



SAR Identification Series- the RPG Guide

By Dan Shea

SAR has brought a number of articles on the RPG-7 and its technology and history to our readers. We've covered light armorer work, as well as operational idiosyncrasies, and we've dispelled myths perpetuated by a generation of writers and Internet gurus who insist on saying "RPG" means "Rocket Propelled Grenade" no matter how many times it's explained that this is a recoilless launcher system, with many launchers using rocket-assisted grenades. This is a fundamental difference in system, not a minor picking point for us fire-arms techno-geeks. There are many different capabilities and characteristics to consider in this.

"RPG" stands for "Ruchnoi Protivotankoviya Granatomyot," in the case of RPG-2 and RPG-7. There are different Russian words with the same initials for the true rocket propelled grenades of RPG-18, RPG-22, etc. In no case does "RPG" represent the English words "Rocket Propelled Grenade."

Our goal is to educate the small arms community, and especially those going into harm's way, so that they have a full understanding of the system. While there is a stigma in the Western press, the NATO and U.S. allies in this world are now using the RPG-7 system more and more. It is an effective, robust, reloadable and generally easy to use system. It is entirely worthy of upgrades and operation.

There are two stories we haven't done yet at SAR; identification of the grenades used in these systems, and identification of the weapons that fall into the category of "RPG." We decided to start with the launchers, and to concentrate on overall pictures and identifying marks, so that the reader would have the ability to perform fast forensic identification of a unit, hopefully helping solve the questions of where it might have come from.

For the museums and collectors of military pieces out there, here's another set of items to start tracing down and

**RPG Nomenclature:
What does "RPG" really stand for?**

Reusable launchers -
RPG-2/7/16/29 - ruchnoi protivotanoviya granatomyot = hand-held antitank grenade LAUNCHER.

Single use weapons -
RPG-18/22/26/27/28/30 - reaktivnaya protivotankovaya granata = JET antitank GRENADE.

filling out your displays, as if you didn't have enough to chase already! At the end of the RPG-7 section, we have moved further into as many of the weapons called "RPG" whether they are recoilless launcher systems or true shoulder fired rocket launchers, so that the reader can tell what they are, as well as some odd pieces that fit the category but not the nomenclature.

Previous SAR Articles that the Reader Should Reference:

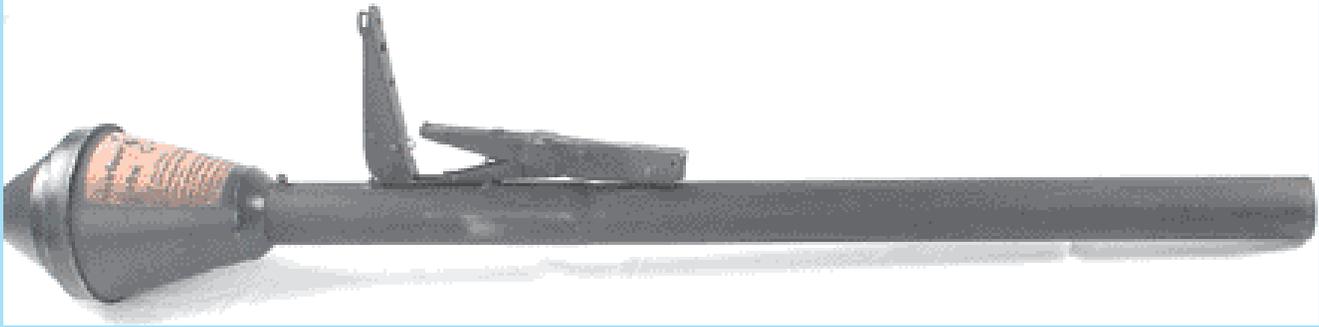
· The RPG-7 System by Dan Shea. (History, some ID, light armorer work. SAR Vol. 10, No. 3, December 2006)

· Rocket Versus Recoilless; A Brief History of the RPG by Paul Newhouse. (History, operation, good technical understanding of the systems. SAR Vol. 11, No. 1, October 2007)

· A Primer on Shaped Charges by Paul Newhouse. (History, physics, good technical understanding of shaped charges. SAR Vol. 11, No. 1, October 2007)

· Rocket Launchers & Recoilless Rifles by Robert Bruce. (History and operation of some WWII era systems. SAR Vol. 4, No. 12, September 2001)

09/21/2004 - Six RPG-7 portable rocket launchers, found by Iraqi Security Forces during a raid of a Muqtada al Sadr safe house in An Najaf, An Najaf Province, Iraq, are displayed by U.S. Marine Corps Marines, 11th Marine Expeditionary Unit (MEU) Special Operations Capable, Sept. 21, 2004. These caches were found in different buildings among the city and are in direct violation of the peace agreement between the Grand Ayatollah Sayyid Ali Husaini al-Sistani, highest religious authority and leader of the Hawza (Najaf), and al Sadr, an agreement blessed by the Iraqi Interim Government. The 4th MARDIV is engaged in Security and Stabilization Operations (SASO) in the Al Anbar Province in support of Operation Iraqi Freedom. This group found in Iraq illustrates the problem encountered by personnel. RPGs from top to bottom (As best SAR can ID from the pictures, there are non-standard repair parts mixed): 1- Russian RPG-7V; 2- Iraqi Al-Nasirah missing trigger group, with field expedient radiator hose clamp repairs and religious image pasted to heat shield; 3- Iraqi Al-Nasirah with heat shield replaced with Chinese shield, painted black; 4- Chinese Type 69-1 RPG (note Bipod); 5- Bulgarian RPG-7 variant; 6- Iraqi Al-Nasirah. (U.S. Marine Corps photo by Cpl. Dick S. Kotecki)



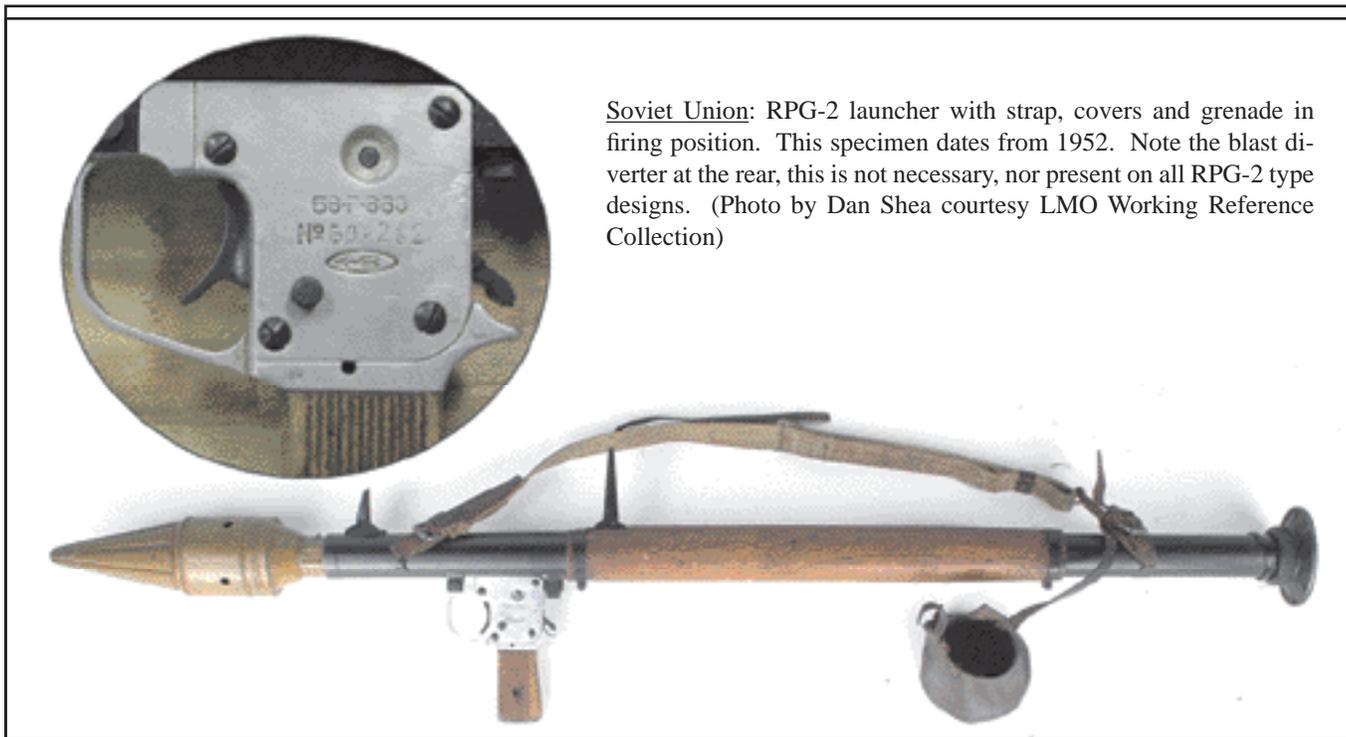
Panzerfaust 30-60-90-100-150

The German Panzerfaust was a basic underarm fired recoilless launcher made in the early 1940s. The first ones, the “30” and “60” meter launchers (shown), used a single lower-pressure black powder charge in order to limit hoop pressure on the tube. Later Panzerfausts, the “100” and “150” models, added a second charge further down the tube in order to spread out the pressure and the time/pressure curve, thus adding velocity/range. A primary problem with the Panzerfausts was the low velocity of the projectile, causing targets that moved to be difficult to aim properly for. There is another “Panzerfaust” that came into service use in the early 1960s in Germany, called the PZF44 and upgrades (2A1). The slang term was “Lanze.” This was also a reloadable recoilless launcher but more sophisticated than the originals, more akin to the RPG-2 series. This was replaced in the early 1990s by the Panzerfaust 3. (Photo by Dan Shea courtesy LMO Working Reference Collection)

The following are not illustrated due to low or non-existent production, and a resulting lack of photos.

