

ROCKET LAUNCHERS

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Mod 1974 FMK-1 Mod 1

Notes: Used only by Argentina and Guatemala, this is heavy recoilless rifle based on the old US M-40 recoilless rifle. It is a heavier, but more compact weapon, with more advanced sights and balancing, and able to be vehicle-mounted or fired from an integral trailer. The trailer mount may be raised or lowered to fire from a raised position, medium position, or low position. Instead of the .50 caliber spotting rifle, the Mod 1974 uses a spotting rifle that fires special 7.62mm tracer ammunition that causes a flash when the target is hit, and is fed from a magazine containing five rounds. The spotting rifle is capable of automatic fire. The Mod 1974 may fire M-40 recoilless rifle ammunition, but better results are obtained when using the four rounds specifically designed for it (the Argentine rounds listed below, which cannot be fired from the M-40).

Weapon	Caliber	Weight	Length	Price
106mm Mod 1974 FMK-1 Mod 1	105mm (106mm)	\$13200	4.08 meters	\$13200

Ammunition	Caliber	Weight	Price
3A-HEAT-T	106mm	14.5 kg	\$489
Argentine HE	106mm	16.6 kg	\$249
Argentine M-1968 HE	106mm	15.6 kg	\$234
Argentine HEAT-ECH	106mm	11.1 kg	\$208
Argentine FMK-12 HEAT	106mm	14.7 kg	\$331
Chinese HE	106mm	21.6 kg	\$324
Chinese HEAT	106mm	15.6 kg	\$351
German HE-FRAG	106mm	8 kg	\$120
Israeli I-HEAT	106mm	13.37 kg	\$201
M-581 APERS	106mm	18.73 kg	\$1405
M-344A1 HEAT	106mm	16.89 kg	\$380
M-346 HESH	106mm	16.95 kg	\$445
RAT-700 HEAT-T	106mm	15.7 kg	\$530
Spanish M-DN-11 FRAG	106mm	16.4 kg	\$246

Weapon	Reload	Range	IFR	Round	Damage	Pen
Mod 1974 FMK-1 Mod 1	7	350	2460	3A-HEAT-T	C15 B20	96C/120C
	8	350	2460	Argentine HE	C17 B30	9C
	8	350	2460	Argentine M-1968 HE	C20 B30	9C
	6	355	2500	Argentine HEAT-ECH	C12 B18	40C

	7	415	2875	Argentine FMK-12 HEAT	C15 B20	120C
	11	335	2355	Chinese HE	C22 B35	9C
	8	350	2460	Chinese HEAT	C11 B20	73C
	4	350	2460	German HE-FRAG	C15 B40	5C
	7	385	2710	Israeli I-HEAT	C13 B20	99C
	7	215	Nil	M-581 APERS	B30x65	1-Nil
	8	350	2460	M-344A1 HEAT	C11 B20	78C
	8	350	2460	M-346 HESH	C14 B25	62C
	7	350	2460	RAT-700 HEAT-T	C15 B20	133C/173C
	8	345	2430	Spanish M-DN-11 FRAG	C13 B38	5C

MPA-75

Notes: This is a twin tube disposable rocket launcher designed to be both a bunker buster and antipersonnel weapon, with emergency use against armored vehicles. It is a twin-tube rocket launcher with a single sight and both rockets are fired at the same time. It is basically a twin-tube LAW-type weapon, with the empty weapon being discarded after launch.

Twilight 2000 Notes: Only in the Twilight 2000 world did this launcher see any sort of widespread use.

Weapon	Caliber	Weight	Length	Price
MPA-75	75mm	2.6 kg	510mm	\$233

Weapon	Reload	Range	IFR	Round	Damage	Pen
MPA-75	0	96	Nil	HEDP-FRAG	C5 B32	36C

RL-83 Blindicide

Notes: This is a light rocket launcher used by Belgium until the late 1980s. The Blindicide can be collapsed for carrying and storage. It is basically an updated version of the US M-20A1 Super Bazooka. A large number of these weapons found their way into the hands of military, paramilitary, and terrorist forces from Lebanon to the Horn of Africa.

Twilight 2000 Notes: These weapons were taken back out of storage and issued to Belgian troops during the Twilight War. Later, they were used by Belgian troops fighting both under the French flag and opposing it.

Weapon	Caliber	Weight	Length	Price
RL-83 Blindicide	83mm	8.4 kg	1.7 meters	\$800

Ammunition	Caliber	Weight	Price
HE	83mm	2.7 kg	\$44
HEAT	83mm	2.7 kg	\$65
HEDP	83mm	2.7 kg	\$54
ILLUM	83mm	2.7 kg	\$44
Smoke	83mm	2.7 kg	\$44
WP	83mm	2.7 kg	\$85

Weapon	Reload	Range	IFR	Round	Damage	Pen
RL-83 Blindicide	1	105	Nil	HE	C12 B35	6C
	1	105	Nil	HEAT	C8 B30	64C
	1	105	Nil	HEDP	C10 B32	35C
	1	105	Nil	ILLUM	(B715)	Nil
	1	105	Nil	Smoke	C2 (B10)	Nil
	1	105	Nil	WP	C2 B20	Nil

RLC-83 Compact Launcher

Notes: As it sounds, this is basically a shorter version of the Blindicide above. It was not adopted by the Belgians or anyone else's military, but has seen action in the Middle East, usually in the hands of irregulars.

Weapon	Caliber	Weight	Length	Price
RLC-83 Compact Launcher	83mm	6.2 kg	1.2 meters	\$687

Ammunition	Caliber	Weight	Price
HE	83mm	2.7 kg	\$44
HEAT	83mm	2.7 kg	\$65
HEDP	83mm	2.7 kg	\$54
ILLUM	83mm	2.7 kg	\$44
Smoke	83mm	2.7 kg	\$44
WP	83mm	2.7 kg	\$85

Weapon	Reload	Range	IFR	Round	Damage	Pen
RLC-83 Compact Launcher	1	88	Nil	HE	C12 B35	6C
	1	88	Nil	HEAT	C8 B30	64C
	1	88	Nil	HEDP	C10 B32	35C
	1	88	Nil	ILLUM	(B715)	Nil
	1	88	Nil	Smoke	C2 (B10)	Nil
	1	88	Nil	WP	C2 B20	Nil

L-6 Wombat

Notes: An obsolete British antiarmor weapon, the Wombat was replaced by the Milan and other guided missiles. It remains in service with a number of armies around the world, such as some former British colonies. The Wombat uses a telescopic sight and a .50 spotting rifle (the same as on the US M40A2). It uses a wheeled carriage similar to that of many recoilless rifles of such size.

Weapon	Caliber	Weight	Length	Price
L-6 Wombat	120mm	308 kg	3.5 meters	\$11450

Ammunition	Caliber	Weight	Price
HE	120mm	28 kg	\$420
HEAT	120mm	28 kg	\$630
HESH	120mm	28 kg	\$735

Weapon	Reload	Range	IFR	Round	Damage	Pen
L-6 Wombat	7	360	1100	HE	C22 B35	11C
	7	360	1100	HEAT	C14 B20	89C
	7	360	1100	HESH	C18 B28	71C

LAW-80

Notes: This is the primary short range antiarmor weapon for British troops. It uses a large warhead for a LAW-type weapon, and is very effective against armor from nearly any angle of impact. The LAW-80 is disposable and issued as a round of ammunition. To assist in aiming the weapon, the LAW-80 includes a semiautomatic 9mm spotting rifle that uses tracer rounds that produce a bright flash upon impact. The result is that every successful hit with the spotting rifle allows the firer a +1 to hit, up to +3. The spotting rifle has a 5-round magazine. The launch tube is carried collapsed and is extended before firing. In addition to the British, Jordan and Oman use the LAW-80.

Weapon	Caliber	Weight	Length	Price
LAW-80	94mm	10 kg (Complete)	1 meter (Stowed), (Firing) 1.5 meters	\$269

Weapon	Reload	Range	IFR	Round	Damage	Pen
LAW-80	0	125	Nil	HEAT	C10 B30	114C

Type 95 Queen Bee

Notes: This is a new Chinese rocket launcher that was began production in the late 1990s. It is similar to the DARD in concept, being a large-caliber rocket launcher with a snap-on projectile module that goes into the rear of the launcher unit. The Queen Bee may use Chinese made thermal sights or any type of Bloc-type night vision sights. Two warheads are available. The launch tube is made from low-weight carbon fiber.

Twilight 2000 Notes: This weapon went into production just before the Russian invasion, supplies were never great, but low-rate production continued until well after the Twilight War.

Merc 2000 Notes: This weapon was not exported, except to (strangely enough) Germany.

Weapon	Caliber	Weight	Length	Price
Type 95 Queen Bee	120mm	4.5 kg	2.4 meters	\$725

Ammunition	Caliber	Weight	Price
HEAT-T	120mm	12 kg	\$304
HEDP	120mm	12 kg	\$356

Weapon	Reload	Range	IFR	Round	Damage	Pen
Queen Bee	3	205	Nil	HEAT-T	C19 B45	110C/137C
	2	200	Nil	HEDP	C29 B55	74C

Type PF-89

Notes: The Type PF-89 is a disposable antitank weapon designed for one-man use. The launcher is made of fiberglass and has a pistol grip with trigger. It is found only in Chinese service. It is basically a Chinese counterpart to the US M-72 or Russian RPG-18.

Weapon	Caliber	Weight	Length	Price
Type PF-89	80mm	3.7 kg (Complete)	900mm	\$290

Weapon	Reload	Range	IFR	Round	Damage	Pen
Type PF-89	0	90	Nil	HEAT	C8 B30	68C

Type 70-1

Notes: This is a light antitank weapon intended for one-man use against light and medium armor. It is comprised of a two-part launch tube of fiberglass, with a simple pistol grip and sight. The rear of the launcher is removed for loading; the round is placed inside and the rear section replaced around the rocket. The rocket is very light, and the Chinese use the Type 70-1 more as a bunker buster or antipersonnel weapon than an antiarmor weapon.

Weapon	Caliber	Weight	Length	Price
Type 70-1	62mm	2.03 kg	1.2 meters	\$600

Ammunition	Caliber	Weight	Price
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HEAT	62mm	1.18 kg	\$27
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Weapon	Reload	Range	IFR	Round	Damage	Pen
Type 70-1	1	65	Nil	HEAT	C4 B20	43C

Type 78

Notes: This Chinese weapon is an improvement of the Russian B-10. Primary improvement in the weapon is in the area of weight, which has been considerably lightened. The weapon is also simpler and cheaper to produce. Sighting is done through a 2.5x telescopic sight with illuminated stadia for night use. In addition to China, the Type 78 is likely to be encountered throughout Southeast Asia, South America, Central America, and Afghanistan.

Weapon	Caliber	Weight	Length	Price
Type 78 Recoilless Rifle	82mm	34.1 kg	1.6 meters	\$2950

Ammunition	Caliber	Weight	Price
FRAG-HE	82mm	5.1 kg	\$191
HEAT	82mm	4.35 kg	\$198

Weapon	Reload	Range	IFR	Round	Damage	Pen
Type 78	3	200	1200	FRAG-HE	C9 B32	5C
	2	200	1200	HEAT	C8 B15	60C

M-59A

Notes: Produced by the famous Skoda Works in Czechoslovakia, this obsolescent recoilless rifle is only found in service with second-class Czech formations and with a few city militia and marauder units. It is extremely rare outside of Czechoslovakia, generally found in that country or within 100km of its borders. It uses a 12.7mm spotting rifle, and is the only recoilless rifle in the Warsaw Pact to use that aiming method.

Weapon	Caliber	Weight	Length	Price
M-59A Recoilless Rifle	82mm	385 kg	4.6 meters	\$13750

Ammunition	Caliber	Weight	Price
HE	82mm	6 kg	\$180
HEAT	82mm	6 kg	\$270

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-59A	3	245	1365	HE	C8 B20	5C
	3	245	1365	HEAT	C6 B15	43C

P-27 Panceroška

Notes: This is a Czech modification of the RPG-2. Ammunition for the P-27 is not interchangeable with RPG-2 ammunition, and the P-27 is a larger, longer, heavier weapon firing a round with a much larger warhead. The P-27 also has a bipod, a folding scissors-type on a strut; the bipod can also be used as a foregrip when standing. By 2000, the P-27 was largely out of service in Eastern Europe, and the most likely place to encounter it was Africa (particularly Angola and Namibia) and Southeastern Asian countries like Vietnam, Cambodia, Laos, and Thailand.

Weapon	Caliber	Weight	Length	Price
P-27 Panceroška	120mm (Overcaliber)	6.39 kg	1.09 meters	\$850

Ammunition	Caliber	Weight	Price
HEAT	120mm (Overcaliber)	3.3 kg	\$86
HE	120mm (Overcaliber)	3.3 kg	\$58

Weapon	Reload	Range	IFR	Round	Damage	Pen
P-27	1	35	285	HEAT	C12 B35	65C
	1	35	285	HE	C18 B40	11C

RPG-27

Notes: This weapon does not exist in real life.

Twilight 2000 Notes: Traditionally, the Czech armament industry has preferred to manufacture its own variations of Pact weapons for its soldiers. The RPG-27 continues in this long tradition. In this case, the RPG-27 is used in place of the RPG-16. The launch tube is made from lightweight glass fiber.

Weapon	Caliber	Weight	Length	Price
RPG-27	112mm (Overcaliber)	4.5 kg	1.1 meters	\$725

Ammunition	Caliber	Weight	Price
HEAT	112mm (Overcaliber)	3.8 kg	\$97
HE	112mm (Overcaliber)	3.8 kg	\$66
WP	112mm (Overcaliber)	3.8 kg	\$129
ILLUM	112mm (Overcaliber)	3.8 kg	\$66

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-27 (Czech)	2	95	700	HEAT	C14 B40	105C
	2	95	700	HE	C22 B45	10C
	2	95	700	WP	C3 B45	Nil
	2	95	700	ILLUM	(B1535)	Nil

RPG-75

Notes: This is a Czech LAW now in service with a number of pact armies. Each launcher comes with a pair of earplugs in a little plastic case attached to the carrying strap. The sights are quite crude and can be difficult to use properly.

Weapon	Caliber	Weight	Length	Price
RPG-75	68mm	3.1 kg (Complete)	630mm (Stowed), 890mm (Extended)	\$280

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-75	0	75	Nil	HEAT	C5 B25	61C

T-21 Tarasnice

Notes: This is a smoothbore recoilless gun (it is smoothbore, not rifled, and therefore not a recoilless rifle). It comes with a very light carriage (simply a pair of metal wheels snapped on), but is light enough to be fired from the shoulder. This is the recoilless rifle found on some variants of the OT-62.

