technology, which keeps it lighter than its competitors, and a conventional underbarrel weapon based on the ADI F88 AUSTEYR assault rifle, a licensed variant of the Steyr AUG (p. HT115). The fire control system is similar to the one on the OICW. A disposable reload barrel is 2.5 lbs.

GIAT AIF, 30mm and 5.56×45mm NATO, France, 2012 (Holdout -7): The Arme Individuelle Future ("future individual weapon") is a grenade launcher/rifle combination weapon to replace the GIAT FA-MAS-5.56-F3 (above) and R/M M203PI (p. HT121). The French are convinced that the minimum effective grenade caliber is 30mm. To keep weight down, they opt for a limited capacity HE component, currently only two rounds. The KE component is based on the action of the FA-MAS, firing 5.56×45mm NATO ammo. It is intended to fire APS ammo from a 40-round magazine. The initial prototypes (known as PAPOP) were very bulky and heavy; newer versions have been trimmed. The fire control system is similar to the one on the OICW.



WEAPON TABLES

Entries in these tables use the format and abbreviations on pp. 123-127 of *GURPS High-Tech, Third Edition*, with the following additions or modifications:

Weapon: Suffixes used in the caliber designations are: B – Belted Rim; CL – Caseless; CLTA – Caseless Telescoped Ammunition; CTA – Cased Telescoped Ammunition; ELG – Electronic Grenade; ELP – Electronic Pistol; PC – Plastic-Cased; PCTA – Plastic-Cased Telescoped Ammunition; R – Rimmed; SR – Semirimmed.

EWt: Empty weight.

RoF: Two asterisks (**) indicate a weapon capable of limited bursts, while a pound sign (#) indicates a weapon capable of controlled bursts (p. 19). Two pound signs (##) indicate a weapon capable of precision bursts (p. 37).

Cost: Costs in italics (\$00) are estimates for weapons and ammunition that never entered production. They will only apply for campaigns where the items are actually available other than as prototypes.

WPS: Weight per shot.

CPS: Cost per shot.

Manufacturer Abbreviations

AAI: Aircraft Armaments Incorporated (United States)

ADI: Australian Defence Industries (Australia)

AI: Accuracy International (Great Britain)

CIS: Chartered Industries of Singapore Singapore)

DN: Dynamit Nobel (Germany)

FN: Fabrique Nationale d'Armes de Guerre (Belgium)

GD: General Dynamics (United States)

GE: General Electric (United States)

GIAT: Groupement Industriel des Armements Terrestres (France)

H&K: Heckler & Koch (Germany)

KAC: Knight's Armament Corporation (United States)

KBP: Konstruktskoe Buro Priborostroeniya (Russia)

LM: Lockheed Martin (United States)

NORINCO: North China Industries Co. (China)

P&R: Phillips & Rodgers (United States)

SIG: Schweizerische Industrie-Gesellschaft (Switzerland)

SM: Schweizerische Munitionsfabrik (Switzerland)

PISTOLS

These use Guns/TL (Pistol) for single shots, Guns/TL (Machine Pistol) for burst fire.

Weapon	Malf	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
H&K P11, 7.62×36mm	Crit.	1d+1 (imp.)	10	2	100	1,700	2.6	1.1	3~	5	9	-1	\$2,000	1	7
Hämmerli 280, .22 LR	Crit.	1d+1-	11	5	75	1,300	2.3	0.1	3~	6+1	7	-1	\$1,650	3	7
Lorcin L-25, .25 ACP	16	1d-	10	0	50	1,000	0.9	0.2	3~	6+1	7	-1	\$75	3	7
TsNIITochMash P-9 Gyurza, 9×21mm	Crit.	3d-2(2)	10	3	150	2,000	2.9	0.7	3~	18+1	10	-1	\$500	1	7
Glock 27, .40 S&W	Crit.	2d+	9	1	140	1,800	1.7	0.4	3~	9+1	10	-2	\$650	3	7
Kel-Tec P-11, 9×19mm	Crit.	2d+1	9	1	140	1,800	1.3	0.4	3~	10+1	9	-1	\$315	3	7
FN Five-seveN, 5.7×28mm	Crit.	3d(1.25)-	10	3	200	1,900	1.7	0.4	3~	20+1	9	-1	\$650	1	7
Walther P99, 9×19mm	Ver.	2d+1	10	2	140	1,800	2	0.6	3~	16+1	9	-1	\$800	3	7
H&K USP Compact, .40 S&W	Ver.	2d+	10	3	140	1,800	2	0.5	3~	12+1	10	-1	\$520	3	7
Izhmekh PYA, 9×19mm	Crit.	2d+2(2)	10	3	150	1,850	2.5	0.7	3~	17+1	9	-1	\$250	1	7
O'Dwyer VLE, 9mmELP	Ver.	2d+2	10	3	150	2,000	2.2	0.45	3##	4×6	9	-1	\$1,000	1	8

REVOLVERS

These use Guns/TL (Pistol).