- RPG-1: Russian design. Very similar to the German Panzerfaust of WWII, this recoilless system did not progress from design.
- RPG-3: Russian design. A design step up from the RPG-2 series, did not progress from design. Frequently this designation is mistaken for the infamous RKG-3 drogue-parachuted, shaped charge, hand thrown grenade that saw so much use in Africa and the Balkans (Yugoslav M79).
- RPG-4: Russian design, limited production. RPG-4 is where the RPG-7 was truly born - the expanded tube from the 40mm size of the RPG-2, to 45mm, and the central “chamber area” providing for more expansion of the propellant gases, combined with the new Venturi at the rear, made for more range and faster target hits. Not issued in significant quantity.
- RPG-6: Russian design. Hand thrown grenade from WWII.
- RPG-8: This designation was mistakenly applied by Western intelligence to what was later known as the RPG-7D takedown model of the RPG. RPG-8 as part of this series did not exist except in some late 1960s reports.
- RPG-15 This designation is seen occasionally and apparently dates to 1970s era intel reports- talking about the RPG-18. SAR has seen no other indication that an RPG-15 was made.

RPG-2: This Russian designed, reloadable, shoulder operated recoilless system is the first real step towards the RPG-7 of today. The RPG-2 was copied in many countries, and many of the subvariants are shown here. No RPG-2 grenades had rocket assist, the bodies simply couldn't take the added pressures in the experimental rounds that were tried and this severely limited the range and time to target. One major step up from the German designs is that instead of two charges spread out over the interior of the launching tube, the RPG-2 utilizes six in tandem to create much more velocity and keep the tube integrity intact.



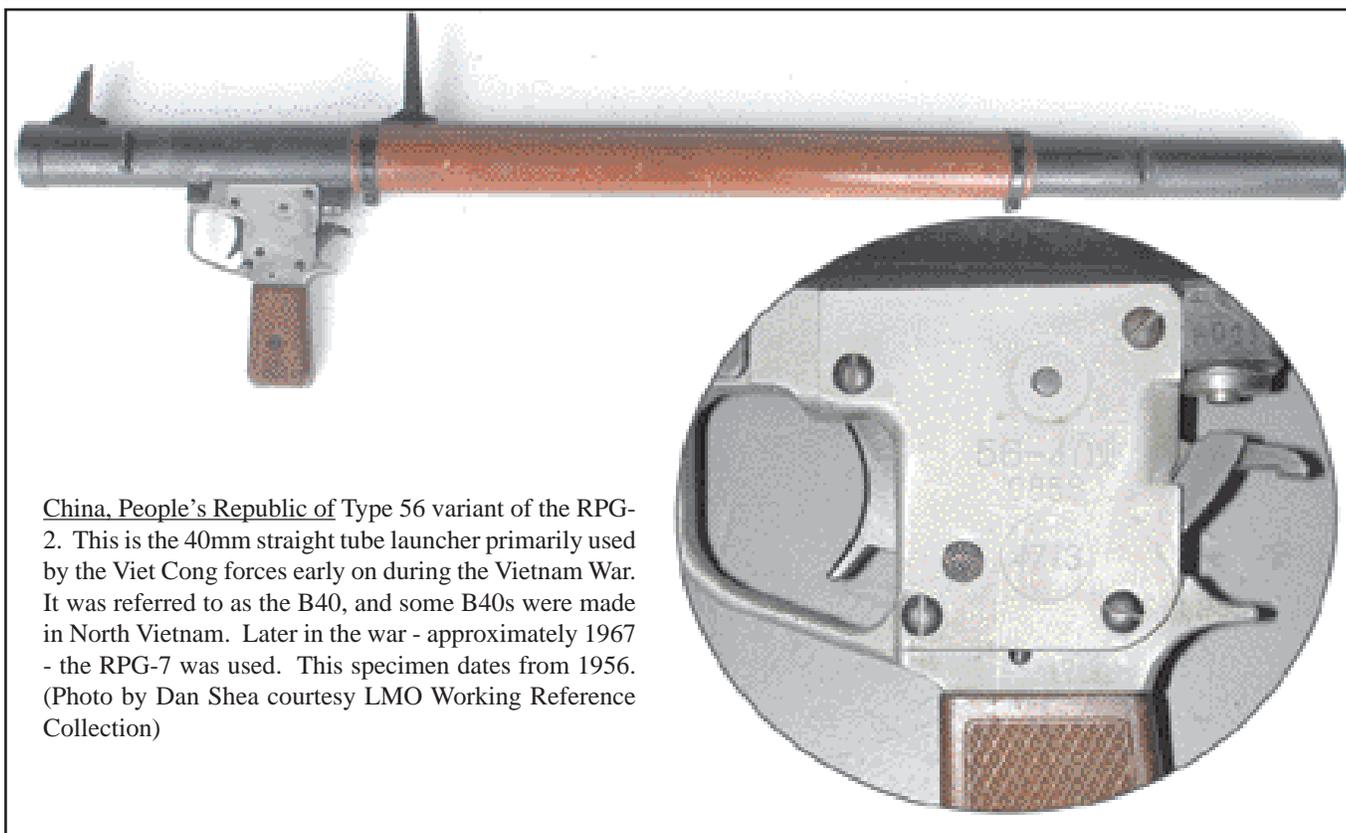
Soviet Union: RPG-2 launcher with strap, covers and grenade in firing position. This specimen dates from 1952. Note the blast diverter at the rear, this is not necessary, nor present on all RPG-2 type designs. (Photo by Dan Shea courtesy LMO Working Reference Collection)

Korea, North (not shown). The North Korean RPG-2 was manufactured as a copy of the Chinese Type 56-1 launcher.

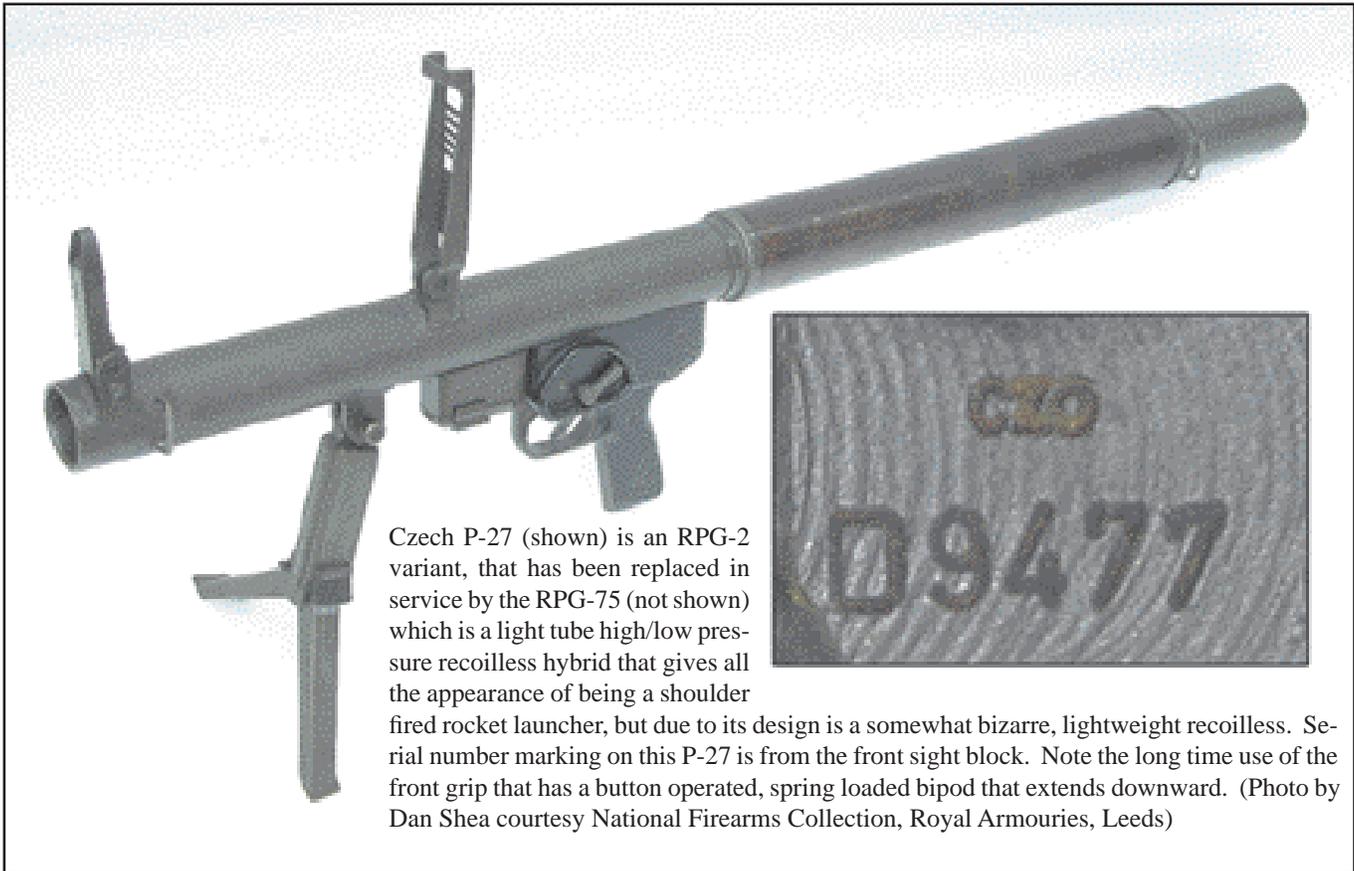
NOT ILLUSTRATED

Finland Raikka 41 (not shown) is an RPG-2 type launcher.

Vietnam, North (not shown). B-40 See the Chinese Type 56-1 launcher below. The North Vietnamese, Chinese, and North Korean launchers in the Vietnam War were all often referred to as the B-40. In addition to their B-40 direct copy of the RPG-2, the North Vietnamese produced, in limited numbers, an enlarged copy as well, the 50mm B-50. Little is known of the launcher, which is believed to resemble the B-40/RPG-2. The grenade is unique, in that rather than wraparound sheet steel fins like the PG-2, it uses fixed fins on a collar which is located behind the warhead in the unfired condition, and which slides down to the end of the tail boom following muzzle exit.