Weapon	Caliber	Weight	Length	Price
T-21 Tarasnice	82mm	17.3 kg	1.473 meters	\$2595

Ammunition	Caliber	Weight	Price
HEAT	82mm	2.13 kg	\$48

Weapon	Reload	Range	IFR	Round	Damage	Pen
T-21 Tarasnice	1	164	Nil	HEAT	C6 B15	44C

M-55

Notes: This is a light rocket launcher for antiarmor use as well as general antipersonnel and antibunker use. Though it is an older weapon, it is a very modern design, with a compact yet powerful (4x) telescopic sight. It is an overcaliber weapon like the RPG series. The M-55 is generally issued one per infantry platoon, and is also used by other arms. It is a rare sight outside of Finland, and is built to a standard of quality normally not present in such launchers.

Weapon	Caliber	Weight	Length	Price
M-55	88mm (Overcaliber)	6 kg	940mm	\$925

Ammunition	Caliber	Weight	Price
HE	88mm (Overcaliber)	2.5 kg	\$38
HEAT	88mm (Overcaliber)	2.5 kg	\$57
HEDP	88mm (Overcaliber)	2.5 kg	\$48

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-55	1	65	515	HE	C12 B24	6C
	1	65	515	HEAT	C8 B30	63C
	1	65	515	HEDP	C10 B32	35C

SM58-61

Notes: This was the only heavy recoilless gun found in Finnish service, but it was supplanted by ATGM and was relegated to a reserve role and to use in an anti-avalanche role. It comes on a light wheeled carriage and may also be mounted on a vehicle with minimal fuss. A 12.7mm spotting rifle is used to help aiming; each hit by the spotting rifle on the target increases the chance that a follow-up rocket shot will have by +1, up to a maximum of +3.

Weapon	Caliber	Weight	Length	Price
SM58-61	95mm	140 kg	3.2 meters	\$10600

Ammunition	Caliber	Weight	Price
HE	95mm	12.7 kg	\$191
HEAT	95mm	10.2 kg	\$286

Weapon	Reload	Range	IFR	Round	Damage	Pen
SM58-61	6	285	2260	HE	C14 B25	7C
	6	285	2260	HEAT	C9 B15	69C

APILAS (Armor Piercing Light Arm System)

Notes: This is an unusual antitank rocket used by France, Finland, Italy, and Jordan. The missile is equipped with a telescopic sight, and the launcher can be easily changed to accommodate left- and right-handed firers. The sight includes an antifeash face shield due to the high launch velocity. (An unfortunate side-effect is the APILASs massive backblast.) The APILAS is heavy but effective due to its 108mm warhead.

The ABB is variant of the APILAS antitank rocket launcher (see below) used as a bunker buster. The launcher uses the Davis Countershot principle, ejecting a mass of plastic beads from the rear of the launcher to reduce firing signature and eliminate recoil. It may be fired from as little as 1 meter in front of a wall with no ill effects to the firer from backblast. The warhead may be adjusted before firing to provide an impact burst or a delayed burst, penetrating light obstacles before exploding. The ABB is capable of blasting a 250mm wide hole in reinforced concrete 200mm thick. The ABB is disposable.

Weapon	Caliber	Weight	Length	Price
APILAS	108mm	9 kg (Complete)	1.26 meters	\$400
ABB	92mm	7.3 kg (Complete)	1.26 meters	\$350

Weapon	Reload	Range	IFR	Round	Damage	Pen
APILAS	0	125	Nil	HEAT	C13 B35	101C
ABB	0	90	Nil	HEDP	C15 B40	46C

DARD-120

Notes: This is a French-built heavy rocket launcher. The DARD comes in two sections: a launcher section, with a pistol grip/trigger which can be rotated for left- and right-hand firers, shoulder rest, and sight unit, along with the launch tube; and the ammunition container, which is snapped into the tube of the launcher. The price of the launcher includes an optical sight with a magnification of 3.5x; this can be replaced by any number of other optical or night-vision sights.

Weapon	Caliber	Weight	Length	Price
DARD-120	120mm	4.5 kg	2.3 meters	\$1500

Ammunition	Caliber	Weight	Price
HE	120mm	8.9 kg	\$152
HEAT	120mm	8.9 kg	\$224

Weapon	ROF	Reload	Range	IFR	Round	Damage	Pen
DARD-120	1	4	180	Nil	HE	C25 B50	11C
	1	4	180	Nil	HEAT	C17 B40	113C

LRAC-89

Notes: This has been used extensively by French forces and others; however, in the late 1990s, France herself discarded it in favor of one-shot, lighter rockets such as the AT-4. It is a medium rocket launcher made largely of glass fiber and plastic to save weight. The rockets and launcher come in two tubes; the rocket section is loaded into the rear of the launching tube, and then discarded after firing. The launcher has an adjustable shoulder piece that can be moved back and forth to suit the firer. The launcher is equipped with a bipod to steady the launcher; unusually, the bipod is part of the shoulder piece, behind the pistol grip, and it is at the balance point of the weapon when a rocket module is attached. It is equipped with a telescopic sight and a folding foregrip. Note that the pistol grip is shaped somewhat like a clamp; the two halves must be squeezed together, then the trigger pulled, for the LRAC-89 to fire, and therefore the LRAC-89 essentially has a grip safety.

The ACIP-300 is a version of the LRAC-89 that France was experimenting with in the mid-1980s, but what happened to it after that I do not know. It was designed with penetrating the glacis plate of a T-72 of the time period in mind. The unfortunate byproduct of the increased warhead size is the short range.

Weapon	Caliber	Weight	Length	Price
LRAC-89	88.9mm	5.5 kg	1.168m	\$860
ACIP-300	105mm	3 kg	(Open) 1.71m, (Closed) 940mm	\$520

Ammunition	Caliber	Weight	Price
89mm AP/AV	88.9mm	3.8 kg	\$93
89mm HEAT	88.9mm	2.2 kg	\$111
89mm ILLUM	88.9mm	3.3 kg	\$75
89mm Smoke	88.9mm	3.95 kg	\$75
105mm HE-FRAG	105mm	3.4 kg	\$123

105mm HEAT	105mm	3.4 kg	\$183
105mm ILLUM	105mm	3.4 kg	\$123

Weapon	ROF	Reload	Range	IFR	Round	Damage	Pen
LRAC-89	1	1	94	Nil	AP/AV	C12 B32	32C
	1	1	94	Nil	HEAT	C9 B30	82C
	1	1	94	Nil	ILLUM	(B970)	Nil
ACIP-300	1	1	94	Nil	Smoke	C2 (B10)	Nil
	1	2	74	Nil	HE-FRAG	C14 B56	9C
	1	2	74	Nil	HEAT	C13 B35	99C
	1	2	74	Nil	ILLUM	(B1350)	Nil

Sabraacan

Notes: Another French antiarmor launcher, Sabraacan was developed to be a lighter, cheaper counterpart to the APILAS ATGM. Sabraacan eliminates most of the backblast by using a booster motor to clear the tube before igniting the sustaining motor, and can be used from confined spaces. Sabraacan was unfortunately a casualty of 1980s budget cuts and never procured by any country.

Twilight 2000 Notes: The French Foreign Legion deployed the Sabraacan in huge numbers, generally employing it in favor of the DARD-120. The British Royal Marines were also known to use it, as well as US Army Rangers operating in the Persian Gulf.

Weapon	Caliber	Weight	Length	Price
Sabraacan	130mm	13 kg	2 meters	\$700

Ammunition	Caliber	Weight	Price
HEAT	130mm	9.64 kg	\$261
HEAT-T	130mm	10.01 kg	\$391
HE	130mm	9.64 kg	\$175
FAE	130mm	11.81 kg	\$522
WP	130mm	9.64 kg	\$346
Smoke	130mm	9.64 kg	\$175

Weapon	Reload	Range	IFR	Round	Damage	Pen
Sabraacan	4	105	800	HEAT	C20 B45	140C
	4	105	800	HEAT-T	C20 B45	110C/138C
	4	105	800	HE	C30 B55	13C
	4	105	800	FAE	C60 B40	62C
	4	105	800	WP	C3 B40	Nil
	4	105	800	Smoke	C3 B20	Nil

SARPAC

Notes: This was a light rocket launcher the French were experimenting with in the early to mid-1980s. It is a "semi-disposable" rocket launcher; it is not meant to be used for years, but instead wears out after about 20 launches. The sights are very simple, similar to the various LAW-type weapons around the world.

Weapon	Caliber	Weight	Length	Price
SARPAC	68mm	1.9 kg	(Open) 1.017m, (Closed) 765mm	\$336

Ammunition	Caliber	Weight	Price
ROCHAP HEDP	68mm	1.8 kg	\$80
ROCHAR HEAT	68mm	1.07 kg	\$96
ROCLAIR ILLUM	68mm	1.3 kg	\$64

Weapon	Reload	Range	IFR	Round	Damage	Pen
SARPAC	1	52	396	HEDP	C7 B28	32C
	1	52	396	HEAT	C5 B25	61C
	1	52	396	ILLUM	(B565)	Nil

Wasp

Notes: This weapon was designed for the direct attack of light armored vehicles at short range. Its backblast is small, since it uses the Davis Countershot principle. The Wasp is used by France and Italy, and over 400,000 had been produced by 1996. The weapon is ready use almost instantly, without lengthy preparation.

Weapon	Caliber	Weight	Length	Price
Wasp	70mm	3 kg (Complete)	800mm	\$260

Weapon	Reload	Range	IFR	Round	Damage	Pen
Wasp	0	100	Nil	HEAT	C6 B25	63C

AC300 Jupiter

Notes: The AC300 is sort of a reusable version of the Armbrust with a larger warhead. It was once supposed to replace the Panzerfaust-3, but never quite got too far in that regard due to budgetary concerns.

Twilight 2000 Notes: This rocket launcher used as an alternative to the APILAS in France and alongside the Armbrust in Germany. The Luxembourg Reconnaissance Platoon also used the AC300 during the Twilight War.

Merc 2000 Notes: This weapon did not sell in Europe, but was bought by Mexico and some Central American countries.

Weapon	Caliber	Weight	Length	Price
AC300 Jupiter	115mm	11 kg	1.2 meters	\$1050

Ammunition	Caliber	Weight	Price
HEAT	115mm	3.5 kg	\$91
HE	115mm	3.5 kg	\$61
HEAT-T	115mm	3.5 kg	\$137
HEDP	115mm	3.5 kg	\$76

Weapon	Reload	Range	IFR	Round	Damage	Pen
AC300 Jupiter	3	85	Nil	HEAT	C15 B40	108C
	3	85	Nil	HE	C23 B50	10C
	3	85	Nil	HEAT-T	C15 B40	86C/108C
	3	85	Nil	HEDP	C19 B45	59C

Panzerfaust 3

Notes: Current heavy rocket launcher of Germany, the PzF3 uses an overcaliber warhead like the RPG series. The PzF3 can be fired from enclosed spaces and has little visible backblast due to its use of the Davis Countershot Principle. (The backblast is taken up by a mass of plastic rods that are still dangerous to those behind the weapon.)

Weapon	Caliber	Weight	Length	Price
Panzerfaust 3	90, 110, or 125mm (Overcaliber)	9 kg	1.35 meters	\$950

Ammunition	Caliber	Weight	Price
HE	90mm Overcaliber	2.96 kg	\$48
HEAT	90mm Overcaliber	2.96 kg	\$70
ILLUM	90mm Overcaliber	2.96 kg	\$48
Smoke	90mm Overcaliber	2.96 kg	\$48

HEAT	110mm Overcaliber	3.9 kg	\$99
HEAT-T	110mm Overcaliber	3.9 kg	\$148
HEDP (BASTEG)	110mm Overcaliber	3.9 kg	\$83
HESH	110mm Overcaliber	3.9 kg	\$116
HEAT	125mm Overcaliber	4.3 kg	\$111

Weapon	Reload	Range	IFR	Round	Damage	Pen
Panzerfaust 3	1	135	Nil	90mm HE	C14 B30	7C
	1	135	Nil	90mm HEAT	C9 B30	93C
	1	135	Nil	90mm ILLUM	(B990)	Nil
	1	135	Nil	90mm Smoke	C2 (B10)	Nil
	2	115	Nil	110mm HEAT	C14 B35	133C
	2	115	Nil	110mm HEAT-T	C16 B40	106C/133C
	2	115	Nil	110mm HEDP	C18 B40	72C
	2	115	Nil	110mm HESH	C21 B45	106C
	2	110	Nil	125mm HEAT	C18 B40	152C

Panzerfaust 11-1

Notes: This weapon does not exist in real life.

Twilight 2000 Notes: The German replacement for the older Armbrust, the PzF11-1 is very similar to the latter weapon. However, the rocket is of a larger caliber, and the PzF11-1 can use any sort of US, NATO, Israeli, or French sighting or night vision device.

Weapon	Caliber	Weight	Length	Price
Panzerfaust 11-1	75mm	4 kg (Complete)	900mm	\$280

Weapon	Reload	Range	IFR	Round	Damage	Pen
Panzerfaust 11-1	0	130	Nil	HEAT	C7 B25	83C

Panzerfaust 44-2A1 Lanze

Notes: The German's first post-WW II attempt at a rocket launcher, the Lanze (Lance) proved to be an effective and successful design, although it eventually became outdated. The Lanze uses the Davis Countershot Principle. It is still very common with reserve forces.

Weapon	Caliber	Weight	Length	Price

Panzerfaust 44-2A1	67mm (Overcaliber)	7.8 kg	880mm (Stowed), 1102mm (Firing)	\$900
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Ammunition	Caliber	Weight	Price
HE	67mm Overcaliber	2.5 kg	\$40
HEAT	67mm Overcaliber	2.5 kg	\$59

Weapon	ROF	Reload	Range	IFR	Round	Damage	Pen
Panzerfaust 44-2A1	1	1	70	Nil	HE	C6 B25	3C
	1	1	70	Nil	HEAT	C4 B20	69C

B-300

Notes: This man-portable multipurpose rocket launcher was designed by Israel for use by troops to tackle armor and fortifications. It is designed to be loaded, carried, and fired by one man. It comes in two sections: the firing unit, with the forward part of the firing tube, the handgrips, and sight; and the rear section, a disposable unit carrying one round of ammunition. The rear ammunition section is snapped into the forward section before firing. The firing unit includes a pair of handgrips, a folding bipod, and a 3x sight with illuminated stadia. The B-300 formed the basis for the US Marines M-12 SMAW rocket launcher (q.v.).