Weapon	Malf	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
<i>P&R Model 47 Medusa, .357 Magnum</i>															
	Crit.	3d-2	10	2	165	2,000	2.75	0.2	3~	6	11	-2	\$600	3	7
<i>KBP U-94 UDAR, 12.3x50mmR</i>															
	Crit.	1d+2+	10	1	100	500	2.5	0.38	3~	5	10	-2	\$300	3	7

RIFLES

These use Guns/TL (Rifle) for single shots, Guns/TL (Light Auto) for burst fire.

Weapon	Malf	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
<i>Colt M16A2, 5.56x45mm</i>															
	Crit.	5d(1.25)	12	11	800	3,500	8.9	1	3**	30+1	9	-1	\$800	1	7
<i>TsNIITochMash AS Val, 9x39mm</i>															
	Crit.	3d(2)	12	8	200	2,000	7	1.4	10*	20+1	9	-1	\$750	1	7
<i>AAI ACR, 5.56x45mm</i>															
	Crit.	6d(2) (imp.)	12	11	1,000	4,500	8.8	1	10#	30+1	8	-1/2	\$1,200	1	7
<i>Colt ACR, 5.56x45mm</i>															
	Crit.	3d+2 (Duplex)	12	11+2	300	2,000	10	1	10*(x2)	30+1	9	-1	\$1,000	1	7
<i>H&K G11, 4.73x33mmCLTA</i>															
	Ver.	4d+2	10	12	500	3,000	9.25	1	9#	45+1	8	-1/2	\$1,500	1	7
<i>Steyr ACR, 5.56x45mmPCTA</i>															
	Ver.	6d+1(2) (imp.)	10	11	1,000	4,500	7.9	0.7	3#	24+1	8	-1/2	\$1,300	1	7
<i>AI AWM, 8.6x70mm</i>															
	Ver.	9d+1	15	12+3	1,500	5,500	17.5	0.8	1/2	4+1	13B	-3	\$5,650	4	7
<i>Voere VEC91, 5.7x26mmCL</i>															
	Ver.	5d(0.5)	12	11	500	3,000	6.2	0.2	1/2	5+1	9	-1	\$2,500	4	7
<i>TsNIITochMash MA Vikhr, 9x39mm</i>															
	Crit.	3d-1(2)	10	6	200	2,000	5.8	1.4	10*	20+1	9	-1	\$500	1	7
<i>KAC SR-25, 7.62x51mm</i>															
	Crit.	7d	15	11+3	1,200	4,200	14.4	0.8	3~	20+1	12	-2	\$2,500	4	7
<i>SIG SG551 SWAT, 5.56x45mm</i>															
	Crit.	4d+2(1.25)	11	9	500	3,200	8.7	1	11**	30+1	9	-1	\$1,500	1	7
<i>TsKIB SOO OTs-14, 9x39mm</i>															
	Crit.	3d(2)	10	7	400	2,500	7.3	1.4	11*	20+1	9	-1	\$500	1	7
<i>NORINCO 95 Shi, 5.8x42mm</i>															
	Crit.	5d+1	11	8	500	3,600	8.6	1.4	11**	30+1	9	-1	\$360	1	7
<i>Dan-Inject JM Standard, 11mm</i>															
	Crit.	1d (imp.)	13	10+2	45	145	6.6	0.02	1/4	1	9	-1	\$1,200	5	7
<i>H&K G36, 5.56x45mm</i>															
	Crit.	5d(1.25)	12	12+1	800	3,500	9	1.1	12*	30+1	9	-1	\$1,100	1	7
<i>Colt M4A1, 5.56x45mm</i>															
	Crit.	4d+2(1.25)	11	9	500	3,200	7.25	1	15*	30+1	9	-1	\$900	1	7
<i>Izhmash AN-94, 5.45x39mm</i>															
	Ver.	5d	12	8	500	3,500	9.7	1.2	10#	30+1	9	-1/2	\$1,150	1	7
<i>Steyr Scout, 7.62x51mm</i>															
	Crit.	7d	11	11+1	1,000	4,200	6.5	0.5	1/2	5+1	12	-2	\$2,000	4	7
<i>TsKIB SOO OTs-14, 7.62x39mm</i>															
	Crit.	5d+1	11	7	500	2,500	8.6	1.8	12*	30+1	10	-2	\$500	1	7