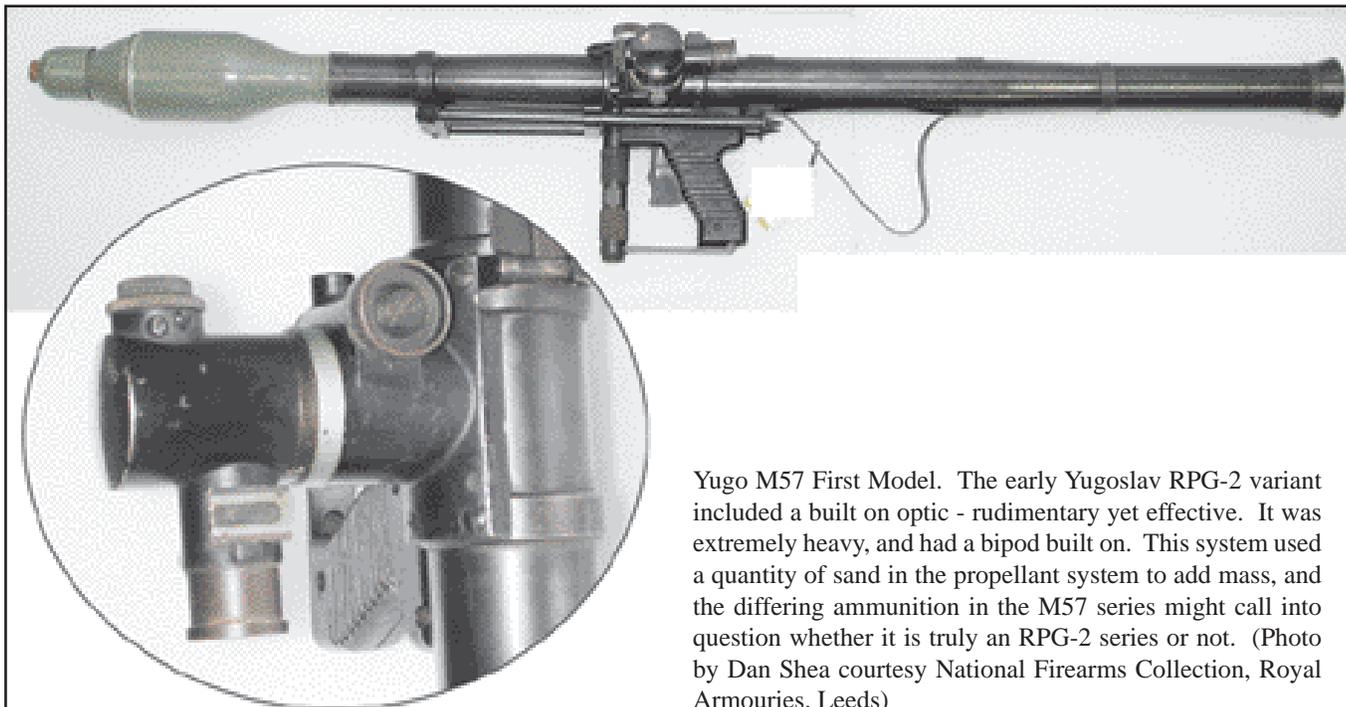


China, People's Republic of Type 56 variant of the RPG-2. This is the 40mm straight tube launcher primarily used by the Viet Cong forces early on during the Vietnam War. It was referred to as the B40, and some B40s were made in North Vietnam. Later in the war - approximately 1967 - the RPG-7 was used. This specimen dates from 1956. (Photo by Dan Shea courtesy LMO Working Reference Collection)



Below: Hamas Al-Yassin (Yasin). In the early 2000s, the Izz ad-Din al-Qassam Brigades of Hamas and their various allied forces fighting the Israelis started using a new manufacture RPG-2 variant called the “Yasin.” This is indigenously manufactured, moving a step back from the much more complex to manufacture RPG-7 variants that had shown up in the Palestine area from the 1970s on. While this may be a technical step backwards, the fact is that these can now be manufactured robustly, and the grenades, while not rocket assisted, have proven effective against armor. It is not unusual to see RPG-7s of various manufacture referred to as “Yasin” in photos, because the Yasin has a divergent nozzle; the large cone at the back end, much like an RPG-7. However, it does not have the RPG-7 expansion chamber and the projectiles use bent sheet metal fins, no rocket assist, and have a unique local explosives design. (Photos courtesy Al-Qassam English Forum)





Yugo M57 First Model. The early Yugoslav RPG-2 variant included a built on optic - rudimentary yet effective. It was extremely heavy, and had a bipod built on. This system used a quantity of sand in the propellant system to add mass, and the differing ammunition in the M57 series might call into question whether it is truly an RPG-2 series or not. (Photo by Dan Shea courtesy National Firearms Collection, Royal Armouries, Leeds)

Yugoslavia



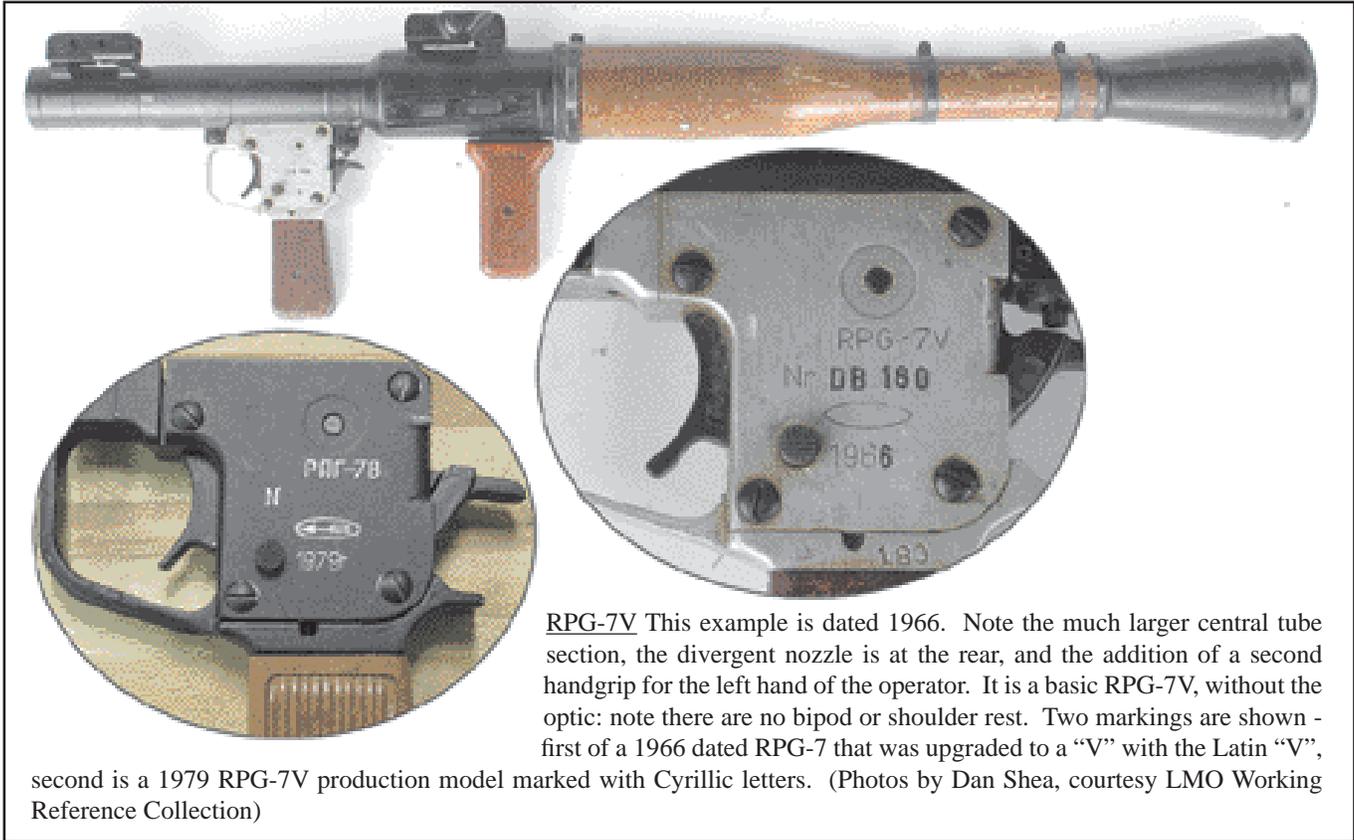
Yugo M57 Second Model. Tens of thousands of the M57 were manufactured, and this very heavy tubed RPG-2 variant was quite successful as the main arm of the Yugoslav army and replaced eventually by the M80 - similar to the disposable M72 LAW shoulder fired rocket launcher. 20,000 of these have moved onto the world market in recent years, some cannibalized for their excellent M80 optics, which are seen adapted in some places on RPG-

7s. Serbia and Montenegro, before the breakup, manufactured the final variant of the M57, called an M80 - not to be confused with the shoulder fired rocket launcher made in Serbia at Sloboda, also called an M80. (Photo by Dan Shea courtesy National Firearms Collection, Royal Armouries, Leeds)

RPG-7

Soviet Union- Russia RPG-7 “Knut” The USSR developed the RPG-7 series of launchers and grenades to extend the range of their individuals in the anti-tank role. The RPG-2 was seriously lacking in that regard. In order to get more range, and faster time to target, the Soviet designers did two things: first, they added an expansion chamber to the tube that would surround the expeller cartridge, allowing for more volume, and a Venturi and Divergent Nozzle to the rear. The pressure build up and mass needed to attain more velocity was dramatically changed allowing the grenade a much further and faster trajectory. Second, they added a rocket assist that ignites after the grenade has left the recoilless launcher adding more range and speed as well. The Soviet doctrine for RPG-7 with optics and a trained operator allowed frequent hits on targets out to 550 meters and beyond. The RPG-7 is a reloadable launcher, and estimates of over 10 million of the different variants having been made would not be out of the range of believability. The RPG-7 took the steps forward that were used in the RPG-4, modified them, enlarged on the technology, and reduced the general tube size back to that of the RPG-2; 40mm (not including the enlarged expansion chamber area).