Weapon	Caliber	Weight	Length	Price
B-300	82mm	3.5 kg	1.35 meters	\$910

Ammunition	Caliber	Weight	Price
HEAT Mk 1	82mm	4.5 kg	\$119
HEAT Mk 2	82mm	5 kg	\$134
HEFT (HEAT-HEDP)	82mm	5 kg	\$123

Weapon	Reload	Range	IFR	Round	Damage	Pen
B-300	2	105	Nil	HEAT Mk 1	C8 B30	75C
	2	100	Nil	HEAT Mk 2	C9 B30	92C
	2	100	Nil	HEFT	C11 B32	50C/61C

Picket

Notes: The Picket was a LAW that Israel was experimenting with in the mid-1980s. It consisted of a disposable rocket launcher containing a supersonic rocket and a clip-on telescopic sight unit. The rocket requires very little lead on a moving enemy since the rocket's speed is so great and time of flight is so short. (The rocket's speed is roughly 1250 meters per phase.) The rocket's motor burns out after 2 seconds, and then the rocket self destructs if it hasn't hit anything.

Weapon	Caliber	Weight	Length	Price
Picket	81mm	6 kg (Complete)	760mm	\$340

Weapon	Reload	Range	IFR	Round	Damage	Pen
Picket	0	128	Nil	HEAT	C8 B30	74C

Shipon

Notes: This Israeli weapon is replacing the M-136 and M-72 in Israeli service. The rocket is based on that of the B-300 rocket launcher, and the tube can be repacked by a qualified armorer for re-use. The sight incorporates an image intensifier and is removable.

Twilight 2000 Notes: This weapon is in extremely short supply.

Weapon	Caliber	Weight	Length	Price
Shipon	96mm	6 kg (Complete); 1.5 kg (Sight)	1.1 meters	\$410 (Rocket); (\$200 (Sight)

Weapon	Reload	Range	IFR	Round	Damage	Pen
Shipon	0*	125	Nil	HEAT-T	C12 B45	105C/131C

Folgore

Notes: This is the standard medium antitank weapon of Italy. The Folgore is rather long (1.85m), but this contributes to the Folgore's long range. The Folgore can be fired from an integral bipod using an optical sight, or a tripod using a low-power image intensifier (optronic) sight.

Weapon	Caliber	Weight	Length	Price
Folgore	80mm	17 kg (Basic Weapon); 8.1 kg (Tripod/Optronic Sight)	1.85 meters	\$1950 (Basic Weapon); \$840 (Tripod/Optronic Sight)

Ammunition	Caliber	Weight	Price
HEAT	80mm	5.2 kg	\$234

Weapon	Reload	Range	IFR	Round	Damage	Pen
Folgore (Bipod)	3	160	Nil	HEAT	C7 B15	73C
(Tripod/Optronic Sight)	3	240	1300	HEAT	C7 B15	73C

RPG-76 Komar

Notes: The RPG-76 is a one-shot disposable rocket launcher, similar in design to the World War 2 German Panzerfaust (though it is not related to that weapon). The Komar (Mosquito) is not exactly a recoilless launcher; the rear of the launcher is closed, though exhaust gasses are vented away from the gunner by gas vents around the rear of the rocket, there is still a bit of a kick (the RPG-76 has a Recoil of 2 in game terms). Before firing, the leaf sights are raised and a rudimentary shoulder stock is unfolded. Minimum arming range is 10 meters. The warhead is a greatly-improved and enhanced version of that used in the PGN-60 rifle grenade. The Bulgarians had a large involvement in the development of RPG-76, though after a couple of years Bulgarian involvement in the project broke down due to disagreements in design and the RPG-76 is therefore an almost wholly Polish design. The RPG-76 was first issued to Polish troops in 1985; some contention was raised over the knowledge that it had no chance of penetrating the frontal armor of any modern tank or the front of some APCs and IFVs equipped with ERA, and it became a special weapon for Airborne, Air Assault, and special operations troops. It is not issued to regular troops, and in 2003, it was almost totally withdrawn from service, replaced by Cal Gustav M-3 recoilless rifles. Currently, the RPG-76 is issued only in very limited numbers to Polish troops in Afghanistan and Iraq as an antipersonnel weapon and to a limited extent, a bunker buster.

Twilight 2000 Story: This weapon is issued in large numbers to both regular and special troops in the Twilight 2000 timeline, as it is cheap and easy to make.

Merc 2000 Story: This weapon has been sold far and wide in the world, and can be encountered just about anywhere in the Merc 2000 timeline.

Weapon	Caliber	Weight	Length	Price
RPG-76 KOMAR	68mm (Overcaliber)	2.1 kg (Complete)	805mm (Stowed), 1119mm (Firing)	\$250

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-76	0	65	Nil	HEAT	C5 B25	53C

Snake

Notes: The Snake is a rocket launcher produced by Turbomecanica of Romania. It is a multipurpose weapon, with several warheads available. The weapon produces no flash, smoke, or firing signature, and very little noise (perhaps twice that of a normal silenced pistol). However, hot gasses do escape the rear, and the minimum room size for safe firing of a Snake is 3x3 meters. This weapon was not produced after 1996, having found no buyers.

Twilight 2000 Notes: Production of this weapon stopped in 1996, but was hurriedly picked up again in 1998 as the Twilight War intensified. It is thus somewhat rare.

Merc 2000 Notes: There have been a lot of sales of the Snake, but none inside of Europe.

Weapon	Caliber	Weight	Length	Price
Snake	99mm (Overcaliber)	5.5 kg	1.4 meters	\$775

Ammunition	Caliber	Weight	Price
Thermobaric	99mm Overcaliber	9 kg	\$486
HE	99mm Overcaliber	9 kg	\$164
HEAT	99mm Overcaliber	9 kg	\$243
Smoke	99mm Overcaliber	9 kg	\$164

Weapon	Reload	Range	IFR	Round	Damage	Pen
Snake	2	140	1100	Thermobaric	C34 B30	46C
	2	140	1100	HE	C17 B40	8C
	2	140	1100	HEAT	C11 B35	92C
	2	140	1100	Smoke	C2 (B10)	Nil

122mm Free Rocket

Notes: These rockets, still in their shipping containers, are simply propped against some handy object and fired by a fuse or electrical ignition. Often, the rockets are placed in position and fired by a time fuse to prevent effective counterbattery fire. Maximum accuracy for these rounds is 4 (aiming is largely guesswork), and deviation distances are doubled, and no corrections are allowed. Aiming these rockets for direct-fire work is impossible. These rockets are also fired by MRLs such as the BM-14.

Weapon	Caliber	Weight	Length	Price
122mm Free Rocket	122mm	46 kg (Complete)	2 meters	\$350

Weapon	Reload	Range	IFR	Round	Damage	Pen
122mm Free Rocket	0	Nil	10000	HE	C8 B24	80C

B-10

Notes: The B-10 is a recoilless rifle that has been largely replaced in Russian service by antitank missiles and the SPG-9 recoilless rifle. The B-10 is normally aimed using a simple sight, though several optical sights may be mounted. The B-10 has largely been replaced in Russian units by ATGMs and lighter rocket launchers, though Airborne units still use it mounted on light vehicles. It is also in widespread use by former Soviet client states.

Weapon	Caliber	Weight	Length	Price
B-10 Recoilless Rifle	82mm	87.6 kg	1.68 meters	\$5375

Ammunition	Caliber	Weight	Price
O-881A FRAG-HE	82mm	3.9 kg	\$117
BK-881 HEAT	82mm	3.87 kg	\$174
BK-881m HEAT	82mm	4.11 kg	\$185
Type 65 FRAG-HE	82mm	4.6 kg	\$138
Type 65 HEAT	82mm	2.95 kg	\$133
Type 65-I HEAT-FRAG	82mm	3.45 kg	\$104
Type 65-II HEAT	82mm	2.94 kg	\$132

Weapon	Reload	Range	IFR	Round	Damage	Pen
B-10	2	200	1065	O-881A FRAG-HE	C6 B25	3C
	2	200	1065	BK-881 HEAT	C6 B15	42C
	2	200	1065	BK-881m HEAT	C7 B15	46C
	2	230	1220	Type 65 FRAG-HE	C8 B25	4C
	2	230	1220	Type 65 HEAT	C6 B15	37C
	2	215	1145	Type 65-I HEAT-FRAG	C8 B20	34C
	2	235	1230	Type 65-II HEAT	C7 B15	40C

B-11

Notes: This bulky and difficult-to-handle weapon has largely been replaced in Russian service by antitank missiles. It can still be found in category 2 and 3 units. The B-11 is also used by Airborne units as a light field gun and bunker buster. It is equipped with a simple iron sight, but may mount other type of sighting equipment.

Weapon	Caliber	Weight	Length	Price
B-11 Recoilless Rifle	107mm	305 kg	3.31 meters	\$10250

Ammunition	Caliber	Weight	Price
HE	107mm	13.6 kg	\$408
HEAT	107mm	9 kg	\$405

Weapon	Reload	Range	IFR	Round	Damage	Pen
B-11	4	200	1065	HE	C14 B25	9C
	4	200	1065	HEAT	C9 B15	57C

RPG-2

This is the forerunner of the RPG-7, and rivals that weapon as the most widely used rocket launcher in the world. It is now found only in Third World nations and in China (as the Type 56), though it is found in those countries in droves. It has found service in at least 15 countries' armies in its lifetime, and perhaps much more in the hands of irregular, guerilla, and terrorist hands. The RPG-2 has been produced with and without license worldwide, and is a very easy weapon to make, even in primitive conditions. The launcher is a simple straight tube with sights and a firing mechanism attached, and sometimes a small exhaust

flare at the rear, with a wooden sleeve for the part that goes over the shoulder to protect the shooter from the heat of the propellant charge. The warhead, though large, is an old design and very inefficient; range is not helped by the fact that the RPG-2's grenade charge, the PG-2, is not actually rocket-propelled – it is fired by simple charge of six tandem black powder charges, which blows the grenade out of the tube, similar to a blackpowder rifle in a way, though exhaust gasses are still vented to the rear. The grenade free-flies without any propulsion along the way. Essentially, the RPG-2 is not a rocket launcher in any way – it is a recoilless grenade thrower.

An interesting note about the RPG-2 is that it is not meant to be fired from the left shoulder. At the rear of the pistol grip, on the right side, is a small gas port, which vents some gas during firing to relieve pressure on the firing pin from the propellant charge. Firing from the left shoulder could cause a nasty burn on the left side of a shooter's neck if it is fired from the left shoulder. To simulate this, the GM should assign a 50% chance that the head of the shooter receives 1-2 points of damage if he shoots from the left shoulder, upon each shot.

The Karen National Liberation Army in Burma has produced round for the RPG-2/Type 56 with a fragmentation jacket added to it, producing an *ad hoc* antipersonnel round. This type of round would be easy to produce in a *Twilight 2000* timeline from existing RPG-2 round. The weight below is estimated; if anyone knows for sure, please email me.

Weapon	Caliber	Weight	Length	Price
RPG-2	82mm (Overcaliber)	2.83 kg	1.19 meters	\$650

Ammunition	Caliber	Weight	Price
Chinese HEAT	80mm Overcaliber	1.84 kg	\$46
Russian HEAT	82mm Overcaliber	1.84 kg	\$46
KNLA FRAG-HEAT	82mm Overcaliber	2.1 kg	\$48

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-2	1	40	Nil	Chinese HEAT	C6 B25	46C
	1	40	Nil	Russian HEAT	C6 B25	42C
	1	37	Nil	KNLA FRAG-HEAT	C4 B31	37C

RPG-7 Knut

Notes: The RPG-7 is a progressive development of the RPG-2 and a forerunner of the RPG-16, though the RPG-16 failed to supplant the RPG-7 due to the flexibility of the RPG-7 system. It fires a larger, but less powerful warhead than the RPG-16s HEAT warhead. But the sheer number of different rockets for the RPG-7 ensured that the RPG-7 remained in production. The sheer flexibility and variety of warheads have meant that the RPG-7 has been retained in service despite the introduction of several newer rocket launchers, even in Russian service. It can be found almost anywhere else and is possibly the most popular rocket launcher ever produced. The RPG-7 is produced, with and without a license, in an unknown number of countries throughout the world, as is the ammunition; the amount of official users reaches into the forties. Some users have greatly-improved sights, as do the RPG-7V2 and RPG-7D3.

The RPG-7 uses a widened (45mm) expansion chamber, with a 40mm tube on either side, and a bell-shaped exhaust venturi in the rear. The part that goes over the shoulder is covered in a wooden sleeve to protect the shooter against the heat of the rocket exhaust. The RPG-7 has a firing grip as well as a "hindgrip" behind the firing grip. The RPG-7 must be "cocked" before firing; a hammer at the rear of the firing grip must be drawn back. Chinese versions have a folding bipod, and several other countries' versions also have a bipod. Rockets consist of a rocket booster section and a warhead section, which must be assembled prior to use, though this may be done well before a battle, and the round will store stable for years after assembly. The original version is now called the RPG-7V. A variant of the RPG-7, the RPG-7D, is designed primarily for airborne, air assault, and light infantry use, and differs in the lighter materials used and in being able to be taken apart at the center for easier drops and carrying; and the firing grip can be removed to protect it during jumps. The two halves connect using AK-47 bayonet lugs. The RPG-7 is equipped with a low-magnification optical sight that requires considerable practice to achieve optimum results.

The RPG-7V2 and RPG-7D3 are the latest versions, modified to allow the use of newest RPG-7 rounds. The original RPG-7V and RPG-7D cannot use the latest Russian PG-7L, PG-7VR, PG-7LT, and TPG-7 rounds or the Bulgarian GTB-7 round, as the pressure from the firing and exhaust gasses is too high for these earlier designs. They RPG-7V2 and RPG-7D3 are otherwise equivalent to the RPG-7V and RPG-7D for game purposes.