RIFLES (CONTINUED)

Weapon	Malf	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
Izhmash SV-99, .22 LR	Crit.	1d+2-	11	7	175	1,700	8.4	0.15	1	5+1	7	-1/2	\$450	1	7
Mechem NTW20, 20x82mm	Crit.	8d(2)++	20	12+2	1,500	5,000	59.2	2	1/2	3+1	13B	-3	\$5,000	0	7
Barrett M107, 12.7x99mm	Crit.	11d+1(2)+1d-4[1d]	17	13+3	1,500	7,100	22.5	2	1/2	5+1	13B	-4	\$7,500	2	7
FN F2000, 5.56x45mm	Crit.	5d-2(1.25)	11	10	500	3,200	8.5	1	6*/14*	30+1	9	-1	\$900	1	7
FN M303, 18.5mm Paintball	Crit.	1d-3(0.25)	12	5	40	110	4.5	0.5	3~	15	7	-1	\$500	5	7
GIAT FA-MAS-5.56-F3, 5.56x45mm	Crit.	5d(1.25)	11	11+1	800	3,500	12	1	16**	30+1	9	-1	\$1,500	1	7
Alliant-H&K OICW, 5.56x45mm	Crit.	4d-1(1.25)	12	8+2	300	2,500	14	1	3**	30+1	10	-1	\$12,000	0	8
GIAT AIF, 5.56x45mm	Crit.	6d+1(2)	12	11+2	1,000	4,500	15	1.3	16**	40+1	10	-1	\$15,000	1	8
ADI-Metal Storm AICW, 5.56x45mm	Crit.	5d(1.25)	12	11+2	800	3,500	12	1	11*	30+1	10	-1	\$10,000	0	8

SHOTGUNS

These use Guns/TL (Shotgun) for single shots, Guns/TL (Light Automatic) for burst fire.

Weapon	Malf	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
AAI CAW, 18.5x79mmPC	Crit.	4d (imp.)	11	7	75	250	10.8	1.8	7*	12+1	12	-2	\$700	1	7
H&K CAW, 18.5x76mmB	Crit.	5d(1.5)	10	7	75	250	11.7	2.15	4*	10+1	12	-2	\$1,000	1	7
Franchi SPAS 15, 12g	Crit.	4d	12	5	50	125	9.7	1.3	3~	6+1	12	-2	\$700	4	7
TsNIITochMash KS-23 Drozt, 23x75mmR	Crit.	5d	12	5	50	150	9.1	0.6	2~	3+1	13	-4	\$400	4	7
Benelli M1014, 12g	Crit.	4d	12	5	50	125	8.4	0.85	3~	6+1	11	-2	\$950	4	7

SUBMACHINE GUNS

These use Guns/TL (Light Auto) for burst fire, Guns/TL (Rifle) for single shots.

Weapon	Malf	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
Colt CAR-15 R635, 9x19mm	Crit.	3d-1	10	8	160	1,900	7	1.3	15*	32+1	10	-1	\$650	1	7
H&K MP5/10A3, 10x25mm	Crit.	3d+	10	8	200	2,200	7.8	1.5	13**	30+1	11	-2	\$1,500	1	7
Izhmash Bizon-2, 9x18mm	Crit.	2d	10	6	120	1,800	7.4	2.25	11*	64+1	8	-1	\$300	1	7
H&K UMP, .45 ACP	Crit.	2d+1+	10	8	190	1,750	5.8	1.3	10*	25+1	11	-2	\$900	1	7
H&K MP7, 4.6x30mm†	Crit.	4d(1.25)-	9	5	200	2,000	3.9	0.5	15*	20+1	7	-1/2	\$800	1	7

† With the stock retracted, use Guns/TL (Machine Pistol) for burst-fire, Guns/TL (Pistol) for single shots.