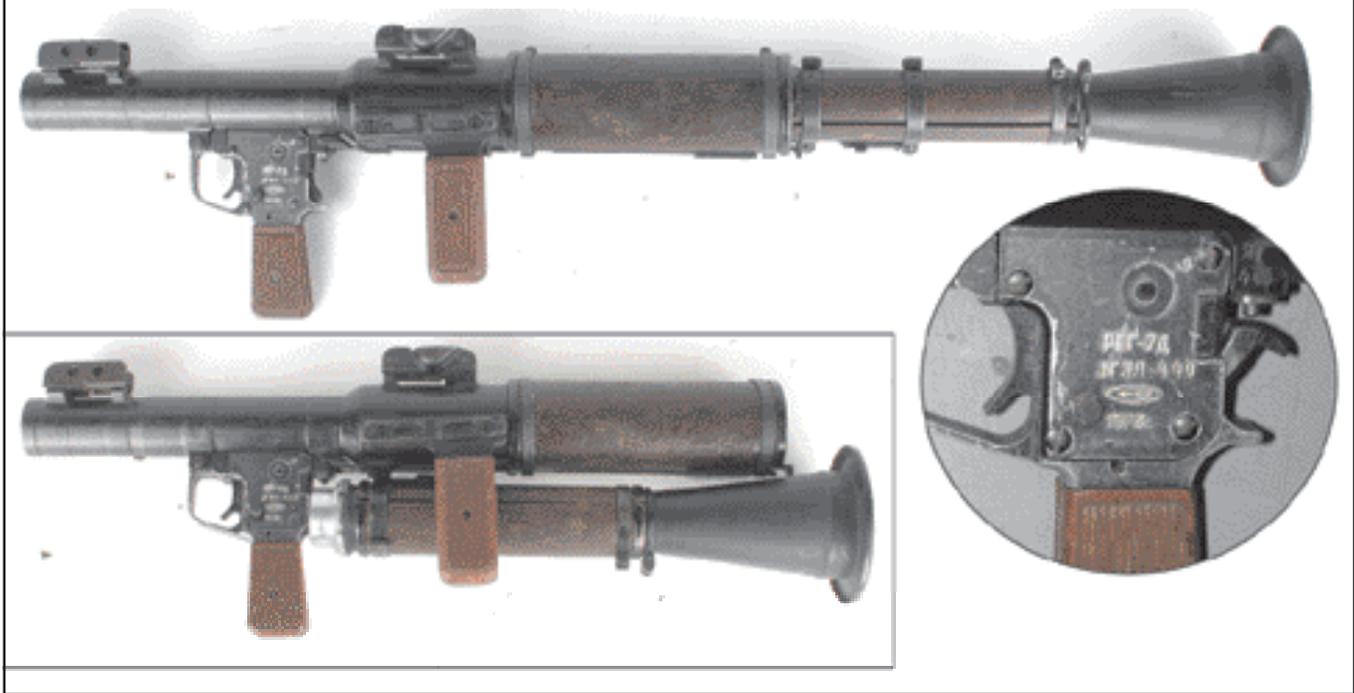
The first model in the USSR around 1962 was the RPG-7, first tracked in-country Vietnam by about 1967-8. It gradually replaced most of the RPG-2s in the hands of the NVA and Viet Cong. This model was quickly replaced in the late 1960s by the RPG-7V, and then by the RPG-7V1 and V2 models. These designations are basically about adding different round capabilities to the launcher - the Thermobaric rounds of today would not be possible to fire from an original RPG-7. The 7V1 added a bipod capability as well. Today the Russians are manufacturing these as well as their many rocket type RPG shoulder fired launchers, and a new unit called a “Temp 10” that has a 50mm tube, and is the base for launching an EFP - Explosive Formed Projectile - Grenade. The appearance is that of an RPG-7V series launcher, but with the odd, flat nosed grenade, it stands out.



RPG-7V This example is dated 1966. Note the much larger central tube section, the divergent nozzle is at the rear, and the addition of a second handgrip for the left hand of the operator. It is a basic RPG-7V, without the optic: note there are no bipod or shoulder rest. Two markings are shown - first of a 1966 dated RPG-7 that was upgraded to a "V" with the Latin "V",

second is a 1979 RPG-7V production model marked with Cyrillic letters. (Photos by Dan Shea, courtesy LMO Working Reference Collection)

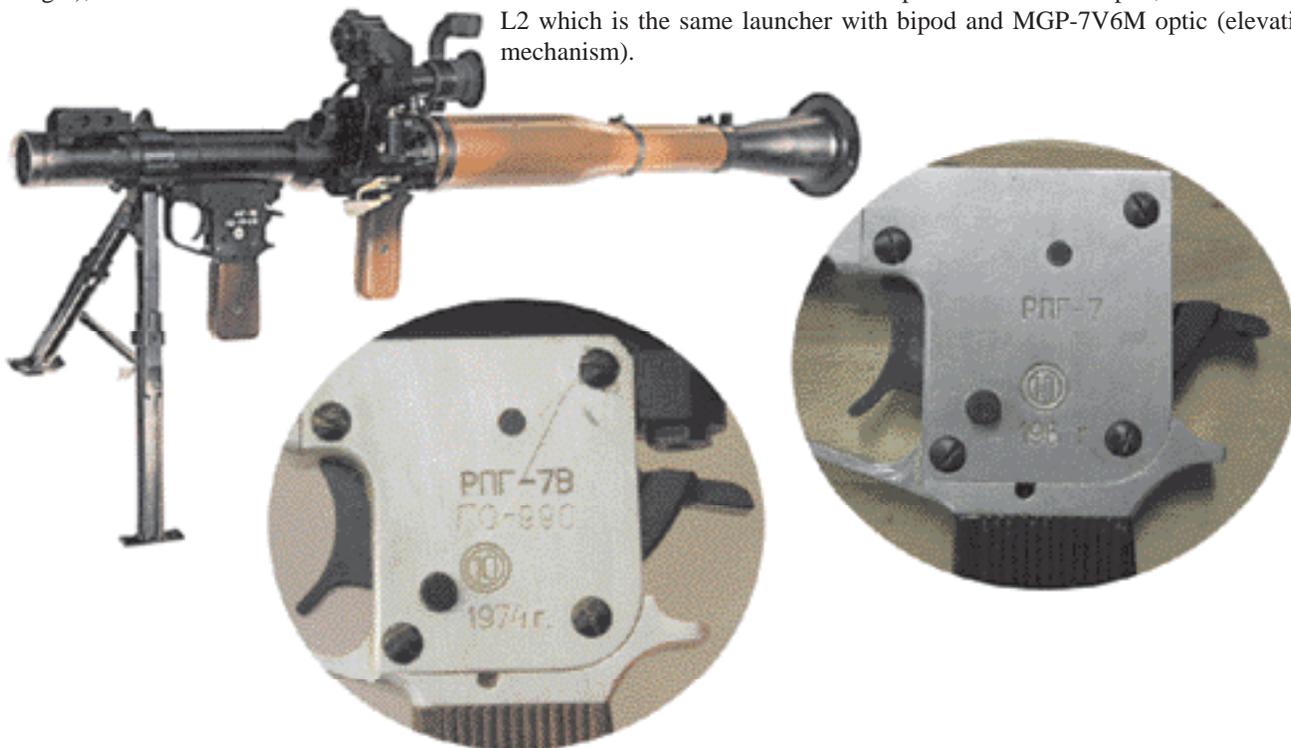
RPG-7D Left side view of Soviet RPG-7D paratrooper take down version manufactured in 1973. The second photo shows the RPG-7D in the carry condition, with the rear of the launcher locked underneath the front part. The RPG-7D has a locking latch that snaps into place when the tubes are properly mated together and ready to fire. If the tubes are not properly placed, the latch extension blocks the sear. The sear block is a sheet metal piece that fits around the firing pin well, and moves forward or backwards depending on the position of the locking latch. This stops the system from firing if not assembled properly. The front and rear tubes are connected together with two bayonet lugs. Once locked into place, they are very securely attached. The hammer needs to be cocked and safety "On" in order for the rear tube to slide into place, or the trigger group needs to be removed. The RPG-7D trigger group has a notch on the top right hand plate that fits around the sear block mechanism. Installation and removal of the RPG-7D trigger group requires more manipulation than a straight "on-off" like the standard groups. The operator needs to ensure the sear block mechanism is not compromised or bent when he installs the trigger group. (Photo by Dan Shea courtesy LMO Working Reference Collection)

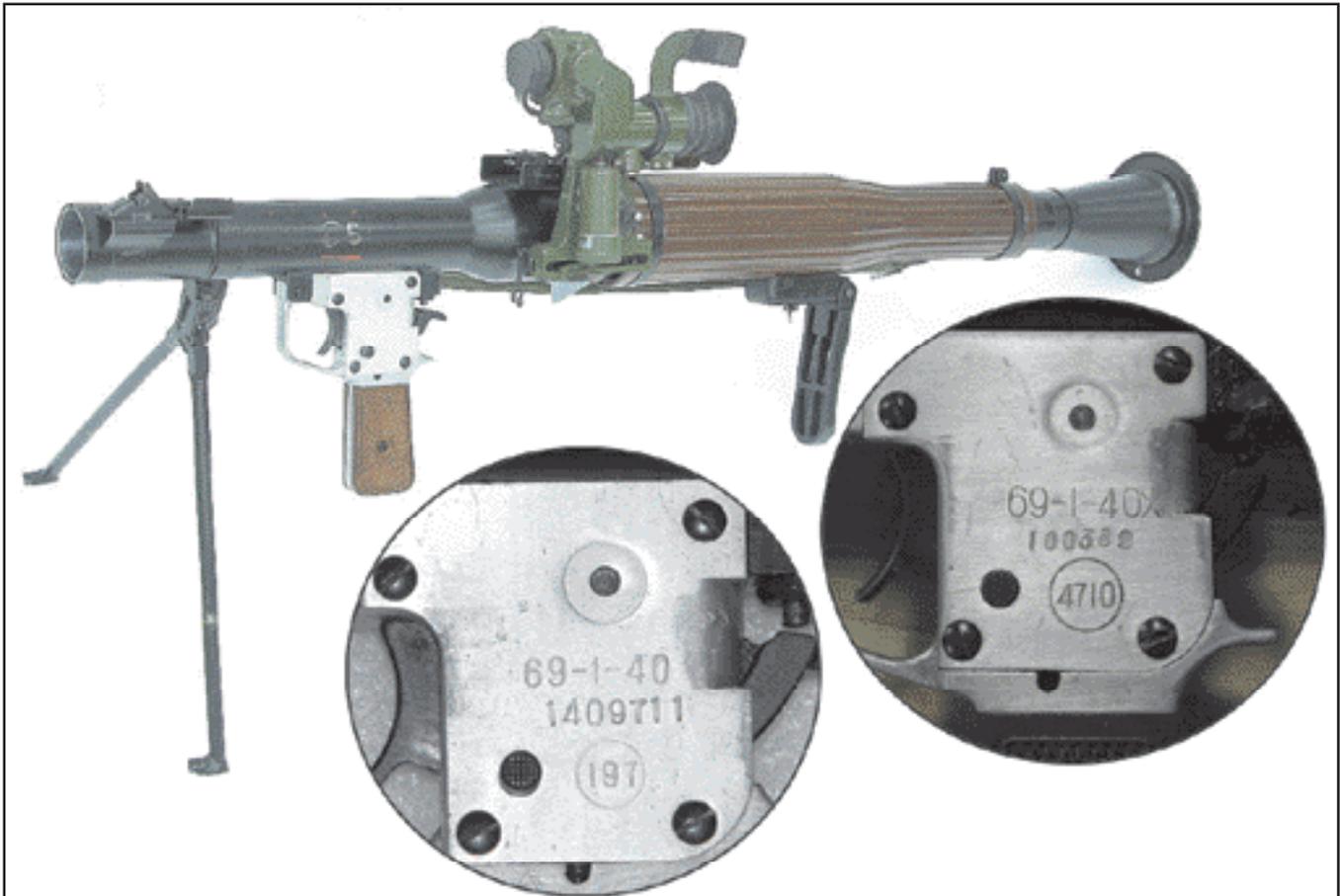




Azerbaijan - Azerbaijan is manufacturing the RPG-7 and it appears to be the Bulgarian version ATGL-L1.