Airtronic USA has developed a US version of the RPG-7V2 and will it for sale starting in 2011; it has been dubbed in the press the "Amerikanski RPG-7," Though Airtronic calls it the RPG-7-USA. This version uses a modern steel launch tube (similar to that of an M-16 barrel), a MIL-STD-1913 rail in three pieces atop the launcher, and an removable M-4-type sliding shoulder stock below the launcher as well as a "hindgrip." The firing grip uses an M-16/M-4-type pistol grip. The upper rail has simple flip-up-type iron sights, though any sort of sight could be installed on the rails. The rails allow the RPG-7-USA allow for left and right-handed use. Several ergonomic enhancements are incorporated into the design. The RPG-7-USA can use all types of RPG-7 rockets, with the same results. The RPG-7-USA is a much shorter than the standard RPG-7V2. So far, no sales have been made, though there are reportedly several interested parties.

DIO in Iran produces a shortened version of the RPG-7 which is a "no frills" model only 730mm long. I have not yet been able to find any good information on performance or effects of the shorter length, so it is not covered here except for this heads-up.

The RPG-7 is not meant to be fired from the left shoulder, for a different reason than the RPG-2 – the sights are virtually impossible to use from the left shoulder. Degrade accuracy by two levels when fired from the left shoulder.

Twilight 2000 Notes: The Airtronic RPG-7-USA is not produced in the Twilight 2000 timeline, though the West has reverse-engineered the standard versions of the RPG-7 for use by its troops in China, Europe, and the Middle East, and considerable use is made of captured RPG-7s in those areas as well as in Alaska, and by guerillas.

Weapon	Caliber	Weight	Length	Price
RPG-7V	Several Sizes of Overcaliber Rockets	6.9 kg	950mm	\$850
RPG-7D	Several Sizes of Overcaliber Rockets	6.3 kg	650mm/950mm	\$950
RPG-7-USA	Several Sizes of Overcaliber Rockets	7.09 kg	908mm	\$966

Ammunition	Caliber	Weight	Price
Bulgarian OG-7E Concussion	73mm Overcaliber	3 kg	\$51
Bulgarian OFG-7V FRAG-HE	73mm Overcaliber	3 kg	\$51
Bulgarian OG-7G FRAG-HE	73mm Overcaliber	3.35 kg	\$58
Bulgarian KO-7 HEAT-FRAG	96mm Overcaliber	3.5 kg	\$110
Bulgarian GTB-7 Thermobaric	105mm Overcaliber	4.7 kg	\$162
Chinese Type 69 FRAG-Airburst	75mm Overcaliber	2.8 kg	\$46
Chinese HE-HEAT	92mm Overcaliber	2.67 kg	\$86
Chinese HE-RP	76mm Overcaliber	2.67 kg	\$64
Chinese Type 69 HEAT	85mm Overcaliber	2.16 kg	\$54
Chinese Type 69-I HEAT	85mm Overcaliber	2.24 kg	\$56
Chinese Type 69-II HEAT	94mm Overcaliber	2.97 kg	\$80
Chinese Type 69-III HEAT	80mm Overcaliber	2.26 kg	\$47
Chinese ILLUM	75mm Overcaliber	2.2 kg	\$35
Chinese FRAG-ILLUM	80mm Overcaliber	2.5 kg	\$80
Chinese Type 84 HEAT	84mm Overcaliber	1.8 kg	\$37
Czech PG-7M110 HEAT	110mm Overcaliber	3.15 kg	\$77
Egyptian SAKR Cobra HEAT	80mm Overcaliber	2.2 kg	\$50
Egyptian Home Guard HE-FRAG	40mm Overcaliber	1.75 kg	\$25
Egyptian Borkan WP	82mm Overcaliber	2.25 kg	\$35
Iranian Nafez HEAT	73mm Overcaliber	2.65 kg	\$63
Iranian Saegheh HE-FRAG	40mm Overcaliber	1.4 kg	\$18
Iranian Nafez-2 HEAT-T	80mm Overcaliber	2.6 kg	\$101
Russian OG-7 HE	73mm Overcaliber	1.76 kg	\$29
Russian OG-7M HE	73mm Overcaliber	1.76 kg	\$28
Russian PG-7M HEAT	70mm Overcaliber	1.98 kg	\$48
Russian PG-7N HEAT	70mm Overcaliber	1.98 kg	\$46
Russian PG-7L HEAT	93mm Overcaliber	2.6 kg	\$65
Russian PG-7VR HEAT-T	105mm Overcaliber	4.5 kg	\$182
Russian PG-7LT HEAT-T	93mm Overcaliber	2.9 kg	\$102
Russian TBG-7 Thermobaric	105mm Overcaliber	4.5 kg	\$231

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-7	1	85	520	Bulgarian OG-7E Concussion	C13	2C
	1	125	935	Bulgarian OFG-7V FRAG-HE	C6 B38	4C
	1	85	600	Bulgarian OG-7G FRAG-HE	C8 B44	3C
	1	100	800	Bulgarian KO-7 HEAT-FRAG	C7 B38	52C
	2	105	800	Bulgarian GTB-7 Thermobaric	C38 B34	49C
	1	105	800	Chinese Type 69 FRAG-Airburst	C10 B26	2C
	1	105	1800	Chinese 92mm HE-HEAT	C11 B32	51C
	1	105	1500	Chinese 76mm HE-RP	C6 B22	2C
	1	70	500	Chinese Type 69 HEAT	C6 B25	44C
	1	80	600	Chinese Type 69-I HEAT	C7 B25	51C
	1	70	500	Chinese Type 69-II HEAT	C9 B30	68C
	1	140	1100	Chinese Type 69-III HEAT	C7 B25	69C
	1	105	1500	Chinese ILLUM	(B505)	Nil
	1	115	1500	Chinese FRAG-ILLUM	C4 B20+(B305)	1C
	1	145	1100	Chinese Type 84 HEAT	C8 B30	77C
	1	105	800	Czech PG-7M110 HEAT	C16 B40	140C
1	125	1000	Egyptian SAKR Cobra HEAT	C8 B30	93C	

1	145	1100	Egyptian Home Guard HE-FRAG	C2 B25	Nil
1	125	1000	Egyptian Borkan WP	C2 B15	Nil
1	115	900	Iranian Nafez HEAT	C6 B25	83C
1	120	900	Iranian Nafez-2 HEAT-T	C7 B25	81C/101C
1	160	1200	Iranian Saegheh HE-FRAG	C2 B20	Nil
1	70	500	Russian OG-7 HE	C7 B25	4C
1	90	700	Russian OG-7M HE	C8 B30	4C
1	85	600	Russian PG-7M HEAT	C5 B20	51C
1	100	700	Russian PG-7N HEAT	C6 B25	72C
1	85	600	Russian PG-7L HEAT	C10 B30	103C
2	65	500	Russian PG-7VR HEAT-T	C15 B40	108C/135C
2	80	600	Russian PG-7LT HEAT-T	C11 B35	98C/122C
2	105	800	Russian TBG-7 Thermobaric	C34 B30	52C

RPG-16 Udar

Notes: Though the RPG-16 resembles an RPG-7 with a wider tube (58mm vs. the 40mm tube of the RPG-7), it is more of a smaller version of the SPG-9, supposedly giving paratroopers the capabilities of the SPG-9 in a smaller form. It proved to be less effective than the SPG-9 and not as flexible as the RPG-7 system and did not offer significantly more range, so it was quickly dropped and airborne and air assault forces went back to the RPG-7D. The most common place they are to be encountered these days, therefore, are in the hands of Taliban and Al-Qaida forces, as they were primarily used (in small numbers) during Russia's involvement in Afghanistan. The base warheads are better than those of the RPG-7, but later developments in RPG-7 warheads outstrip the RPG-7. The RPG-16 has an integral passive IR sight with a 2.7x magnification, as well as backup iron sights, and a folding bipod. It can be split into two parts for transport and storage. The rocket has a launching charge and a booster charge; the booster charge does not fire until the rocket is 7 meters from the shooter, so the backblast is half as effective at dampening backblast as a rocket using the Davis Countershot principle.

Twilight 2000 Notes: This weapon was for long time thought to be out of production (dropped in favor of the RPG-7 and improved warheads), but in the Twilight War it was revealed to still be in use by certain Russian troops as well as being sold to some former Warsaw Pact countries and certain "unnamed parties."

Weapon	Caliber	Weight	Length	Price
RPG-16	88mm (Overcaliber)	9.4 kg	645mm (Stowed), 1104mm (Firing)	\$1082

Ammunition	Caliber	Weight	Price
HEAT	88mm Overcaliber	3 kg	\$74

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-16	1	100	1075	HEAT	C9 B30	81C

RPG-18 Mukha

Notes: Noting the utility of the US M-72 LAW disposable AT launcher as a bunker buster in Vietnam, the Russians set about to copy it. And they did, almost to the letter, right down to the cartoon-type instructions on the side of the collapsible launch tube. Like the M-72, the simple sights spring open when the launch tube is opened. (The warhead is a bit smaller, at 64mm vs. the M-72's 66mm.) The RPG-18 Mukha began issue in 1972, and issue continued until 1990, when it was replaced by the RPG-22. The RPG-18 was primarily issued to heliborne and light infantry units.

The RPG-18, however, does not have a very important feature that the M-72 does have – once the RPG-18 launcher is extended to the launch position, it cannot be put back on safe and re-collapsed. Once you extend the RPG-18, you have a live round that stays live, even if you find out you don't need to use the RPG-18 after all. Therefore, you simply have to abandon the RPG-18 or carry a rocket that could go off at any moment. Not a pleasant thought!

The RPG-22 Neto was an improved version of the RPG-18, issued to Soviet units in 1980. Production of the RPG-22 stopped in 1993 in favor of the more effective RPG-26, but since large stocks of the RPG-22, it is not uncommon to find Russian units that still have them; it was also exported to other countries. The warhead is larger at 72.5mm, with a more powerful rocket motor to propel it. The Soviets did realize their mistake at providing no way to safe the RPG-22 is use was found to not be necessary, using a safing and re-collapsing method similar to that of the M-72.

The RPG-26 Aglen was a further improvement of the RPG-22, adopted by the Soviets in 1985, and still in production. Warhead diameter is the same, but the warhead is more effective than the RPG-22's. The RPG-26 is otherwise the same as the RPG-22 for game purposes.

The RShG-2 is derived from the RPG-26, with a thermobaric warhead instead of a HEAT warhead. It is designed for multipurpose use, against soft-skinned and light armored vehicles, as a bunker buster, and to kill troops in the open and inside caves. The Russians adopted this weapon in 2000, though it existed in test form about 3 years earlier.

Twilight 2000 Notes: In the Twilight 2000 timeline, the RPG-18 and RPG-22 are fairly common, the RPG-26 fairly rare, and the RShG-2 nonexistent.

Weapon	Caliber	Weight	Length	Price
RPG-18 Mukha	64mm	2.7 kg	705mm (Stowed), 1050mm (Firing)	\$260
RPG-22 Neto	72.5mm	2.7 kg	785mm (Stowed), 850mm (Firing)	\$260
RPG-26 Aglen	72.5mm	2.9 kg	785mm (Stowed), 850mm (Firing)	\$260
RShG-2	72.5mm	3.8 kg	785mm (Stowed), 850mm (Firing)	\$332

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-18 Mukha	0	55	Nil	HEAT	C4 B20	45C
RPG-22 Neto	0	90	Nil	HEAT	C6 B25	66C
RPG-26 Aglen	0	95	Nil	HEAT	C7 B25	80C
RShG-2	0	95	Nil	Thermobaric	C17 B15	10C

RPG-27 Tavorlga

Notes: Essentially a heavy disposable LAW (perhaps MAW would be more appropriate), the RPG-27 is based around a modified form of the RPG-7's PG-7VR tandem HEAT rocket, and is quite a powerful weapon in a relatively small package. The RPG-27 was adopted by Russian forces in 2000. It is offered for export, but customers (if any) are unknown).

Externally, the RPG-27 looks like an overgrown RPG-26. The endcaps are not opened during before launch, and no extending of the launcher into launch position is necessary; the rubber endcaps are destroyed once the firing bar is depressed. The firing mechanism is readied by raising the rear sight, which interlocks with a safety; putting the sight back down re-engages the safety.

The RShG-1 is a derivative of the RPG-27 that has a thermobaric warhead instead of the HEAT-T warhead of the RPG-27. The sights are altered to reflect the different usage of the RShG-1, and are not as effective against moving targets. Operation is essentially the same as the RPG-27, except for the warhead effects.

Details on the RPG-28 are still sketchy, but it appears to be an even larger version of the RPG-27, firing a tandem HEAT warhead from a unitary disposable launch tube. The RPG-28 and RPG-27 look virtually identical except for caliber, and appear to have the same operation. Like the RPG-27, the RPG-28 does not need to be extended before launch, and the sights are similar and work in the same manner.

The RPG-30 is an interesting, and as far as I can find out, unique iteration on the antitank rocket launcher. It is, essentially, a duplex rocket launcher. Upon firing, a small rocket fires ahead of the main rocket, and the two are matched to fly in an identical trajectory, about a half a second apart; the second rocket is slowed by larger fins and its larger size. Though the small precursor rocket has a small explosive charge, causing damage is not its primary role. The precursor rocket's role is to spoof hard-kill Active Protection Systems such as the Arena, Drozd, and Trophy systems. Such a system requires 0.2-0.4 seconds to reset to deal with any further rounds which are incoming, and the second rocket should be able to slip under this window of time. The probability that the primary rocket will get past the APS is a roll of 12 on a 1d20. If the RPG-30 is fired as an antipersonnel weapon or area weapon, the precursor rocket will land 1-3 meters from the impact point determined for the primary rocket. Due to the dual rocket launches, firing the RPG-30 requires a little extra training and chances to hit with it are at -1 on the die roll. The GM should have the PC or NPC roll to hit with the primary rocket only, i.e., only one to hit roll is required. Against a hard target, the two rockets will hit almost simultaneously (within 0.2 seconds of each other), in almost exactly the same spot if not the same spot.

Twilight 2000 Notes: These weapons do not exist in the Twilight 2000 timeline.