LIGHT MACHINE GUNS

These use Guns/TL (Light Auto) for burst-fire, Guns/TL (Rifle) for single shots.

Weapon

Mal	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
<i>H&K MG11, 4.73×33mmCLTA</i>														
Ver.	5d	12	12	500	3,000	15.4	3.7	10#	300	9	-1/2	\$2,500	1	8
<i>NORINCO 95 Shi, 5.8×42mm</i>														
Crit.	5d+1	11	10	500	3,200	11.7	2.9	11*	75+1	10B	-1	\$480	1	7
<i>H&K MG36, 5.56×45mm</i>														
Crit.	5d(1.25)	12	12+1	800	3,500	13.9	5	12*	100+1	10B	-1	\$1,400	1	7
<i>TsNIITochMash 6P41 Pecheneg, 7.62×54mmR</i>														
Crit.	7d	17	11	1,000	4,200	27.3+16.5	8.6	11	100	12B	-2	\$800	1	7
<i>FN MK46 MOD 0, 5.56×45mm</i>														
Ver.	5d(1.25)	14	9	500	3,200	16	3.5	12	100	10B	-1	\$4,800	1	7
<i>H&K MG43, 5.56×45mm</i>														
Ver.	5d(1.25)	15	11	800	3,500	25.5	6.6	12	200	10B	-1	\$4,500	1	7

HEAVY MACHINE GUNS

These use Gunner/TL (Machine Gun).

Weapon

Mal	Damage	SS	Acc	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
<i>CIS 50MG, 12.7×99mm</i>														
Crit.	13d+1+	20	15	1,800	7,400	66+44.5	2×32	10	2×100	32T	-1	\$12,000	0	7
<i>GE GAU-19/A, 12.7×99mm</i>														
Ver.	12d+2+	20	14	1,500	7,100	74	195	16**/33**	750	41T	-2	\$25,000	0	7

GRENADE LAUNCHERS

These use Guns/TL (Grenade Launcher).

Weapon

Mal	Damage	SS	Acc	Min	1/2D	Max	Wt	AWt	RoF	Shots	ST	Rcl	Cost	LC	TL
NORINCO 87 Shi, 35×62mm††															
Crit.	1d+2 [3d]	19	8+1	30	600	1,650	36.9+17.6	10.5	8*	12	12B	-1	\$1,000	0	7
KBP GP-30 Obuvka, 40mm															
Crit.	1d+2 [3d]	14	5	11	150	460	+3.3	0.56	1/4	1	11	-1	\$250	0	7
KBP GM-94, 43mm															
Crit.	2d [3d]	14	5	11	150	440	13	2.4	2~	3+1	11	-1	\$600	0	7
H&K AG36, 40×46mmSR															
Crit.	4d(10) + 1d+1 [3d]	14	5	30	150	440	+3.8	0.5	1/4	1	11	-1	\$1,500	0	7
ISTEC ISL201, 40×46mmSR															
Crit.	4d(10) + 1d+1 [3d]	12	4	30	150	440	+3.15	0.5	1/4	1	12	-1	\$1,000	0	7
GD-Bofors MK47 MOD 0 Striker, 40×53mmSR ††															
Ver.	6d(10) + 1d+2 [3d]	20	10+3	30	1,650	2,400	78.1+44.5	30.8	5*	32	37T	-1	\$20,000	0	7
FN LG1, 40×46mmSR															
Crit.	4d(10) + 1d+1 [3d]	14	5	30	150	440	+2.7	0.5	1/4	1	11	-1	\$800	0	7
Alliant-H&K OICW, 20×28mm															
Crit.	1d+1 [3d]	12	10+2	30	1,000	2,200	14	1.6	2~	6	11	-1	\$12,000	0	8
GIATA IF, 30mm															
Crit.	5d(10) + 1d [3d]	12	10+2	30	900	2,000	15	0.8	2~	2	11	-2	\$15,000	0	8
ADI-Metal Storm AICW, 40mmELG															
Crit.	6d(10) + 1d+1 [3d]	12	10+2	30	900	2,000	12	2.5	2~	5	11	-2	\$10,000	0	8
†† Use Gunner/TL (Grenade Launcher).															

†† Use Gunner/TL (Grenade Launcher).

HAND GRENADES

These use Throwing.