Bulgaria - Earlier Bulgarian made RPG-7s were simply referred to as RPG-7, and they made the first model in the 1960s. The RPG-7V was made later. The modern Bulgarian RPG-7 variant is called the ATGL-L (Anti-Tank Grenade Launcher - Light), and there are two sub variants: ATGL-L1 which is the same launcher with a bipod and PGO-73V optic, and the ATGL-L2 which is the same launcher with bipod and MGP-7V6M optic (elevating mechanism).

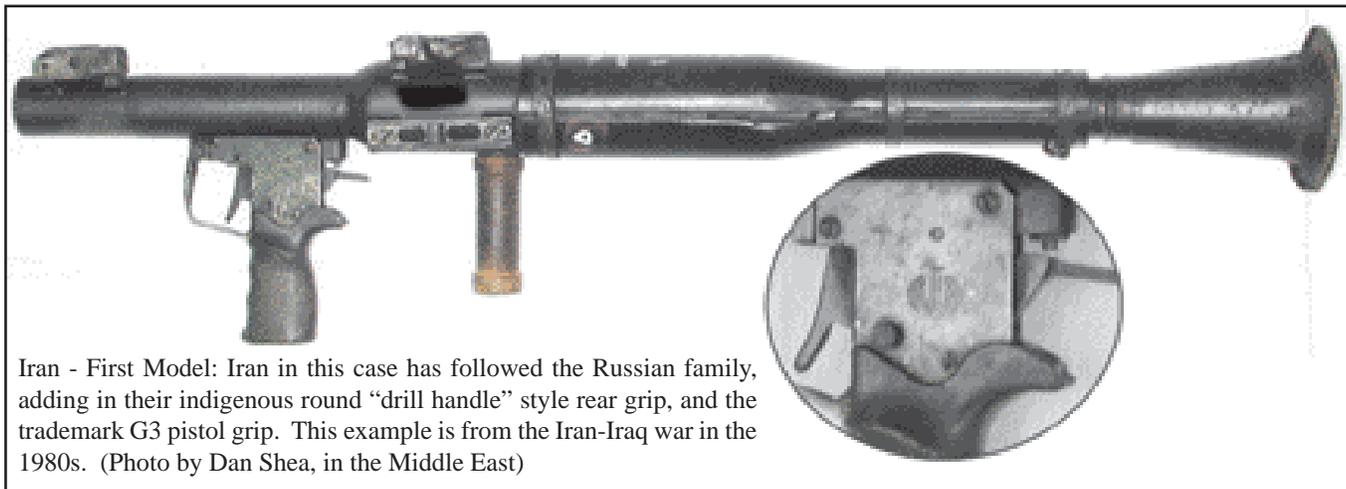




China - The Chinese branch of the RPG-7 family is the Type 69 and Type 69-1. Type 69 was a fairly faithful copy of the Russian RPG-7 although the tube was heavier and the bipod was added. The Chinese also made the rear sight adjustable for windage. The Chinese optics rail is slightly narrower than the Russian one, so the Chinese optic will not fit on a Russian launcher. The Type 69-1 adds the ability to use different ammunition, as well as Opto-electronics. It is shorter than the Type 69, but the quickest identifier of the tube is that the 69-1 sights are centered on the tube top, where the 69 has offset sights. Many RPG-7 variants today are the hybrid children of the Russian and Chinese systems. Note the Chinese system has bipod, shoulder rest, and in this case, the optic is installed. A note on the shoulder rest: this is not generally for standing or kneeling, unsupported firing, as that would place the rear of the divergent nozzle too close to the rear of the operator, placing limbs and gear in danger. This rest is for positioning for aiming while in the bipod supported position. The number inside a circle is the factory that manufactured the RPG-7. The newest version from China is called the Type 2004, (not shown) and it is a paratrooper's takedown version much like the RPG-7D. (Photo by Dan Shea courtesy LMO working Reference Collection)

Egypt - This is an Egyptian made RPG-7, called a "Sakr" showing both Russian and Chinese heritage. Numerous RPG-7 launchers are credited to Egypt, but this is the basic acknowledged design, with no marking. Note the position of the bipod on a swivel mount, leaving room for the grenade nock. (Photo by Dan Shea courtesy National Firearms Collection, Royal Armouries, Leeds)



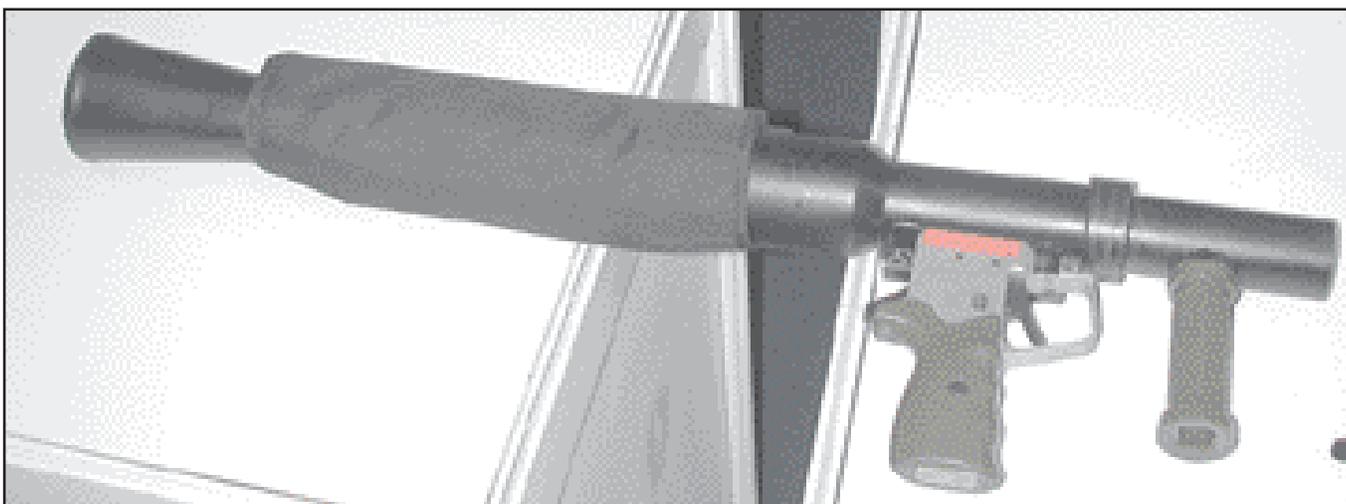


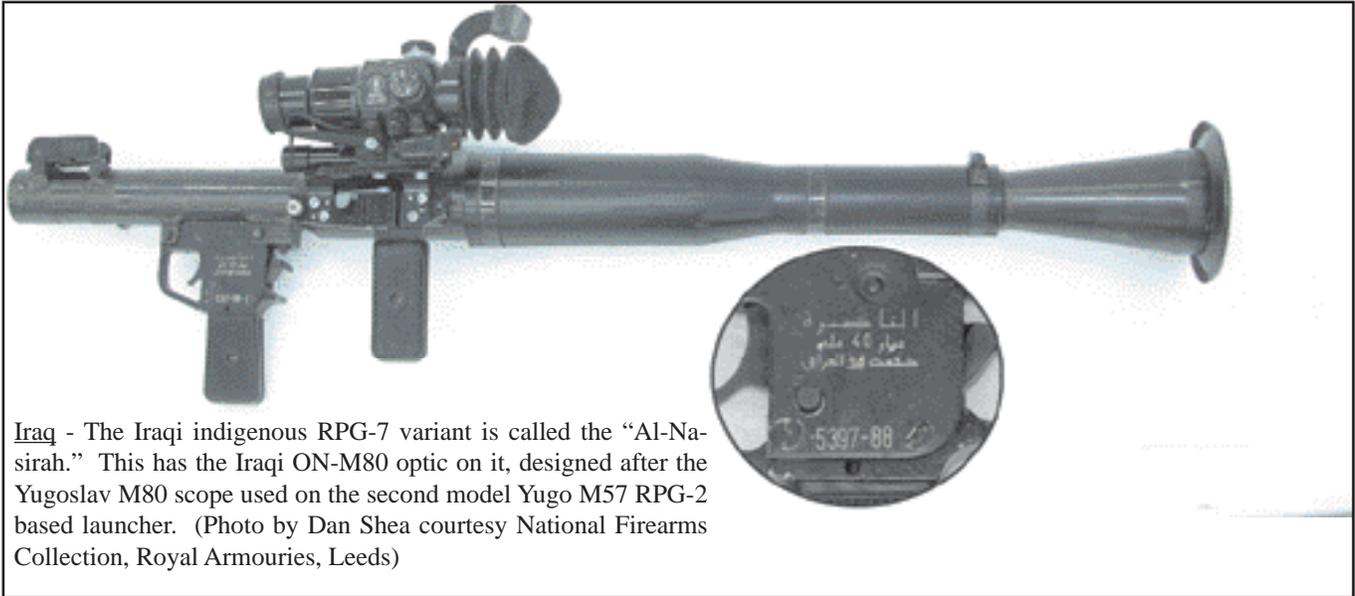
Iran - First Model: Iran in this case has followed the Russian family, adding in their indigenous round “drill handle” style rear grip, and the trademark G3 pistol grip. This example is from the Iran-Iraq war in the 1980s. (Photo by Dan Shea, in the Middle East)