Weapon	Caliber	Weight	Length	Price
RPG-27	105mm	10 kg	900mm	\$384
RShG-1	105mm	8 kg	900mm	\$448
RPG-28	125mm	13 kg	1200mm	\$467
RPG-30	10mm + 105mm	10.3 kg	900mm	\$576

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-27	0	90	Nil	HEAT-T	C15 B40	89C/119C
RShG-1	0	90	Nil	Thermobaric	C44 B34	60C
RPG-28	0	90	Nil	HEAT-T	C21 B45	107C/143C
RPG-30	0	90	Nil	HE + HEAT-T	C1 B1 + C15 B40	Nil + 89C/119C

RPG-29 Vampir

Notes: The RPG-29 appears to be a straightforward tube rocket launcher; the launch tube and warhead are of the same caliber instead of using an overcaliber warhead, and this allows for a larger propellant charge, and therefore longer range. The launch tube comes in two parts to allow for easier transport and storage. At first, only one round was available for it, the PG-29V tandem shaped charge; this round uses a precursor warhead on a long tube with a 65mm warhead. Later, a thermobaric warhead round was developed for the RPG-29, the TBG-29V. The RPG-29 is unusual for a modern rocket launcher in that it does not have an initial rocket charge to propel the rocket out of the tube before the main rocket charge ignites; instead, the main rocket fires when the trigger is pulled, and the entire propelling charge burns out before the rocket has left the launch tube. This also means

that the rocket follows a ballistic trajectory from the moment it leaves the tube instead of having most of its flight being relatively flat, and this takes some training and getting used to on the part of the gunner. The sight used with the RPG-29 is a 2.7x optical sight with an illuminated stadia, but this can be removed or the launcher otherwise fired without it using folding unmagnified sights. There is also a ground mount for the RPG-29; this consists of a tripod and adds laser sights.

Twilight 2000 Notes: The RPG-29 is in use primarily by Russian and Czech Airborne, Air Assault, and special operations forces, and is relatively rare. Ground mounts are even rarer.

Weapon	Caliber	Weight	Length	Price
RPG-29	105mm	(Launcher) 12.1 kg, (Ground Mount) 9 kg	1 meter (Stowed); 1.85 meters (Firing)	(Launcher) \$850, (Ground Mount) \$1000

Ammunition	Caliber	Weight	Price
HEAT-T	105mm	7.79 kg	\$224
Thermobaric	105mm	7.79 kg	\$285

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPG-29	3	125	Nil	HEAT-T	C15 B40	71C/119C
With Ground Mount	3	200	Nil	HEAT-T	C15 B40	105C/131C
RPG-29	3	125	Nil	Thermobaric	C44 B34	60C
With Ground Mount	3	200	Nil	Thermobaric	C44 B34	60C

RPO Shmel

Notes: This is rocket launcher designed to fire incendiary projectiles. Four types of warhead are available: a conventional white phosphorus warhead, a thermobaric fuel-air explosive to destroy bunkers, a smoke round which produces very dense smoke screens, and a warhead that combines a light HEAT warhead with a thermobaric warhead to provide a limited antiarmor capability.

Twilight 2000 Notes: The RPO-G does not exist.

Weapon	Caliber	Weight	Length	Price
RPO-A	93mm	12 kg (Complete)	920mm	\$660
RPO-D	93mm	12 kg (Complete)	920mm	\$430
RPO-G	93mm	12 kg (Complete)	920mm	\$700
RPO-Z	92mm	12 kg (Complete)	920mm	\$540

Weapon	Reload	Range	IFR	Round	Damage	Pen
RPO-A	0	60	600	Thermobaric	C30 B30	43C
RPO-D	0	60	600	Smoke	C2 (B10)	Nil
RPO-G	0	60	600	HEAT-Thermobaric	C20 B30	65C
RPO-Z	0	60	600	WP	C2 B20	Nil

SPG-9

Notes: The SPG-9 is similar to the 73mm smoothbore gun used on the BMP-1 and BMD-1. The ammunition is identical to that used in the 73mm gun of the BMP-1 and BMD-1 except for the propelling charge. The SPG-9 is common among Bloc airborne forces and is also found among many Third World nations.

Weapon	Caliber	Weight	Length	Price
SPG-9	73mm	57 kg	2.11 kg	\$5250

Ammunition	Caliber	Weight	Price
Bulgarian OG-9BG FRAG-HE	73mm	6.9 kg	\$207
Bulgarian OG-BG1 FRAG-HE	73mm	4.48 kg	\$134
Russian OG-9V FRAG-HE	73mm	5.35 kg	\$161
Russian OG-9VN FRAG-HE	73mm	5.35 kg	\$161
Russian PG-9V HEAT	73mm	4.39 kg	\$198
Russian PG-9VNT HEAT	73mm	3.2 kg	\$144

Weapon	Reload	Range	IFR	Round	Damage	Pen
SPG-9	3	220	800	Bulgarian OG-9BG FRAG-HE	C8 B25	2C
	2	190	660	Bulgarian OG-9BG1 FRAG-HE	C8 B20	2C
	3	220	800	Russian OG-9V FRAG-HE	C8 B20	2C

	3	220	800	Russian OG-9VN FRAG-HE	C7 B25	4C
	2	220	800	Russian PG-9V HEAT	C5 B15	53C
	2	220	800	Russian PG-9VNT HEAT	C6 B15	73C

TEMP-10

Notes: The TEMP-10 is a highly-modified RPG-7, with an enlarged launch tube, advanced sights that incorporate a sighting telescope and limited night vision capabilities (as an image intensifier, but only 75% normal range), and only one type of round: the first EFP (Explosively-Formed Projectile) light antitank weapon round. This round may be set for impact, delayed, or proximity detonation, and can be used for antivehicle, antipersonnel, antibunker, or antihelicopter use. It is a very fast round; after its soft launch, it quickly (within 0.2 seconds) accelerates to 14,000 meters per phase (2,800 meters per second). As of 2003, this was just getting into production, though the Russians had found few buyers.

Twilight 2000 Notes: This experimental rocket launcher was issued in limited quantities to Russian forces during the Twilight War, particularly to Airborne, Air Assault, and special operations forces.

Merc 2000 Notes: Budget cuts stopped the development of the TEMP-10.

Weapon	Caliber	Weight	Length	Price
TEMP-10	110mm (Overcaliber)	6.7 kg	1 meter	\$825

Ammunition	Caliber	Weight	Price
EFP	110mm Overcaliber	3.21 kg	\$118

Weapon	Reload	Range	IFR	Round	Damage	Pen
TEMP-10	2	65	515	EFP	C10 B45	113C

Armbrust

Notes: Originally developed by MBB of Germany, the license and manufacturing rights to the Armbrust were sold to CAI of Singapore in 1988, and they now have sole rights to build the weapon. It is a short-range antiarmor weapon, similar in concept to weapons like the AT-4 and M-72. The Armbrust, however, has no firing signature, virtually no backblast, no muzzle flash, and is quieter than a pistol shot when fired. The firer is thus very difficult to locate if he is hidden, and the Armbrust may be fired from enclosed spaces. The warhead is not particularly large, but the Armbrust may be fired in both indirect fire as well as direct fire roles. It is primarily used by troops of the Balkan States today.

Twilight 2000 Notes: In addition to the Balkan States, the militaries of most of NATO are using the Armbrust, as is Mexico and Venezuela. The Armbrust continued to be manufactured in Germany until well into the Twilight War.

Weapon	Caliber	Weight	Length	Price
Armbrust	67mm	6.3 kg (Complete)	850mm	\$177

Weapon	Reload	Range	IFR	Round	Damage	Pen
Armbrust	0	70	575	HEAT	C6 B25	74C

FT-5

Notes: This is the primary medium rocket launcher of South Africa. It is light enough to be handled and fired by one man, and consists of a reusable launcher and a rocket unit canister slid into the rear of the launcher. The standard sight is a 4x sight protected from damage due to vibration, with backup iron sights. A laser sight can also be added.

Weapon	Caliber	Weight	Length	Price
FT-5	92 or 95mm	5.9 kg	1.05 kg	\$1150

Ammunition	Caliber	Weight	Price
HEAT	92mm	5.4 kg	\$146
HEAT	95mm	5.6 kg	\$152
HEAT/RA (HEAT-T)	95mm	5.6 kg	\$229
HEMP (HEDP)	94mm	5.5 kg	\$125

Weapon	Reload	Range	IFR	Round	Damage	Pen
FT-5	2	95	Nil	92mm HEAT	C11 B35	103C
	2	95	Nil	95mm HEAT	C12 B35	107C
	2	95	Nil	HEAT-T	C12 B35	86C/107C
	2	95	Nil	HEDP	C18 B40	56C

Alcotan-100

Notes: This is a Spanish rocket launcher designed to replace the M-65 and C-90 in Spanish service. As it did not enter mass production until 1998, it is relatively rare. The sight includes passive IR and 4x magnification, and gives a computer-calculated aiming point for the gunner. This is part of the normal aiming process and takes only one phase of aiming time (normal aiming). This results in a good range for the system. After firing, the sight is unclipped from the prepacked launch tube and attached to another round. Several rounds are available.

Weapon	Caliber	Weight	Length	Price
Alcotan-100 (Sight)	NA	5 kg	NA	\$250
Alcotan-100 (ABK)	100mm	9 kg (Complete)	1.35 meters	\$525
Alcotan-100 (BK)	100mm	9 kg (Complete)	1.35 meters	\$235
Alcotan-100 (HEAT-T)	100mm	9 kg (Complete)	1.35 meters	\$525

Weapon	Reload	Range	IFR	Round	Damage	Pen
Alcotan-100	2	150	Nil	ABK	C13 B35	70C/87C
	2	150	Nil	BK	C13 B35	61C
	2	150	Nil	HEAT-T	C6 B6	90/113C

C-90 LAW

Notes: This is a family of disposable light antitank weapons built by Spain, also known as the Alcotan-90. The C-90 is built in 6 versions, with a mix of HEAT, HEDP, and WP warheads and short- and long-range rockets. The C-90 normally comes in a 7-round case with one of each type of weapon. The anti-bunker round can penetrate 250mm of reinforced concrete.

Weapon	Caliber	Weight	Length	Price
C-90C	90mm	4.2 kg (Complete)	840mm	\$300
C-90C-AM	90mm	4.2 kg (Complete)	840mm	\$290
C-90CR	90mm	4.7 kg (Complete)	943mm	\$310
C-90CR-AM	90mm	4.7 kg (Complete)	943mm	\$300
C-90CR-BK	90mm	5.1 kg (Complete)	943mm	\$310
C-90CR-FIM	90mm	5.3 kg (Complete)	943mm	\$350
C-90CR-RB	90mm	4.7 kg (Complete)	943mm	\$310

Weapon	Reload	Range	IFR	Round	Damage	Pen
C-90C	0	45	Nil	HEAT	C9 B30	83C
C-90C-AM	0	45	Nil	HEDP	C14 B40	45C
C-90CR	0	75	Nil	HEAT	C9 B30	83C
C-90CR-AM	0	75	Nil	HEDP	C14 B40	45C
C-90CR-BK	0	75	Nil	Antibunker	C16 B40	35C/43C
C-90CR-FIM	0	75	Nil	WP	C2 B20	Nil
C-90CR-RB	0	75	Nil	HEAT	C11 B35	101C

M-65

Notes: This is medium rocket launcher used by Spain. It is simple to produce and maintain, and easy to use.

Weapon	Caliber	Weight	Length	Price
M-65	89mm	6 kg	850mm (Stowed), 1640mm (Firing)	\$2750

Ammunition	Caliber	Weight	Price
HEAT CHM-65	89mm	2 kg	\$39
HEDP MB-66	89mm	2.9 kg	\$53
WP FIM-66	89mm	2.7 kg	\$74

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-65	1	180	595	HEAT	C8 B15	64C
	1	180	595	HEDP	C10 B20	30C
	1	180	595	WP	C2 B20	Nil

Bofors PV-1110

Notes: This recoilless rifle is found only in Swedish and Irish service, usually mounted on a light vehicle, the BV-206, or a trailer. It is a rather heavy weapon with medium range and penetration. The weapon has a 7.62mm spotting rifle above the main barrel; each successful shot with the spotting rifle before firing the rocket gives the gunner a +1 to hit with the rocket shot, to a maximum of +3.

Weapon	Caliber	Weight	Length	Price
PV-1110 Recoilless Rifle	90mm	260 kg	3.7 meters	\$8950

Ammunition	Caliber	Weight	Price
HEAT	90mm	10.7 kg	\$482
HE	90mm	12.3 kg	\$369
3A-HEAT-T	90mm	10 kg	\$675

Weapon	Reload	Range	IFR	Round	Damage	Pen
PV-1110	6	200	800	HEAT	C8 B15	103C
	6	200	800	HE	C12 B25	7C
	6	200	800	3A-HEAT	C9 B15	112C/140C

FFV Pskott m/68 Miniman

Notes: The Miniman was designed by FFV in response to a Swedish Army requirement for a LAW-type weapon, a type of rocket launcher which was becoming more and more common at the time among Western forces. This weapon was issued to Swedish, Finnish, and Austrian troops, but quickly put into storage when better weapons came along, and scale of issue was never very high. The launcher consists of a rocket inside a fiberglass tube with a thin metal liner. The Miniman used a unique (for a rocket launcher) high-low-pressure launch system, where the initial high-pressure launch gasses were bled into a low-pressure chamber; this, combined with the open rear end, resulted in no recoil (though did not eliminate the backblast). Like most such weapons, the Miniman was issued as a single round of ammunition, with the disposable launch tube being discarded after firing. Though not gifted in range or penetration, it is easy to carry and use, and is better than nothing. The later AT-4 is in many respects a scaled-up Miniman, and the AT-4 replaced the Miniman in production.

Currently, the only users of the Miniman are the Estonian Army.

Twilight 2000 Notes: Bofors actually put the Miniman back into limited production in the early-1990s, with war clouds gathering before the Twilight War. They were issued in droves to Swedish, Finnish, and Austrian forces before and during the Twilight War.

Merc 2000 Notes: Most of these weapons were sold off to Third World countries.

Weapon	Caliber	Weight	Length	Price
Miniman	74mm	2.9 kg (Complete)	900mm	\$257

Weapon	Reload	Range	IFR	Round	Damage	Pen
Miniman	0	89	Nil	HEAT	C5 B25	52C

Saab Bofors AT-4

Notes: The AT-4 is an up-sized development of the m/68 Miniman LAW designed by FFV and built originally by Bofors, which was later bought out by Saab and is still in production by that company. It is also license-produced in several countries, including the US, the AT-4's largest user. The Swedish Army requested a new LAW in 1976; it was already obvious when the Miniman went into service that it was close to useless against the tanks of even the late 1970s and of possibly limited effectiveness against lighter armor and fortifications. The Swedish Army took an interesting approach – they deliberately chose not to make the penetration of tank frontal armor part of the design requirements, since this would result in a weapon that was too large to be manpacked by one soldier, and essentially defeat the purpose of a LAW. They instead required that the AT-4 be able to defeat tanks from the side and lighter armored vehicles from the front, as well as having the ability to do considerable damage to fortifications. This was not generally a design requirement of most LAWs of the period. The Swedish Army also required that after penetrating armor, the AT-4 was to be able to still cause considerable damage to the interior of the vehicle or fortification. FFV produced the first prototypes in 1981 and production began in 1982.