Weapon	Malf	Damage	Wt	Fuze	Cost	LC	TL
Diehl DM51	Crit.	1d+2 [3d]	0.9	5 seconds	\$30	0	7
SM HG 85	Crit.	4d [3d]	1	4 seconds	\$25	0	7
Bazalt RGN-86	Crit.	1d+2 [1d]	0.6	4 seconds	\$15	0	7
Precision Ordnance M452 Stingball	Crit.	1d-4 [1d-2]	0.5	2 seconds	\$25	1	7

ROCKET LAUNCHERS

These use Guns/TL (LAW).

Weapon	Malf	Damage	SS	Acc	Min	1/2D	Max	Wt	AWt	RoF	Shots	ST	Cost	LC	TL
KBP RPO-A, 93mm															
Crit.		6d×9(0.5)	14	8	20	600	1,100	24.2	-	-	1	9	\$3,600	0	7
Bazalt RPG-27 Tavolga, 105mm															
Crit.		6d×4(10) + 6d×9(10)	14	6	30	220	1,000	17.6	-	-	1	9	\$1,500	0	7
Dynamit Nobel PZF3, 60mm															
Crit.		6d×9(10)	16	10+2	15	600	1,200	28.4	27.7	1/5	1	13	\$3,000	0	7
LM SRAW Predator, 142mm															
Crit.		6d×9(2)	14	10+1	20	-	650	22	-	-	1	9	\$5,000	0	8

AMMUNITION WEIGHTS AND COSTS

Handguns, SMGs, and PDWs

Round	WPS	CPS
.25 ACP (6.35×16mmSR)	0.012	\$0.3
.357 Magnum (9×33mmR)	0.035	\$0.5
.357 SIG (9×22mm)	0.029	\$0.4
.38 Special (9×29mmR)	0.033	\$0.3
.40 S&W (10×21mm)	0.035	\$0.3
.45 ACP (11.43×23mm)	0.047	\$0.3
4.5mm (.177) airgun pellet	0.0011	\$0.02
4.6×30mm Royal Ordnance	0.014	\$0.15
5.7×28mm Fabrique Nationale	0.014	\$0.4
9×17mm Kurz (.380 ACP)	0.021	\$0.2
9×18mm Makarov	0.022	\$0.2
9×19mm Parabellum	0.026	\$0.3
9×21mm Gyurza	0.024	\$0.4
10×25mm Auto	0.029	\$0.3

Shotguns

12g 2.75" (18.5×70mmR)	0.15	\$0.6
12g 3" Magnum (18.5×76mmR)	0.18	\$0.9
18.5×76mmB Olin	0.17	\$1
18.5×79mmPC AAI	0.092	\$1.5
23×75mmR	0.21	\$1

Rifles, MGs, and Autocannons

.22 Long Rifle (5.6×16mmR)	0.0077	\$0.03
4.73×33mmCLTA Dynamit Nobel	0.011	\$0.75
5.45×39mm M-74	0.024	\$0.3

Rifles, MGs, and Autocannons

5.56×45mm AAI	0.02	\$0.5
5.56×45mm NATO (.223 Rem)	0.028	\$0.5
5.56×45mmPCTA Steyr	0.011	\$0.5
5.7×26mmCL Usel	0.011	\$2
5.8×42mm 87 Shi	0.028	\$0.6
7.62×37mm H&K	0.044	\$0.5
7.62×39mm M-43	0.036	\$0.5
7.62×51mm NATO (.308 Win)	0.055	\$1
7.62×54mmR Mosin-Nagant	0.052	\$1
7.62×66mmB (.300 Win Mag)	0.068	\$1.5
8.6×70mm (.338 Lapua Mag)	0.096	\$1.65
9×39mm	0.051	\$0.75
11mm Syringe with 2mm needle and 0.05 fl.oz. filler	0.02	\$12
12.7×99mm (.50 Browning)	0.25	\$1.5
14.5×114mm Vladimirov	0.44	\$1.75
18.5mm Paintball	0.019	\$0.5
20×82mm Mauser	0.45	\$1.75

Grenade Launchers

20×28mm OICW	0.21	\$20
30mm AIF	0.4	\$25
35×62mm 87 Shi	0.65	\$10
37×122mmR	0.37	\$5
40mm VOG-25	0.56	\$10
40×46mmSR	0.5	\$10
40×53mmSR	0.75	\$12
43mm GM-94	0.6	\$10

The works listed here are useful for further research or visualization of the items described. Only the most important or most widely available sources are listed.