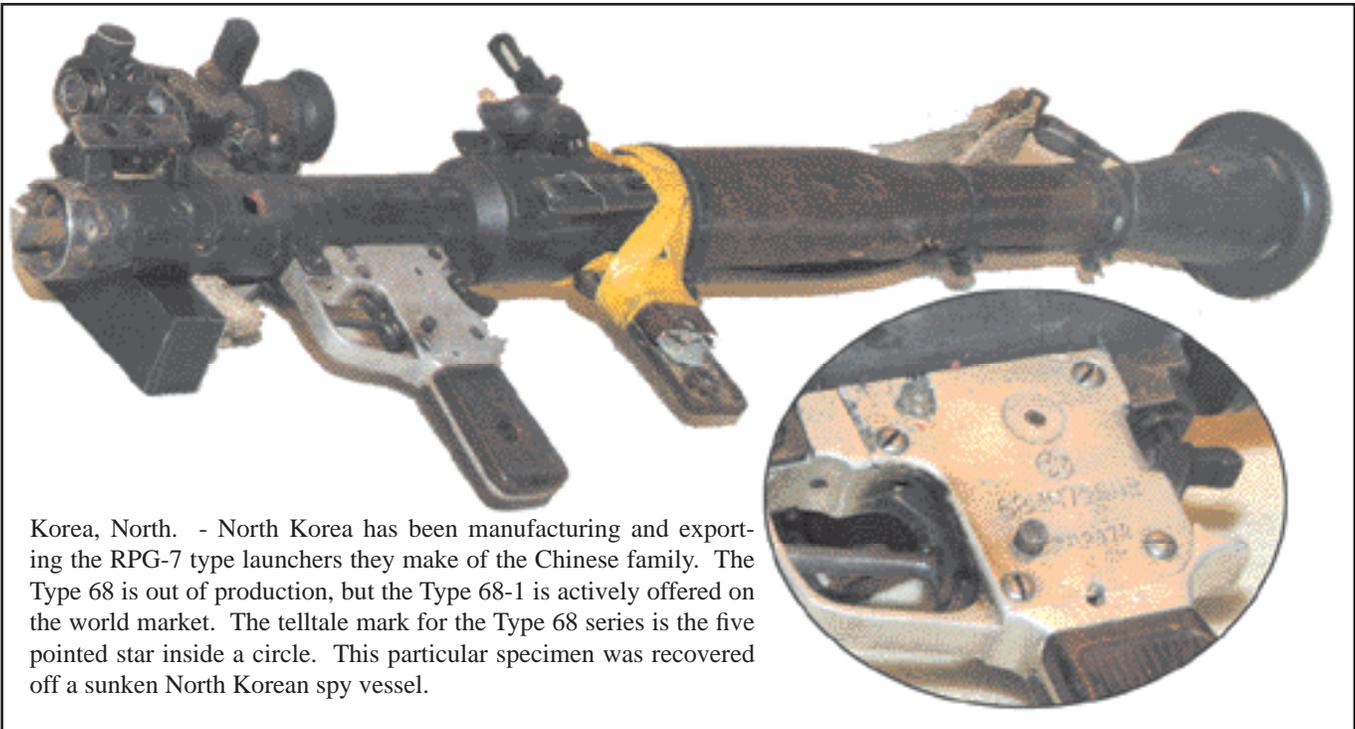
Iran - Second Model: Russian family - Iran refined this design, strengthened their welding, utilized superior production methods, and kept their unique G3 pistol grip and cylindrical rear grip. There is a much shorter model of this allowing for backpack concealment. These were used heavily in Bosnia and are around the Middle East and some in Africa. (Photo by Dan Shea, in the Middle East)

Iran- RPG-7 short. We nicknamed this the “RPG-7K” for “Kurz”, because we did not get any proper name for it. First seen by this author at the Iranian DIO display during DSA 2004 in Kuala Lumpur, Malaysia, it appeared to be simply cut off behind the Venturi with a rudimentary yet robust short divergent nozzle. This small, concealable RPG-7 has not, to our knowledge, shown up in any theatre. (Photo by Dan Shea, in Malaysia)

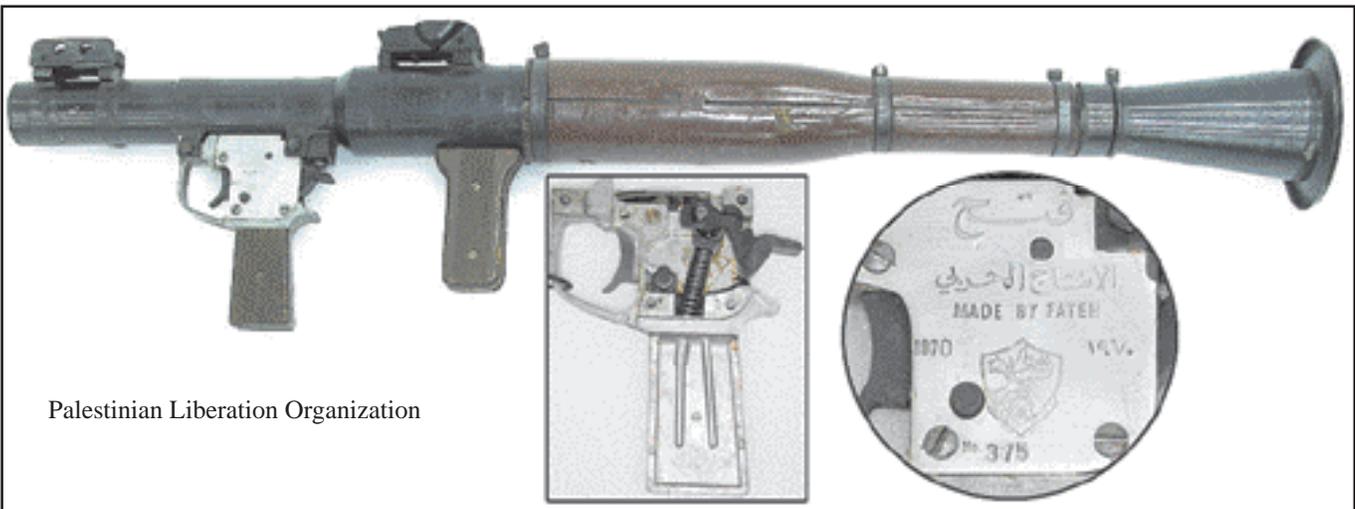




Iraq - The Iraqi indigenous RPG-7 variant is called the “Al-Nasirah.” This has the Iraqi ON-M80 optic on it, designed after the Yugoslav M80 scope used on the second model Yugo M57 RPG-2 based launcher. (Photo by Dan Shea courtesy National Firearms Collection, Royal Armouries, Leeds)



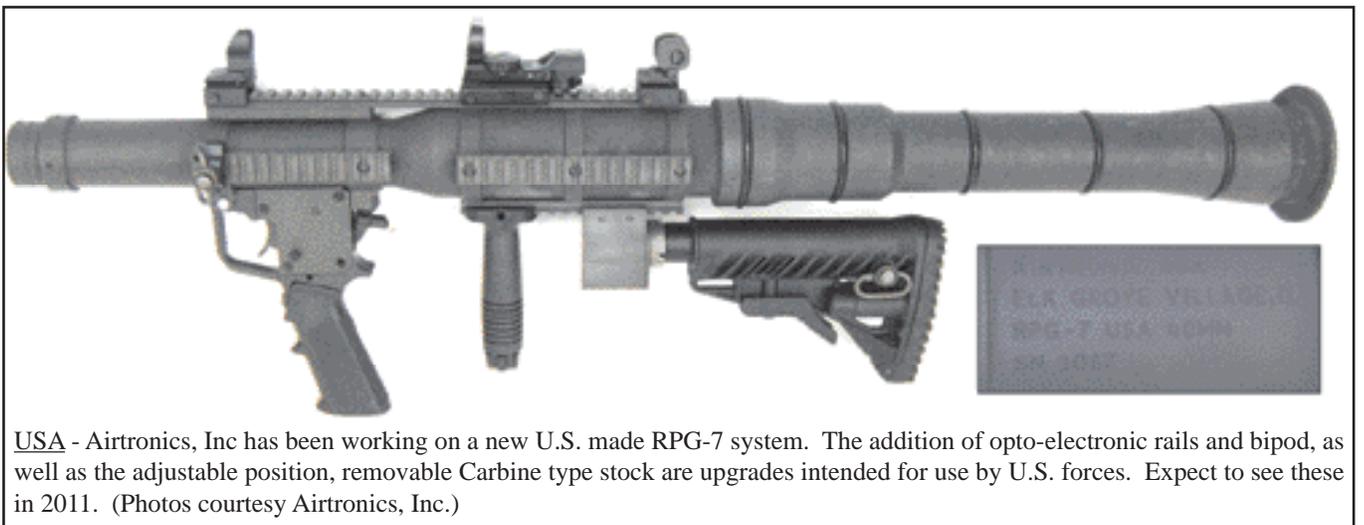
Korea, North. - North Korea has been manufacturing and exporting the RPG-7 type launchers they make of the Chinese family. The Type 68 is out of production, but the Type 68-1 is actively offered on the world market. The telltale mark for the Type 68 series is the five pointed star inside a circle. This particular specimen was recovered off a sunken North Korean spy vessel.



Palestinian Liberation Organization



Romania - Romania has been manufacturing the RPG-7 for a long time, and they have two basic variants; RPG-7V and RPG-7D takedown paratrooper model. Recently, the Romanians have started a new program where they have changed the heat treatment and finish on the tube, and gotten rid of the chrome bore. Factory representatives SAR spoke with said this saved a step in the manufacturing process, and did not degrade the tube life. Some Romanian RPG-7s are marked with "AG-7". (Photos by Dan Shea, in Romania)



USA - Airtronics, Inc has been working on a new U.S. made RPG-7 system. The addition of opto-electronic rails and bipod, as well as the adjustable position, removable Carbine type stock are upgrades intended for use by U.S. forces. Expect to see these in 2011. (Photos courtesy Airtronics, Inc.)