However, the first customer for the AT-4 was not actually the Swedish Army – they did not adopt the AT-4 until 1986, designating it the Pskott m/86. The first customer was the US Army; they had been looking for a replacement for the deficient M-72 LAW since it had proven less than satisfactory against North Vietnamese PT-76s and Viet Cong fortifications during the Vietnam War. The FGR-17 Viper proved to be a short-lived, equally unsatisfactory replacement, and in 1982, the US Army began a hurried replacement program for the M-72 and FGR-17. The AT-4 came along at the right time, beating out five other weapons in 1983. The US Army, however, made a number of tweaks to the AT-4 (which they designated the M-136); bumpers were added to the front and rear, as much to protect the weapon as to ease carrying by the soldier, the carrying sling was both simplified and made more comfortable for the soldier (and doubled as a tie-down strap for carriage on a vehicle), a folding forward grip was added, and most importantly, the sights were greatly simplified, being more akin to rifle sights than traditional LAW sights (with training to make

up the difference). Bofors decided to make most of the US Army's changes the standard for production AT-4s; the only difference between the AT-4 and the M-136 is the folding foregrip. The US Army also gave the AT-4 its name; it is a play on the words "eighty-four," referring to the weapon's caliber; Bofors chose to make "AT-4" the weapon's company designation and US troops generally refer to the weapon as the AT-4 instead of M-136. The AT-4 has since become the standard LAW of 18 countries worldwide, is used by the British in small numbers, and it is possible that the Venezuelans have supplied the AT-4 to FARC guerillas in Columbia.

The Standard AT-4

As originally designed, the AT-4 is a single-use LAW which is relatively compact in form, though it is larger than earlier LAW designs such as the M-72 series. It is issued as a round of ammunition, like almost all LAWs, and the empty tube is intended to be discarded after firing. The tube of the AT-4 is made of reinforced fiberglass with a relatively thin metal liner for the bore, which greatly reduces weight and (real-world) cost. This also allows for a much heavier rocket inside the tube, as more weight can be devoted to the rocket instead of the rocket tube. The liner is smoothbore, with stabilization of the round being via pop-out fins. The original AT-4 uses a single HEAT round which has been tweaked to be more effective against fortifications than is normal for a weapon of its type (10% more effective; see the Care and Feeding of Antiarmor Weapons for elaboration of rocket rounds against fortifications.) The AT-4's round is actually a modified form of the M2/M3 Carl Gustav recoilless rifle's round. The firing mechanism is actually very simple, even simpler than used on most firearms. The sights are pop-up and normally protected by sliding covers. The shooter first cocks the AT-4 with by moving a cocking rod forward and over the top of the weapon to the right side. The shooter then simultaneously pushes a safety button and a trigger button to actually fire the rocket. (It sounds complicated, but can actually be done in about two seconds by most gunners.) The front bumper of the AT-4 disintegrates when the weapon is fired, resulting in a large spray of plastic fragments in front and to the sides of the shooter which generally don't have enough energy to produce any sorts of injuries, but provides an impressive visual effect. In addition to it's standard sights, the AT-4 can mount a number of night vision sights, which are removed after firing.

Training versions of the AT-4 exist. Both are reloadable, and both are ballistically matched to a standard AT-4 round. One is a simple 9mm round, based on the 9mm Parabellum round with a longer case and larger propellant charge. Though this practice round is cheap, the round's hit can generally be only determined primarily by the sound of the round impacting the target and perhaps some dust knocked off, making the scoring of a hit difficult, as neither effect is very noticeable. The other is a 20mm round which produced a flash upon impact, making a hit easier to see and score; it is much preferred over the 9mm round. A third version is used in field training by the US military; this consists of a reloadable smoke cartridge that simulates the backblast of a real AT-4 along with a laser transmitter used with the MILES system. All three are fired using the same procedure as a real AT-4.

The Modifications

Many modifications of the AT-4 have been produced; most of these have been devised by the US military in response to specific needs. Most of the AT-4 variants listed below were produced only in small numbers, as they were generally produced for specialist applications and manufacture was standardized as much as possible. Most are also heavier and therefore reduce the effective range of the AT-4. Some were only produced as prototypes and test versions and did not actually go into production, though I have included them below as "what-ifs."

One of the first modifications made to the AT-4, done starting in the mid-1980s, was to use the Davis Countershot Principle to greatly-reduce the backblast, producing a version which not only has little backblast, but can be fired from enclosed spaces. (See the Care and Feeding of Antiarmor Weapons page for the effects of the Davis Countershot Principle.) The resulting weapon, the AT-4CS (Confined Space), uses a countermass of salt water. It produces a simple spray of steam upon firing, which is almost unnoticeable; the muzzle blast has also been greatly reduced. This increases weight, but the results are worth it. At the same time, the warhead was increased in effectiveness using new technology. The AT-4CS is now the standard production version of the AT-4, replacing the original AT-4 in production, and all subsequent AT-4 modifications use the CS modification.

The AT-4LMAW (Light Multipurpose Assault Weapon) is designed primarily for anti-fortification and antipersonnel use. It can be set for delayed detonation, allowing it to penetrate some fortification walls before a main charge detonates. The main charge has an extra fragmentation jacket wrapped around it, though the actual HEAT round is reduced in size. The warhead is therefore an HEDP/FRAG warhead with a precursor charge. As a side effect, the precursor charge does give the AT-4LMAW some extra chance against ERA. The AT-4MAW's warhead is also known as the HEDP 502 warhead. The AT-4AST (Anti-Structure Tandem) is similar in concept, but uses a heavier HEDP warhead and does away with the fragmentation jacket, though it retains the precursor charge. The AT-4AST increases penetration at the cost of blast radius, and therefore has somewhat better performance against armor.

The AT-4HP (High Penetration) uses a heavier warhead and a somewhat redesigned shaped charge cone. The rocket also has a more powerful propelling charge. This gives it better penetration than a standard AT-4, but pays for it with a heavier weight. Almost on the heels of the AT-4HP, ERA became common enough on potential enemy tanks that a tandem-charge version was designed, the AT-4HP-T. This version is even heavier, and pays for it with even more reduced range.

The AT-4I (Incendiary) was a version of the AT-4 equipped with a white phosphorus warhead. It was designed to fill a perceived gap produced by the removal of the M-202 Flash rocket launcher, which had been removed from the US Army inventory decades before. Though the design was considered satisfactory, and it had its uses, very few were actually manufactured and even less issued. *Rumors* are that most of these went to special operations units, primarily the US Army Rangers. However, there

are no *confirmed* issues of the AT-4I, or confirmations of its actual use. I can't help but think, though, that the actual launchers are being kept somewhere (given the US military's penchant for retaining items, even though they don't use them and never intend to).

The AT-8 was developed to compete in a US Army and Marine program to produce a LAW version of a bunker buster version of the AT-4. It was developed several years before the AT-4AST, and the AT-8 may be regarded in a way as a predecessor of that weapon. The primary differences between the two weapons are weight (the AT-8 is a trifle lighter) and effectiveness of the warhead; in addition, the warhead is heavier (as it uses less-advanced technology) and this cuts the range. However, this is because the precursor warhead is nearly twice as large as that of the AT-4AST. In the end, the competition was won by the SMAW-D, which used a variant of the HEDP warhead used by the US Marines' M-12 SMAW.

The AT-12 is a scaled up version of the AT-4, also called the Frontal Engagement Version. (Despite this name, it is doubtful that the AT-12 could penetrate the frontal armor of Soviet or Russian tanks of the 1990s.) It is essentially an AT-4 suitably scaled up to use a 130mm tandem warhead (the name comes from the original plan to use a 120mm warhead). In design, it otherwise follows the design of the AT-4CS, though it also includes a folding monopod to help support the front of the weapon. In the end, it was considered a too-large and unwieldy weapon and was not placed into production.

Twilight 2000 Notes: Perhaps one-quarter of the AT-4s produced in the Twilight 2000 timeline are the AT-4CS version. Only small amounts (perhaps 10% of the total) of the other versions of the AT-4 were produced and many of these were simply the new warheads placed on older AT-4 (as opposed to AT-4CS) versions. The AT-8 was produced in larger numbers, as the AT-4AST was not available in the Twilight 2000 timeline. The AT-12 version was quite rare, as small batches only were produced starting in 1995; they were, however, more common in Sweden, Norway, and Finland than in NATO countries or the US.

Weapon	Caliber	Weight	Length	Price
AT-4	84mm	6.7 kg (Complete)	1016mm	\$332
AT-4CS	84mm	7.5 kg (Complete)	1016mm	\$348
AT-4LMAW	84mm	7.2 kg (Complete)	1016mm	\$315
AT-4AST	84mm	7.4 kg (Complete)	1016mm	\$352
AT-4HP	84mm	8.2 kg (Complete)	1016mm	\$349
AT-4HP-T	84mm	9.8 kg (Complete)	1016mm	\$438
AT-4I	84mm	6.7 kg (Complete)	1016mm	\$353
AT-8	84mm	7.3 kg (Complete)	1016mm	\$354
AT-12	130mm	14 kg (Complete)	1.2 meters	\$590

Weapon	Reload	Range	IFR	Round	Damage	Pen
AT-4	0	100	Nil	HEAT	C8 B30	77C
AT-4CS	0	100	Nil	HEAT	C9 B30	94C
AT-4LMAW	0	106	Nil	HEDP/FRAG-T	C8 B44	7C/40C
AT-4AST	0	102	Nil	HEDP-T	C9 B35	9C/50C
AT-4HP	0	85	Nil	HEAT	C10 B33	114C
AT-4HP-T	0	79	Nil	HEAT-T	C11 B48	41C/114C
AT-4I	0	100	Nil	WP	C2 B15	Nil
AT-8	0	84	Nil	HEDP-T	C10 B44	20C/49C
AT-12	0	82	Nil	HEAT-T	C25 B48	111C/149C

Saab Bofors M-2/M-3 Carl Gustav

Notes: Used by some 40 countries, the "Carl Gustav" recoilless rifle is called many things by many countries. For example, it goes by the company designation of M-2CG and M-3CG; British troops refer to it as the Charlie G, Canadian troops call it the 84 or Carl G. The US special operations units who use it officially call it the RAWS (Ranger Antitank Weapons System) or MAAWS (Medium Anti-Armor Weapons System), but more commonly call it the Gustav or Carl Johnson or sometimes "the Goose;" the M-3 replaced the M-67 90mm recoilless rifle in the early 1990s. Australian troops call it the Charlie Gusto or Charlie Gutsache. The Swedish Army gives it the official designation of Grg m/48, but the troops are more likely to call it the Stuprör (Drainpipe). The British designation is L-14A1. Other countries have even more designations and appellations for it. The name "Carl Gustav" refers to Carl Gustav Stads Gevärfabriker, where the original production of the M-1 and M-2 took place. The Swedes chose to make the M-2 a recoilless rifle system instead of a straight rocket launcher, since this cut down on the need for stabilization mechanisms and allowed for more propellant to be carried; this increased the range over similar rocket launchers of the period, and has enabled it to maintain combat relevance over time (along with improvements in ammunition). The original version, the M-1, was introduced in 1948 and used a tube and most of its parts made primarily of steel; this was replaced in 1964 by the M-2 version with much of the steel parts made from high-strength aluminum. In 1991, the M-3 version appeared; this replaced most of the firing tube with carbon fiber, with thin internal steel liner, and virtually all other steel parts made from light aluminum alloys or plastics. The drawback of the M-3 version is a lack of staying power; the launch tube has a limitation of 100-200 rounds before it has to be overhauled and becomes increasingly dangerous to use until the overhaul is done.

Both the M-2 and M-3 versions are equipped with a 3x aiming reticle with an illuminated stadia; the M-1's stadia was not illuminated. Backup iron sights are also fitted for quick shots. The M-3 version used by US SOCOM is equipped with a MIL-STD-1913 rail, with the sight mounted on a sliding track that allows for adjustments between users and for different ammunition types, and also allows for the use of night vision devices. US SOCOM also uses a special PFCD (Picatinny Fire Control Device) scope that is itself adjustable for use with different warhead types. The launch tube includes a forward grip, the firing grip behind it, and a short bipod behind that at the point of balance (when the tube is loaded). The Irish and Danish Armies often use the CLASS (Computer LASer Sight), giving a +2 to hit in game terms for up to medium range. Canadian troops, particular the Princess Patricia Light Infantry Regiment, sometimes use a special magazine-fed spotting rifle adapted from that of the US Mk 153 SMAW, which gives a +1 to the gunner's rocket shot for every hit he achieves with the spotting rifle to a maximum of +3. The weapon is loaded by swinging open the rear venturi and sliding rounds into the rear, then closing it again. Reload time is based on its use by a team; add two to all reload times if only one gunner is available. Most countries currently use the M-2 version; the M-3 is used (along with the M-2) by Canada, and is also used by Polish special operations units, India, the Swedish Coastal Rangers, and US SOCOM units (the largest single users of the Carl Gustav). The M-1 version has been long out of service by any world military units. The Germans do use the M-2 version, but only to launch illumination rounds; they still use the Panzerfaust 3 for their other rocket launcher needs. The rounds for the AT-4 LAW are in part a development of the M-2's ammunition, particularly in the use of the warheads.

The standard round for most users is the FFV-551 HEAT round, a more-or-less standard type of antiarmor round. The FFV-597 HEAT uses a much larger warhead. The FFV-751 HEAT-T uses a tandem warhead; the FFV-651 HEAT-ER-T is another tandem-warhead design, one that uses a mid-course rocket boost to extend range and a lighter warhead to keep weight down. The Indians have a special version of the FFV-551 round, one with a slightly reduced-weight warhead but a slightly-extended range. The FFV-441 HE and FFV-502 HEDP are basically standard warheads of their type, though the FFV-441B HE-FRAG can be set to expend the fragmentation charge upon impact or after the HE charge penetrates a fortification, and the FFV-441 can be set for an airburst detonation using a fuze which can be set for proximity or timed detonation. The ADM-401 APERS round is a flechette "beehive" round; at its "range," it separates and disperses quickly into 1000 steel darts.