Catalogs of manufacturers or retailers of both guns and equipment are also very good and usually highly detailed sources. These can often be ordered for free or a small charge, or downloaded from the Internet.

BOOKS

The following books provide useful real-world information on the equipment described in this book.

Dockery, Kevin. *Compendium of Modern Firearms* (R. Talsorian Games, 1991). Written for gamers, the Compendium is very useful, with well-researched data on many weapons. Owing to the year of publication, it is a bit outdated.

Gander, Terry (editor). *Jane's Infantry Weapons 2001-2002* (Jane's Information Group, 2001). Annually published virtual one-stop resource for infantry weaponry. Incredibly useful tome with hundreds of entries, but very expensive. Check your library. Older issues as well as *Jane's Ammunition Handbook*, *Jane's Personal Combat Equipment*, *Jane's Police and Security Equipment*, and the periodicals *Jane's Defence Weekly* and *Jane's International Defence Review* are also helpful.

Gray, Randal, and Harding, David (editors). *Weapons: An International Encyclopedia from 5000 B.C. to A.D. 2000, Revised Edition* (Diagram, 1990). While it only depicts some of the specific designs in this book, this encyclopedia is a great resource for explanations on how weapons, ammo, and equipment in general work. A must-have for any gamer's library.

Hogg, Ian. *Greenhill Military Manuals* (Greenhill/Stackpole, 1994-2001). A loose series of small books on topics such as *Ammunition*, *Counter Terrorist Equipment*, *Infantry Support Weapons*, *Small Arms: Pistols and Rifles*, *Submachine Guns*, and *The World's Sniping Rifles*. Generally good information and illustrations.

Hogg, Ian. *Military Small Arms Data Book* (Greenhill/Stackpole, 1999). Essential data on small arms from 1870 to 1999, quite complete, but with few illustrations. To be used with other sources.

Hogg, Ian. *Jane's Guns Recognition Guide* (HarperCollins, 2000). A very handy pocketbook, much cheaper than other *Jane's*, while providing enough information for most game situations.

Miller, David. *Illustrated Dictionary of 20th-Century Guns* (Salamander, 2001). Very good value. A neat pocketbook with scores of fully illustrated entries, from handguns to heavy machine guns.

Walter, John. *Greenhill Military Manuals* (Greenhill/Stackpole, 2000-2001). Also part of the above-mentioned series, superior in some regards to Hogg's books. Currently include *Modern Machine-Guns* and *Modern Military Rifles*.

FILMS

The following films have been selected almost solely on basis of their display of modern firearms described in this book . . .

Aliens (James Cameron, 1986). See a less sophisticated variation on the OICW concept in action. A popular image of future warfare (without most of the modern electronics), and dead cool.

Demolition Man (Marco Brambilla, 1993). The futuristic beam weapon (!) that villain Simon Fenix steals from the museum is a H&K G11 prototype.

Heat (Michael Mann, 1995). For the bank robbery, Neil and Chris use Colt CAR-15A2 R733 Commando carbines, smaller cousins to the M4A1. For the first half of the film, Neil also carries an H&K USP pistol. Some of the LAPD officers are armed with the Colt AR-15A2 R702.

Judge Dredd (Danny Cannon, 1995). Judge Dredd's Lawgiver pistol has some of the features of the O'Dwyer VLE SmartGun.

Resident Evil (Paul Andersen, 2002). Watch some ineffectual use of H&K G36Ks and MP5KA4s with collimator sights. The team leader also has an AG36 below his carbine, but never gets a chance to fire it . . .

Les Rivières Pourpres (*Purple Rivers*) (Mathieu Kassovitz, 2000). Inspector Kerkerian carries a Glock 26.

Ronin (John Frankenheimer, 1998). Sam uses a SIG SG551 and H&K HK69A1 Granatpistole during the ambush in La Turbie, and later a FN MINIMI-Para with retractable stock. The Nice SWAT team fields the Franchi SPAS 15. Bad guy Seamus is armed with a Kel-Tec P-11.

Tomb Raider (Simon West, 2001). See the H&K G36KE and UMP (both with suppressors) and Walther P99 in the hands of the bad guys, as well as Lara Croft's own H&K USP Match pistols.

Tomorrow Never Dies (Roger Spottiswoode, 1997). Bond first handles a Walther P99: "Ah! The new Walther. I asked Q to get me one of these."

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Zoo keeper rifle, 25.

LOCK AND LOAD!

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