Palestinian Liberation Organization - (Pictured left, opposing page) PLO original manufacture, from the Russian family - The Fateh RPG-7 variant circa 1970, still found in various places in the Middle East. Conjecture: This example is from a period where the PLO was trying very hard to prove that they had full manufacturing capabilities as a country, and the cast grip and indigenous manufacturing methods, as well as the markings give testament to that. (Photo by Dan Shea courtesy National Firearms Collection, Royal Armouries, Leeds)



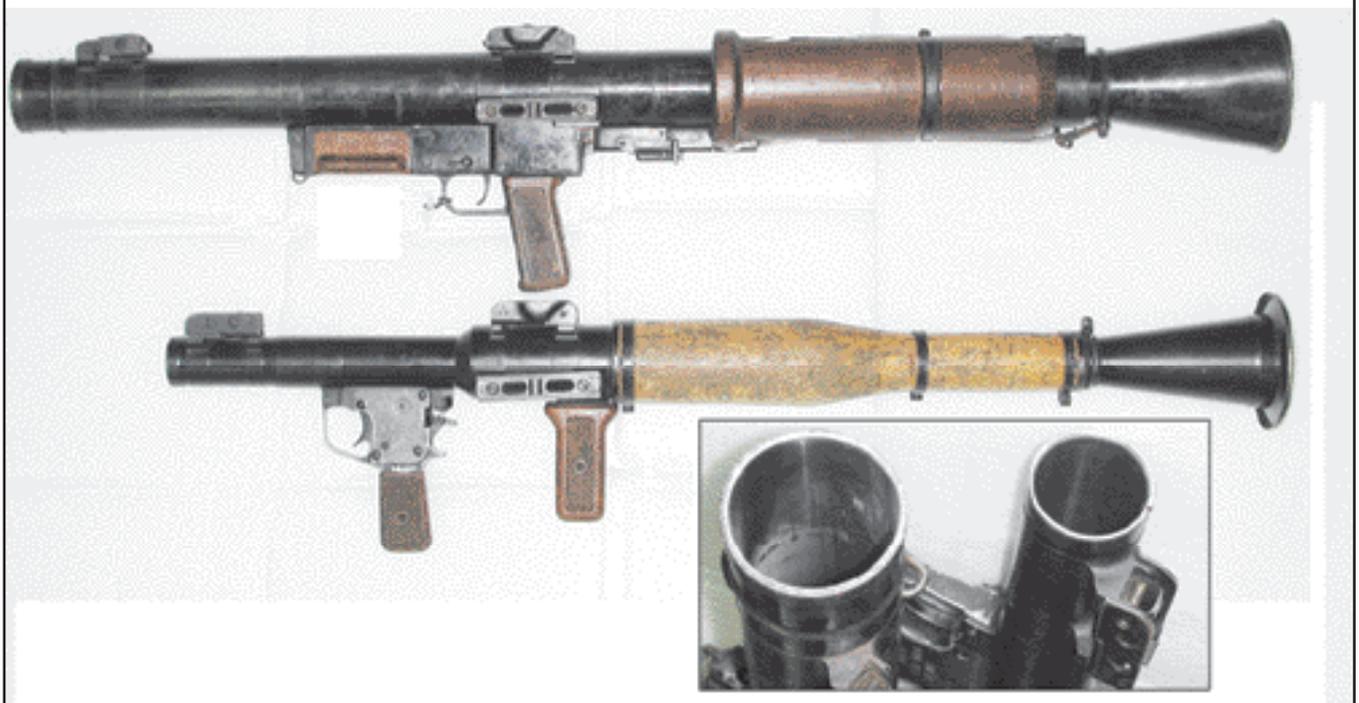
Yemen, North - Above: PLO origin (suspected) - Chinese family - (Note the bipod ring at front.) This RPG-7 variant exhibits cruder manufacturing capabilities, while some components appear to be original Chinese (that is conjecture). The origin of this unit was not known, but the crossed flag markings are identified as Palestine (PLO 1970-80) on the left, and the right with the five-pointed star as Northern Yemen in the period where PLO had training camps actively working in the region. (Photo by Dan Shea in the Middle East)

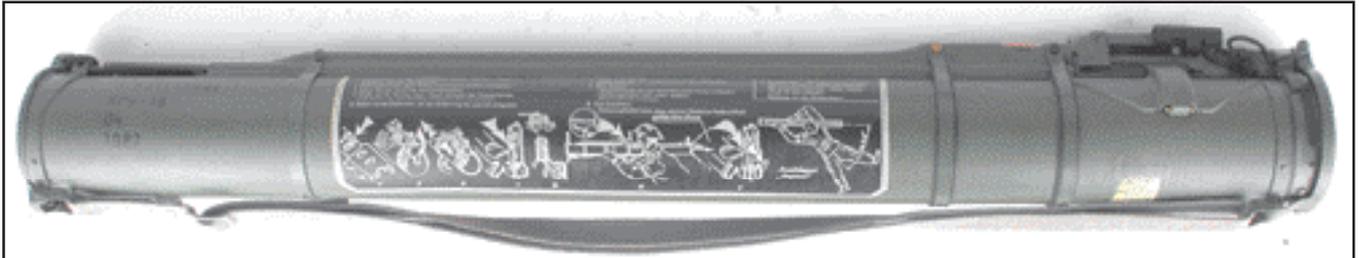
Pakistan - We did not have a picture available, but the Pakistan Ordnance Factories have been manufacturing an RPG-7 of the Russian style for many years. Their production of the ammunition for the RPG-7 is more well known.

NOT ILLUSTRATED

Poland - Poland has manufactured some RPG-7s but we have not located any examples, and get conflicting reports from manufacturers and arms experts in Poland as to what the extent of the manufacturing was. In any event, the ones discussed had the "Works 11" markings.

RPG-16 "UDAR" - Russian design and production. This 58mm tube recoilless launcher was not so much an upscaled 40mm RPG-7V (shown underneath and to the right of the RPG-16 for comparison), but a smaller version of the SPG-9 73mm recoilless for the paratroopers to carry. It did not significantly outdistance the capability of the RPG-7, nor did it compare to the SPG-9 so it was dropped fairly quickly from use. However, these are still encountered in Afghanistan and the region, left over from the Soviet era. (Photo by Dan Shea courtesy National Firearms Collection, Royal Armouries, Leeds)



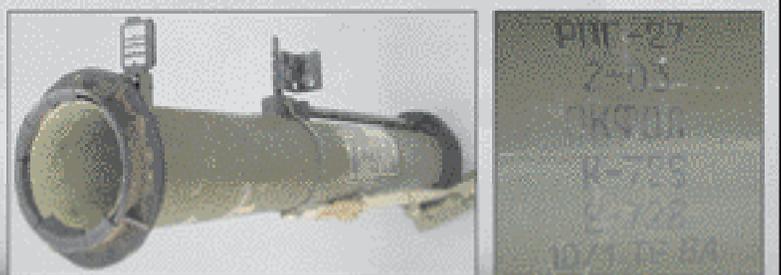


RPG-18 Mukha - While the Warsaw Pact nations were pursuing the RPG series of recoilless, shoulder-fired, rocket-assisted grenade launchers that were reloadable, the U.S. and her allies were concentrating on disposable single shot rocket launchers; most notably the LAW M72 series of launchers. By the mid 1970s, the Soviets had experimented with their own disposable launcher, and it was called the RPG-18. Essentially, the RPG-18 is a true rocket propelled grenade launcher, it is not a recoilless, and is similar to the LAW in most operational regards, with a bit less penetration. The tube is collapsed and must be extended to use. Photo shows the East German version of the RPG-18 in the collapsed, carry position. The Serbian M80 is close to the RPG-18 as well. (Photo by Dan Shea, Courtesy LMO Working Reference Collection)

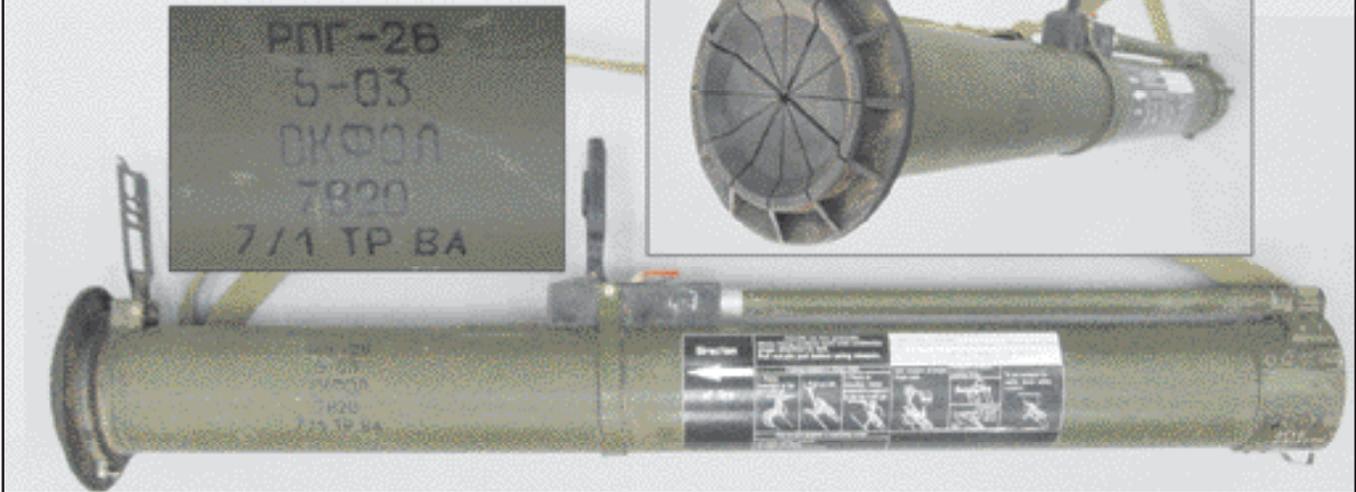


RPG-22 NETTO - RPG-22 is another Russian shoulder fired rocket launcher - not a recoilless. It is of the same family as the RPG-18, with two tubes that must be extended out for use, (When extended it is shorter than RPG-18), but it is more powerful than the RPG-18, can penetrate more armor, and reach longer ranges. (Photo by Dan Shea, taken in the Middle East)

RPG-27 TAVOLGA - RPG-27 is an easy to use, disposable, single tube, three step Russian shoulder fired rocket launcher of 105mm. The basic rocket is a tandem warhead system for defeating ERA (Explosive Reactive Armor) and will reportedly penetrate up to 1.5 meters of reinforced concrete as well. It uses the same warhead as the RPG-29. The Thermobaric model is the RShG-1. (Photo by Dan Shea, taken in the Middle East)