Weapon	Caliber	Weight	Length	Price
M-1	84mm	21.3 kg	1.13 meters	\$1755
M-2	84mm	14.2 kg	1.13 meters	\$1950
M-3	84mm	8.5 kg	1.07 meters	\$2600

Ammunition	Caliber	Weight	Price
ADM-401 APERS	84mm	2.7 kg	\$252
FFV-551 HEAT	84mm	3.2 kg	\$160
FFV-597 HEAT	84mm	9.5 kg	\$538
FFV-751 HEAT-T	84mm	3.8 kg	\$296
FFV-651 HEAT-ER-T	84mm	5.4 kg	\$444
FFV-441 HE	84mm	3.1 kg	\$96
FFV-441B HE-FRAG	84mm	3.1 kg	\$104
Indian HEAT	84mm	2.6 kg	\$134
FFV-502 HEDP	84mm	3.3 kg	\$140
FFV-545 ILLUM	84mm	3.1 kg	\$112
FFV-469B Smoke	84mm	3.1 kg	\$112

Weapon	Reload	Range	IFR	Round	Damage	Pen
Carl Gustav RCLR	1	25	Nil	ADM-401 APERS	12x100D	1-Nil
	1	130	Nil	FFV-551 HEAT	C8 B30	77C
	4	70	Nil	FFV-597 HEAT	C8 B30	156C
	2	120	Nil	FFV-751 HEAT-T	C9 B30	75C/94C
	2	170	Nil	FFV-651 HEAT-ER-T	C7 B24	29C/71C
	1	130	Nil	FFV-441 HE	C16 B28	8C
	1	130	Nil	FFV-441B HE-FRAG	C12 B35	6C
	1	145	Nil	Indian HEAT	C9 B30	69C
	2	125	Nil	FFV-502 HEDP	C12 B35	42C
	1	130	Nil	FFV-545 ILLUM	(B865)	Nil
	1	130	Nil	FFV-469B Smoke	C2 (B10)	Nil

RL-58/80

Notes: This is a Swiss medium rocket launcher that was still in limited use at the time by 2003. Despite the resemblance to the Belgian RLC-83 and the Bazooka, it is an independent design. First designed in the mid-1950s, the launchers and ammunition were updated and redesigned in the late 1970s and early 1980s.

Weapon	Caliber	Weight	Length	Price
RL-58/80	83mm	8.5 kg	1.3 meters	\$925

Ammunition	Caliber	Weight	Price
HE	83mm	2.7 kg	\$48
HEAT	83mm	2.7 kg	\$71
Smoke	83mm	2.7 kg	\$48
WP	83mm	2.7 kg	\$94

Weapon	Reload	Range	IFR	Round	Damage	Pen
RL-58/80	1	80	Nil	HE	C12 B35	5C
	1	80	Nil	HEAT	C8 B30	76C
	1	80	Nil	Smoke	C2 (B10)	Nil
	1	80	Nil	WP	C2 B15	Nil

DeGroat M-20 Recoilless Rifle

Notes: The M20 entered US Army service in 1945 and was obsolete by the 1970s. It can still be found in service with many nations, including Thailand. It is fired from a tripod (40.05 kg).

Weapon	Caliber	Weight	Length	Price
M-20 Recoilless Rifle	75mm	85.1 kg	2.13 meters	\$3650

Ammunition	Caliber	Weight	Price
HE	75mm	10 kg	\$300
HEAT	75mm	10 kg	\$450
WP	75mm	10 kg	\$600

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-20	5	200	1670	HE	C7 B20	4C
	5	200	1670	HEAT	C5 B10	39C
	5	200	1670	WP	C2 B15	Nil

Kroger/Musser M-18A1

Notes: Entering service with the US Army in 1946, this recoilless rifle was replaced by larger weapons in the 1960s. It remains in service with a number of countries, including Thailand. Recoil on the M18A1 is relatively light, and the weapon can be shoulder-fired, although a tripod or vehicle mount (NMT) is preferred.

Weapon	Caliber	Weight	Length	Price
M-18A1 Recoilless Rifle	57mm	(Basic) 22.04 kg, (Tripod) 13.36 kg	1.56 meters	(Basic) \$2250, (Tripod) \$675

Ammunition	Caliber	Weight	Price
M-307A1 HEAT	57mm	2.48 kg	\$112
M-306A1 HE	57mm	2.48 kg	\$74
M-308A1 WP	57mm	2.48 kg	\$149
T-25E5 APERS	57mm	2.51 kg	\$377
Type 36 HE	57mm	2.54 kg	\$76
Type 7 HEAT	57mm	2.44 kg	\$110
Italian HE-PFF	57mm	2.64 kg	\$79

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-18A1(Bipod/Tripod)	1	115/170	Nil/940	M-307A1 HEAT	C3 B10	27C
	1	115/170	Nil/940	M-306A1 HE	C4 B15	2C
	1	115/170	Nil/940	M-308A1 WP	C2 B10	Nil
	1	115/115	Nil	T-25E5 APERS	B10x25	1-Nil
	1	115/170	Nil/940	Type 36 HE	C5 B15	2C
	1	115/170	Nil/940	Type 7 HEAT	C3 B10	39C
	1	115/170	Nil/940	Italian HE-PFF	C4 B20	1C

Picatinny Arsenal M-20A1 3.5" Rocket Launcher

Notes: Nicknamed the Super Bazooka, a smaller version of this weapon (the 2.36" M-1A1) served with fame during World War II. The 3.5" version was designed in response to North Korean T-34 tanks during that war. The Bazooka has an extremely short range and requires considerable courage to use effectively, and usually has little effect on modern vehicles. It is no longer in service with any major army but can be found in use by smaller armies, most notably by fighters in Lebanon, where any weapon is better than none. Over the years, many new rounds have been developed in an attempt to turn the Bazooka into an effective weapon.

Weapon	Caliber	Weight	Length	Price
M-20A1	89mm	5.5 kg	1.55 meters	\$775

Ammunition	Caliber	Weight	Price
CHM-81 HEAT	89mm	2.3 kg	\$57
FIM Smoke	89mm	2.7 kg	\$46
FIM CHEM	89mm	2.7 kg	\$92
Hydroar HEAT	89mm	4 kg	\$104
M-28 HEAT	89mm	4.05 kg	\$109

M-29 HEDP	89mm	4 kg	\$90
NR-415 HEAT-FRAG	89mm	4 kg	\$125
Mecar LR HEAT	89mm	2.7 kg	\$68
Portuguese HEDP	89mm	4 kg	\$87
RJ 3.5AE APAC HEDP-FRAG	89mm	4 kg	\$96

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-20A1	2	115	Nil	CHM81 HEAT	C9 B30	82C
	2	55	Nil	FIM Smoke/CHEM	C2 (B10)	Nil
	2	85	Nil	Hydroar HEAT	C8 B30	64C
	2	45	Nil	M-28 HEAT	C5 B25	29C
	2	45	Nil	M-29 HEDP	C8 B30	17C
	2	85	Nil	NR-415 HEAT-FRAG	C6 B38	51C
	2	120	Nil	Mecar LR HEAT	C8 B30	64C
	2	55	Nil	Portuguese HEDP	C10 B30	26C
	2	85	Nil	RJ 3.5AE APAC HEDP-FRAG	C12 B35	35C

Talley M-72 LAW Series

Notes: The LAW (Light Antiarmor Weapon) was designed in the mid-60s and has long been obsolete. However, the LAW is still quite common throughout the world since mountains of them were distributed. The M72-750 is a progressive improvement of the M-72 series using a faster rocket and heavier warhead, as well as an optional HE warhead. The M-72 normally comes in a case of 15; the M72-750 comes in a case of 10 HEAT and 5 HE rockets. The M72-750 had few sales.

Weapon	Caliber	Weight	Length	Price
M-72A2	66mm	2.36 kg (Complete)	655mm (Stowed), 893mm (Firing)	\$240
M-72A3	66mm	2.5 kg (Complete)	665mm (Stowed), 899mm (Firing)	\$250
M-72A4	66mm	3.45 kg (Complete)	775mm (Stowed), 980mm (Firing)	\$280
M-72A5	66mm	3.45 kg (Complete)	775mm (Stowed), 980mm (Firing)	\$290
M-72A6	66mm	3.45 kg (Complete)	775mm (Stowed), 980mm (Firing)	\$270
M72-750 HE	66mm	4.4 kg (Complete)	724mm (Stowed), 942mm (Firing)	\$280
H72-750 HEAT	66mm	4.4 kg (Complete)	724mm (Stowed), 942mm (Firing)	\$290

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-72A2	0	55	Nil	HEAT	C4 B20	54C
M-72A3	0	70	Nil	HEAT	C4 B20	53C
M-72A4	0	90	Nil	HEAT	C4 B20	63C
M-72A5	0	90	Nil	HEAT-HE	C6 B22	53C
M-72A6	0	90	Nil	HEDP	C7 B25	24C
M72-750	0	155	Nil	HE	C8 B30	3C
	0	155	Nil	HEAT	C4 B4	69C

Talley M-141 BDM

Notes: The M-141 BDM (Bunker-Defeat Munition, formerly called the SMAW-D) is a one-shot LAW-type design weapon meant to provide an anti-fortification capability, primarily for the US Army, which was smaller than the full Mk 153 Mod 0 system but still had the same useful firepower against strongpoints and bunched-up troops. The M-141 essentially uses the rocket and warhead of the Mk 153 Mod 0's Mk 3 HEDP warhead and packages it into a lightweight, one-shot weapon. The BDM was given the OK for production in 1994, but did not enter unit issue until 1999, and production was capped at the time at 6000 rounds, pending the development of a then-unspecified bunker-defeat munition. In light of the need for such a weapon in Iraq and later Afghanistan, the BDM was again put into production. New to the M-141 is a version with the Mk 153 Mod 0's NE warhead; this is the M-141 HIT (High Impulse Thermobaric) warhead. The M-141 is a simple weapon using AT-4-like sights and otherwise kept as simple as possible, for use by any troop trained in its use; a number of night vision devices can also be mounted on a bracket built into the tube. Limited use is being made by the US Marines, but the primary user is the US Army; the Lebanese Army also uses the M-141.

The current BDM shares the same massive backblast as the Mk 153 Mod 0. A version is being designed using the CS warheads being designed for the Mk 153 Mod 1, but these have been just as heavily-delayed as those for the SMAW II. I have designated these the M-141A1, but these are not official designations.

It should be noted that the rationale behind having a separate system for bunker-defeat munitions and anti-armor munitions has been challenged several times, and that it would be more cost-effective to procure variants of the AT-4, which is already in the US Army inventory. I agree with this, but only time will tell. One should never underestimate groupthink and the military-industrial complex, as well as our legislators' willingness to spread the defense dollars around despite what is called for by efficiency.

Twilight 2000 Notes: Limited numbers of the SMAW-D were available for the Twilight War, but only with the Mk 3 HEDP

warhead.

Weapon	Caliber	Weight	Length	Price
M-141	83mm	7.26 kg	813mm	\$360
M-141 HIT	83mm	9.11 kg	813mm	\$641
M-141A1	83mm	8.01 kg	813mm	\$372
M-141A1 HIT	83mm	9.81 kg	813mm	\$679

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-141	0	85	Nil	Mk 3 HEDP	C10 B32	41C
M-141 HIT	0	80	Nil	Mk 80 NE	C65 B40	23C
M-141A1	0	100	Nil	Mk 31 HEDP	C12 B32	49C
M-141A1 HIT	0	95	Nil	Mk 81 NE	C65 B40	23C

Talley/Nammo Mk 153 Mod 0 SMAW

Notes: The Shoulder-Mounted Assault Weapon (SMAW) is based partially on the Israeli B-300 and partially on a McDonnell Douglas development for the US Marines. Originally, the US Army was also participating in the program, for use by the Rangers, Special Forces, and other special ops units; however, they decided to go with the M-3 version of the Carl Gustaf recoilless rifle. Their designation would have been the M-12, had they adopted it. Though the US Army ultimately decided against the SMAW, some 150 launchers were borrowed by the US Army during Desert Storm for use by Rangers, Special Forces, and Delta; there are rumors that more were borrowed during Operation Iraqi Freedom, and that the Army may be considering the SMAW as an issue weapon. In addition to the US Marines, the SMAW is used by Taiwanese Marines and the Lebanese Army. The SMAW has been in use by the US Marines since 1984.

The SMAW comes in the form of a two part unit, with a forward epoxy/fiberglass launch tube which also has a firing grip and forward grip. Near the end of the launch tube portion is a shoulder stop, and the tube also has an extendible bipod for use when prone or in a standing position where the gunner can rest the weapon on something in front of him. A round of ammunition in a disposable tube is snapped into the rear of the launch tube, and at this point an electrical connection is made between the firing grip and the round of ammunition. A safety lever is then switched on and the weapon can be fired. However, the firing grip also has a selector; this allows the gunner to instead fire a round of special 9x51mm ammunition which is ballistically matched to the characteristics of the rocket round. The shooter can use this spotting rifle to improve his aim; for every hit he makes on his target before his rocket shot, he gets a +1 to hit with his rocket shot, to a maximum of +3. The spotting rifle is fed by a 6-round magazine; a magazine for the spotting rifle is clipped to each of the rocket rounds when they are issued. The spotting rifle is similar to that used on the British LAW-80, as it was adapted from that weapon; the ammunition is identical. The firing tube also has a telescopic sight with a magnification of x3.8, and includes an illuminated aiming stadia for night and day use. This sight can be removed and replaced with most US and NATO night vision devices.

The rockets have spring-out fins which deploy after the round leaves the launcher. There are several types available. The round below listed as "NE" stands for "Novel Explosive," but it is a thermobaric round with further-enhanced blast features. The HEAA (high-Explosive Anti-Armor) is simply another designation for a HEAT round. The FTG (Follow-Though Grenade) round uses an HEDP primary warhead with a behind-armor warhead which is smaller but has an extra fragmentation jacket. The SMAW has earned a dubious distinction on the battlefield – it is perhaps the loudest infantry-carried weapon, with a firing volume of 152.3 decibels, loud enough that the use of earplugs is recommended even in battle conditions when using the SMAW. Backblast is a problem, enough that standard doctrine calls for no one to be within 100 meters and a 60-degree cone behind the SMAW when it is fired. The standard crew for a SMAW is two Marines; add two phases to the reload time if no assistant gunner is available. In addition, without an A-gunner, the use of the spotting rifle is basically impossible for the gunner beyond the first shot if he is alone; this is because the spotting rifle is bolt-action and the gunner would have to take the launcher off his shoulder to cock it due to where it is located on the launcher – cocking is normally done by the A-gunner.