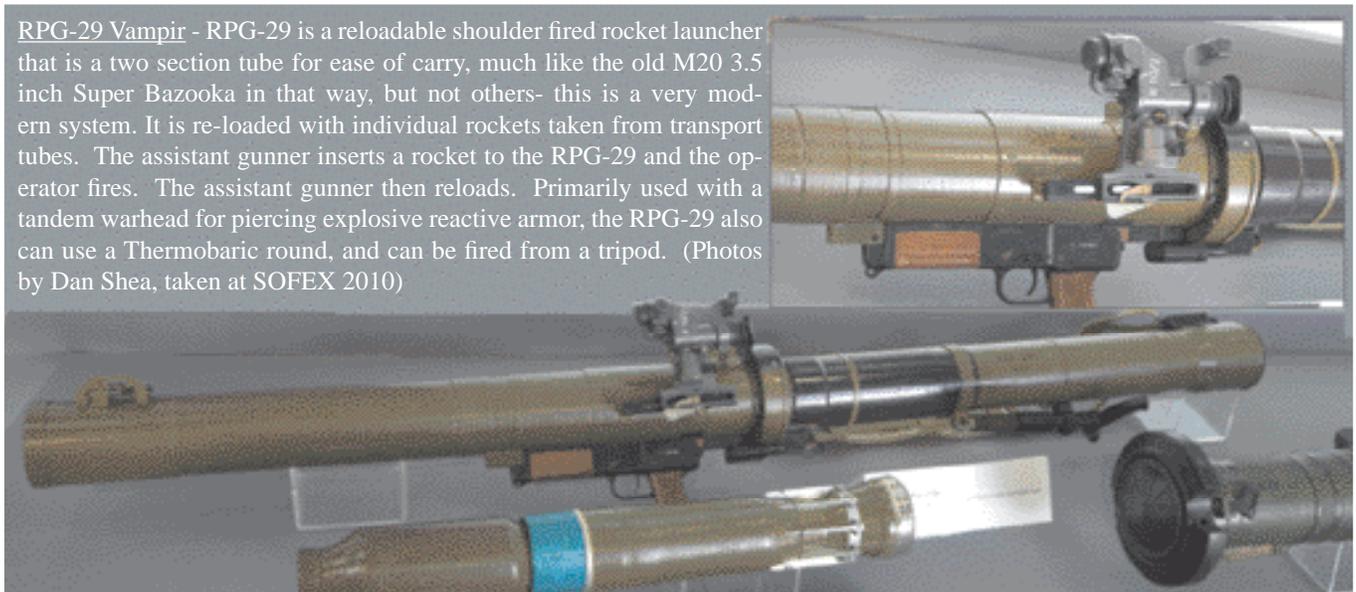
RPG-26 AGLÉN - RPG-26 is a disposable, non-telescoping Russian shoulder fired rocket launcher - again, not a recoilless. It is the direct replacement for the RPG-22 series, and the job it is for is taking out over 1,000 mm of concrete (about 3 feet) or 2,400 mm of log/earth bunker (over 7 feet). This is the same rocket as the RPG-22, with Graze features. The Thermobaric version is the RShG-2. (Photo by Dan Shea, taken in the Middle East)

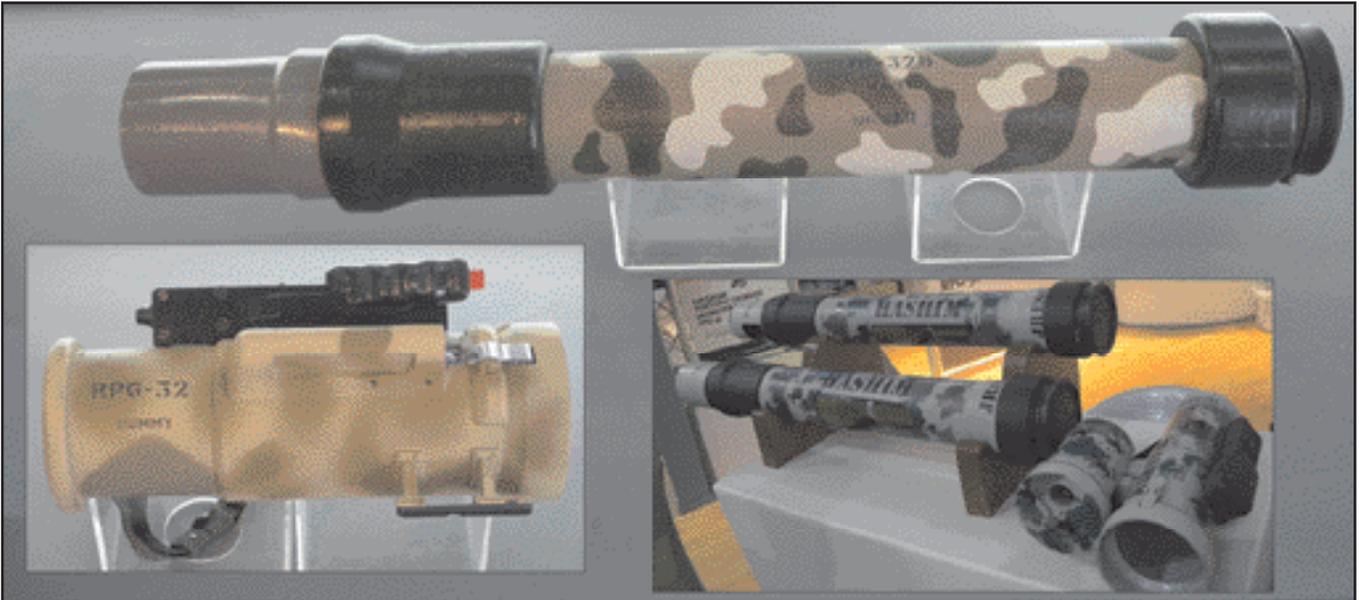


RPG-28 - RPG-28 is a rarely designated 125mm Russian shoulder fired rocket launcher and is a disposable, throw the tube away, launcher. We have no further information on this other than this picture. (Photo by Dan Shea, taken at SOFEX 2010)

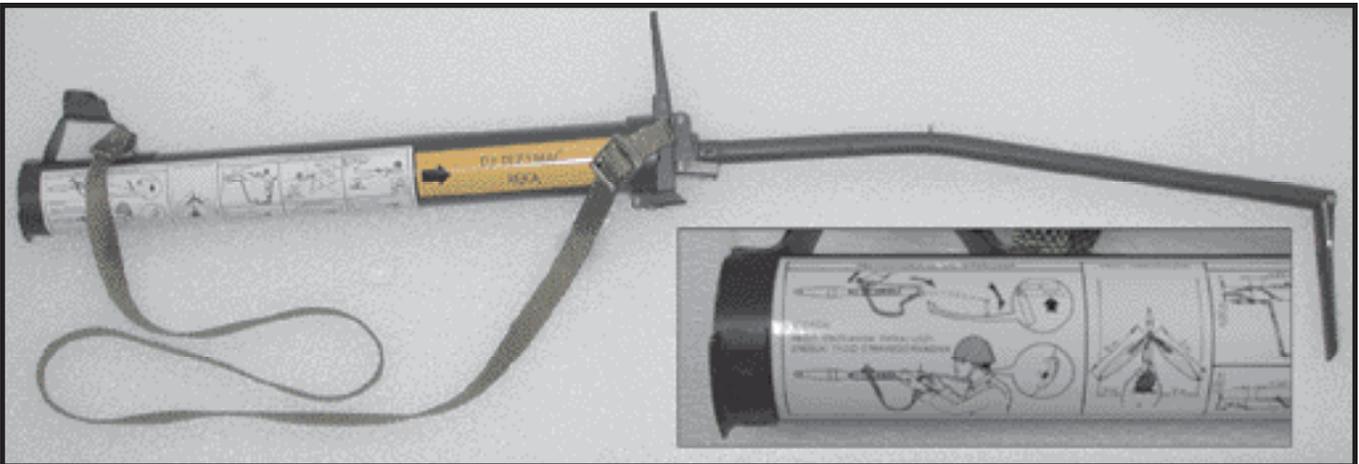


RPG-29 Vampir - RPG-29 is a reloadable shoulder fired rocket launcher that is a two section tube for ease of carry, much like the old M20 3.5 inch Super Bazooka in that way, but not others- this is a very modern system. It is re-loaded with individual rockets taken from transport tubes. The assistant gunner inserts a rocket to the RPG-29 and the operator fires. The assistant gunner then reloads. Primarily used with a tandem warhead for piercing explosive reactive armor, the RPG-29 also can use a Thermobaric round, and can be fired from a tripod. (Photos by Dan Shea, taken at SOFEX 2010)





RPG-32 “Hashim” - (Above) RPG-32 is a Russian designed shoulder fired reloadable rocket launcher that is now being built in cooperation with the King Abdullah Design & Development Bureau in Jordan, where it is designated as the “Hashim.” RPG-32 weighs only 10 kg fully loaded, and has a range out to 700 meters. There are presently two types of rounds - anti-tank HEAT that will penetrate up to 650 mm of Explosive Reactive Armor, or Thermobaric. (Photo by Dan Shea, taken at SOFEX 2010)



RPG-76 “Komar” - (Above) RPG-76 is a Polish shoulder fired rocket launcher with an odd appearance. Some think it is a recoilless due to the RPG-7 like nozzles on the grenade, but thankfully, it is not. This is a true rocket, and the nozzles direct the combustion gases away from the operator. The launcher is very lightweight and single shot. (Photo by Dan Shea courtesy Royal Armouries, National Firearms Centre)

RPG-30 - The RPG-30 is basically an RPG-27 in tandem with a sub-caliber rocket. These are ballistically matched so that on firing the subcal rocket flies in front of the main rocket, and sets off active protection systems on the target, which hopefully cannot recycle in time to kill the following big rocket.

NOT ILLUSTRATED

RPG-73 - Designation for the Polish prototype rocket launchers that became the RPG-76. “73” is apparently from the year of the program start.

NOT ILLUSTRATED

RPG-75 - The RPG-75 is a well-made, single use, shoulder-fired recoilless launcher made in the Czech Republic. The system uses a high pressure chamber, moving to lower pressure, and can be lighter than standard recoilless launchers.

NOT ILLUSTRATED