Talley and Nammo have responded to the US Marines request for a new version of the SMAW, tentatively to be called the Mk 153 Mod 1 SMAW II; the program itself is the FOTS (Follow-On to SMAW) program. This version addresses a number of problem areas, such as the sights, which can be difficult to properly employ against moving targets. Another problem is a tendency for the launcher to have a slight boresight problem when a round of ammunition is snapped in, which can affect the accuracy of the SMAW. The spotting rifle is redesigned to make it more easily used by a lone gunner (he doesn't have to take the launcher off his shoulder, but can make only one shot per two phases). Perhaps the biggest change is the composition of the launch tube, which is a graphite/carbon fiber composite which not only has greatly-extended life span (the lifespan of a standard Mk 153 Mod 0 version is about 250 rounds) and is much lighter than the Mk 153 Mod 0. The Mk 153 Mod 1 program is, however, far behind schedule; current estimates put first combat tests in late 2011, with production beginning in mid-2012. Current SMAW rockets will remain compatible with the SMAW II.

Along with the SMAW II, new rockets are being developed. These rounds are of the CS (Confined Space) type, using the Davis Countershot Principle, and also have improved range and effects for all but the NE rounds. Both the SMAW and SMAW II will be able to use these rockets, but like the SMAW II itself, the in-service date for these new rounds has slipped considerably.

The designations I have used for the new rounds below are not official; they are used primarily for game convenience.

Twilight 2000 Notes: In the Twilight 2000 timeline, large amounts of SMAW's were also issued to US Army troops, especially in

the Middle East, and generally not redesignated to the "M-12" designation. They were also sold to Saudi Arabia, Oman, and Qatar, and the Israelis also used some to supplement their B-300's. None of the new generation of rounds for the SMAW exist in the Twilight 2000 timeline, nor does the NE round.

Merc 2000 Notes: The Army began issuing the M-12 to the Rangers, Special Forces, 82nd Airborne, and 101st Air Assault in 2002; these were designated the M-12.

Weapon	Caliber	Weight	Length	Price
Mk 153 Mod 0 SMAW	83mm	7.5 kg	825mm (Stowed), 1380 meters (Firing)	\$875
Mk 153 Mod 0 SMAW II	83mm	4.99 kg	825mm (Stowed), 1380 meters (Firing)	\$919

Ammunition	Caliber	Weight	Price
Mk 3 HEDP	83mm	5.95 kg	\$133
Mk 6 HEAA	83mm	6.4 kg	\$172
Mk 7 FTG	83mm	7.1 kg	\$193
Mk 80 NE	83mm	7.8 kg	\$414
Mk 31 HEDP	83mm	6.7 kg	\$145
Mk 61 HEAA	83mm	7.1 kg	\$185
Mk 71 FTG	83mm	7.8 kg	\$211
Mk 81 NE	83mm	8.5 kg	\$452

Weapon	Reload	Range	IFR	Round	Damage	Pen
Mk 153 SMAW	3	125	Nil	Mk 3 HEDP	C10 B32	41C
	3	120	Nil	Mk 6 HEAA	C8 B30	76C
	3	120	Nil	Mk 7 FTG	C7 B50	30C/5C
	3	115	Nil	Mk 80 NE	C65 B40	23C
	3	145	Nil	Mk 31 HEDP	C12 B32	49C
	3	140	Nil	Mk 61 HEAA	C9 B30	93C
	3	130	Nil	Mk 71 FTG	C8 B50	36C/7C
	3	130	Nil	Mk 81 NE	C65 B40	23C

Uhl M-1A1 2.36" Rocket Launcher (Bazooka)

Notes: The predecessor of the Super Bazooka below, the M-1A1 was one of the first antitank rocket launchers. It was, unfortunately, unreliable and even dangerous to its shooter due to the ineffective warhead. The warhead was small, but better than nothing, and had good success against light armor. (There is even one recorded kill by a Bazooka against a Tiger tank, though I don't know the story behind that one.) The name "Bazooka" is due to the resemblance of the rocket launcher to a musical instrument played by a popular cartoon character of the time; he played an instrument he called a Bazooka. The launcher was a simple tube with a pistol grip, forward handgrip, and shoulder stop, though in later versions the forward handgrip was eliminated, and the design simplified to facilitate rapid production. By the time of its introduction, it was already fast becoming obsolete. Though at first only HEAT rockets were produced for the Bazooka, HE and WP rockets were later made late in World War 2. The WP rockets could be dangerous to the firing team as the casing tended to rupture. By the Korean War, the M-1A1 was replaced by a heavier version, the Super Bazooka, below). The M-1A1 can still be found here and there in service, usually with insurgents and irregular forces.

Weapon	Caliber	Weight	Length	Price
M-1A1	60mm	5.8 kg	1.37 meters	\$174

Ammunition	Caliber	Weight	Price
HE	60mm	1.55 kg	\$23
HEAT	60mm	1.55 kg	\$34
WP	60mm	1.55 kg	\$44

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-1A1	1	64	Nil	HE	C4 B20	2C
	1	64	Nil	HEAT	C2 B15	17C
	1	64	Nil	WP	C2 B10	Nil

Watervliet M-27A1

Notes: This recoilless rifle is easily confused with the lighter M-40A1 106mm recoilless rifle. It is no longer in service with the US Army, but was adopted by several other countries, including Thailand. It can be fired from a vehicle mount or a tripod (NHT).

Weapon	Caliber	Weight	Length	Price
M-27A1 Recoilless Rifle	105mm	165 kg	3.2 meters	\$6050

Ammunition	Caliber	Weight	Price
HEAT	105mm	16 kg	\$720

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-27A1	8	200	710	HEAT	C7 B15	56C

M-40A2

Notes: This was once a widely used weapon as late as the Vietnam War, but is now in front-line service only in smaller armies and by Israel. Special units such as US Army Rangers also use it. The M40A2 is commonly mounted on a light vehicle, but can also be mounted on a tripod. It is equipped with a telescopic sight and a .50 spotting rifle. A little-known fact is that the ammunition is not actually 106mm in caliber; it is 105mm (though not interchangeable with the M-27A1's ammunition), and the designation was changed to avoid confusion.

Weapon	Caliber	Weight	Length	Price
M-40A2 Recoilless Rifle	106mm	209.5 kg	3.4 meters	\$8500

Ammunition	Caliber	Weight	Price
3A-HEAT-T	106mm	14.5 kg	\$489
Chinese HE	106mm	21.6 kg	\$324
Chinese HEAT	106mm	15.6 kg	\$351
German HE-FRAG	106mm	8 kg	\$120
Israeli I-HEAT	106mm	13.37 kg	\$201
M-581 APERS	106mm	18.73 kg	\$1405
M-344A1 HEAT	106mm	16.89 kg	\$380
M-346 HESH	106mm	16.95 kg	\$445
RAT-700 HEAT-T	106mm	15.7 kg	\$530
Spanish M-DN-11 FRAG	106mm	16.4 kg	\$246

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-40A2	7	320	2240	3A-HEAT-T	C15 B20	96C/120C
	11	305	2140	Chinese HE	C22 B35	9C
	8	320	2240	Chinese HEAT	C11 B20	73C
	4	320	2240	German HE-FRAG	C15 B40	5C
	7	350	2465	Israeli I-HEAT	C13 B20	99C
	7	195	Nil	M-581 APERS	B30x65	1-Nil
	8	320	2240	M-344A1 HEAT	C11 B20	78C
	8	320	2240	M-346 HESH	C14 B25	62C
	7	320	2240	RAT-700 HEAT-T	C15 B20	133C/173C
	8	315	2210	Spanish M-DN-11 FRAG	C13 B38	5C

Watervliet M-67

Notes: Designed as a readily portable antiarmor weapon (when the shortcomings of the Bazooka became apparent), the M-67 was replaced in the US inventory by the Dragon ATGM and in most other countries' inventory by various missiles. Available on the open market for years, many smaller armies still use it in 2000. It is still used by Israel and was replaced in 1991 in US Army Ranger and Special Forces units by the Carl Gustav M-3. The M-67 can be broken into two sections for transport.

Weapon	Caliber	Weight	Length	Price
M-67 Recoilless Rifle	90mm	16 kg	1.35 meters	\$3250

Ammunition	Caliber	Weight	Price
APERS M-590	90mm	3.08 kg	\$462
HE K-242	90mm	4.6 kg	\$138
HEAT M-371A1	90mm	4.2 kg	\$207

Weapon	Reload	Range	IFR	Round Type	Damage	Pen
M-67	2	90	Nil	APERS	B20x35	1-Nil
	2	180	945	HE	C12 B35	7C

Watervliet M-202A1 Flash

Notes: "Flash" is a common nickname given to this weapon by the troops who use it. The US Army officially classifies it as a flame weapon. It is found only in special units and certain National Guard units. The M202 is and is somewhat dangerous to its gunners, since the WP filler is very volatile and the rockets are fragile. HEAT and CHEM clips for this weapon are extremely rare, produced only on an experimental basis. The weapon is automatic, firing one rocket per second unless the trigger is released.

Weapon	Caliber	Weight	Length	Price
M-202A1	66mm	5 kg	827mm	\$1000

Ammunition	Caliber	Weight	Price
CHEM	4x66mm	7 kg (Per Clip)	\$102 (Per Clip)
HEAT	4x66mm	7 kg (Per Clip)	\$148
WP	4x66mm	7 kg (Per Clip)	\$194

Weapon	ROF	Reload	Range	IFR	Round	Damage	Pen
M-202A1	4	4	135	Nil	CHEM	C2 (B5)	Nil
	4	4	135	Nil	HEAT	C4 B20	46C
	4	4	135	Nil	WP	C2 B15	Nil

Zastava M-57

Notes: The former standard rocket launcher of Yugoslavia, this is merely a light rocket launcher with poor range and penetration. It is based on the Czech P-27, which is itself based upon the RPG-2. The design, however, has diverged considerably from those weapons, including the use of rocket-boosted projectiles, and a larger, more modern warhead. The sights allow for indirect fire. Other design changes include the use of a folding bipod, a redesigned firing unit, and a shoulder stop (of rather thin strip metal). The M-57 may be divided up between 1st Model and 2nd Model; the 2nd model has a better optical sight added, with a magnification of 3.5x.

Weapon	Caliber	Weight	Length	Price
M-57 1 st Model	90mm (Overcaliber)	8.1 kg	1 meter	\$900
M-57 2 nd Model	90mm (Overcaliber)	8.5 kg	1 meter	\$1100

Ammunition	Caliber	Weight	Price
M-57	90mm Overcaliber	2.44 kg	\$58

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-57	1	70	505	HEAT	C7 B25	69C

Zastava M-60A

Notes: This Yugoslavian recoilless rifle is very similar to the Czech M-59A, but the ammunition is not interchangeable. It is usually towed behind light vehicles or animals, and may be dismantled for carrying by pack animals. It is meant for use against armored vehicles and fortifications, as well as antipersonnel work.

Weapon	Caliber	Weight	Length	Price
M-60A Recoilless Rifle	82mm	122 kg	2.2 meters	\$5850

Ammunition	Caliber	Weight	Price
HE M-60	82mm	7.2 kg	\$216
HEAT M-72	82mm	7.8 kg	\$351

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-60A	4	275	1530	HE	C8 B20	5C
	4	275	1530	HEAT	C6 B15	42C

Zastava M-80

Notes: This weapon is an improved and modernized version of the M-57 launcher described above. Differences include the shoulder rest, an extra handgrip near the front, an illuminated sight for night use, and a new round with improved penetration.

Weapon	Caliber	Weight	Length	Price
M-80	85mm (Overcaliber)	6.6 kg	1.04 meters	\$825

Ammunition	Caliber	Weight	Price
HEAT	85mm Overcaliber	2.45 kg	\$63

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-80	1	90	625	HEAT	C8 B30	78C

Zastava M-79 90mm RPG

Notes: The Yugoslavian M-79 is patterned after the French LRAC-89. Price includes a 2.5x scope. After the breakup of Yugoslavia, the production facilities were in Croatian territory, and the Croats were both the primary manufacturer and user of the M-79. The Macedonians build it without a license.

Weapon	Caliber	Weight	Length	Price
M-79	90mm	6.2 kg	1.43 meters	\$1550

Ammunition	Caliber	Weight	Price
HEAT	90mm	3.5 kg	\$89
HEDP	90mm	3.5 kg	\$75
WP	90mm	3.5 kg	\$118

Weapon	Reload	Range	IFR	Round	Damage	Pen
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M-79	1	125	690	HEAT	C9 B30	83C
	1	125	690	HEDP	C14 B40	45C
	1	125	690	WP	C2 B30	Nil

Zastava M-79 Recoilless Rifle

Notes: This Yugoslav weapon is an improved version of the Russian B-10 recoilless rifle. The weapon is made of high-strength steel, and comes with an active IR night sight. The M-79 may be packed on animals, or mounted on light vehicles and armored vehicles. It may also be manhandled over short distances. New ammunition was designed for this weapon, but it may also fire B-10 rockets; when it does so, use the B-10 firing tables.

Weapon	Caliber	Weight	Length	Price
M-79 Recoilless Rifle	82mm	27.5 kg	1.79 meters	\$6375

Ammunition	Caliber	Weight	Price
HE	82mm	3.87 kg	\$116
HEAT	82mm	3.87 kg	\$174

Weapon	Reload	Range	IFR	Round	Damage	Pen
M-79 RCLR	1	245	730	HE	C10 B20	5C
	1	245	730	HEAT	C7 B15	63C

Zastava RBR-M-80

Notes: This is a Yugoslavian LAW rarely seen outside Yugoslavia and Albania. The 64mm LAW is lightweight but not gifted in range or penetration. It is another near-copy of the US M-72.

Weapon	Caliber	Weight	Length	Price
RBR-M-80	64mm	3 kg (Complete)	860mm (Stowed), 1200mm (Firing)	\$270

Weapon	Reload	Range	IFR	Round	Damage	Pen
RBR-M-80	0	65	Nil	HEAT	C4 B20	53C

Zastava RBR-M-90

Notes: This Yugoslavian LAW is much larger than the M-80, designed to counter modern armor. It is a disposable rocket launcher in a glass-fiber tube. There are normal sights, but the M-90 has a bracket for Russian-designed night vision devices.

Weapon	Caliber	Weight	Length	Price
RBR-M-90	120mm	13 kg (Complete)	1.3 meters	\$590

Weapon	Reload	Range	IFR	Round	Damage	Pen
RBR-M-90	0	70	Nil	HEAT	C17 B40	153C