INTRO

The SCAR® family of rifles is made by FN/Herstal for U.S. Special Operations Command units. The weapons were developed by FN in conjunction with SOF units to replace the M4A1 rifle as their primary weapon. While the M4/M16 family of rifles had served admirably for many years, units in both theaters of the War on Terror were having issues with the M4’s perceived lack of power. Troops in Afghanistan found the 5.56x45 NATO round was not powerful enough for the long-distance engagements they were facing. In Iraq, there were issues with the 5.56 ammo lacking punch through barriers found in urban combat. The 5.56 was also known to lack effectiveness against vehicles as well as thick walls. SOCOM determined that a new weapon system was needed to meet these challenges.

In 2003, a Joint Operations Requirements Document was released by SOCOM. Our nation’s special operators were looking for a new rifle to meet their unique needs. Initial requirements included multi-caliber adaptability, the ability to change barrels at the operator-level, and enhanced reliability. Special operations soldiers find themselves working in the most adverse environments and need a rifle capable of holding up in extreme conditions. In response to the procurement request, FN developed two separate rifles: the MK 16 and the MK 17. Initially, the MK 16 was to be chambered in 5.56 with multi-caliber capability forthcoming. The MK 17 was to be chambered in 7.62x51 NATO. FN was awarded the contract to develop the rifles in 2004.

Service testing the SCAR family of rifles began in 2007. Testing was conducted by special operations forces under conditions meant to simulate the rigors of use on the battlefield. By 2009, the first SCAR rifles made their way to Afghanistan with soldiers from the 75th Ranger Regiment.

In 2010, SOCOM determined that the MK 16 Mod 0 did not offer a significant advantage over the M4 carbines already in the field and cancelled procurement of the rifles. FN was instead directed to develop a conversion kit that would allow operators to fire both NATO rounds from the MK 17. This was feasible due to a more than 80% compatibility of parts between the two rifles. The MK 17 is currently in service with units from across SOCOM, including Navy SEALs, U.S. Army Rangers and Special Forces, Air Force special ops units, and MARSOC.

ALL-NEW DESIGN

Despite some outward similarities to the M4, the SCAR is a completely new design. It has upper and lower receiver units joined by crosspins, similar to the M4. The configuration of the controls and the rails along the handguard are all familiar from the M4 series. There are also the familiar rails at the 12, 3, 6, and 9 o’clock positions. These external similarities and the caliber are where the similarities end.
SCAR rifles utilize a short-stroke gas piston system, with rotating bolt. The piston system uses some of the gas from firing a round to push a piston to the rear, driving the bolt carrier backwards. As the carrier group moves to the rear, the bolt rotates and unlocks from the breech, extracting the spent cartridge as it goes. Excess gases are vented out the front through a vent hole in the gas regulator. The bolt carrier continues rearward, ejecting the cartridge and cocking the hammer for the next shot as it goes. Once the bolt reaches its rear limit, it is forced back into battery by the return spring assembly. A new round is picked up by the bolt face as it goes forward, the bolt rotates into position, and the action is locked and ready.

The piston system keeps the upper receiver and internal moving parts much cleaner and cooler compared to the traditional gas system of the M4A1. This greatly reduces parts wear and necessary maintenance. It also enables the gun to function more reliably in adverse conditions.

Unlike the M4A1, the SCAR has a folding buttstock. The stock’s length of pull can be adjusted to six different positions. There is also a two-position cheek piece to accommodate for different height iron and optical sights.

The SCAR has a two-position gas regulator to adjust the amount of gas released when the action is cycled. The first position is for normal operation, while the second position allows more gas to be vented to avoid an increase in the cyclic firing rate when using a suppressor.

The next major upgrade is the design of the barrels. The barrel of the FN SCAR can be changed by the end user without the need for armorer’s or special tools. There are CQB, standard, and long-range barrels available for both the SCAR-L and SCAR-H variants.
This flexibility represents a major step forward on the modern battlefield.

Further increasing the flexibility of the SCAR platform is the ability to change the charging handle from the right side of the rifle to the left side. This allows operators who fire left-handed to avoid having to manipulate the rifle with the support hand. The magazine release and selector lever are ambidextrous. In addition to making the rifle easier for left-handed shooters to use effectively, this makes it easier for operators to switch between soldiers in dynamic urban environments.

**MK 16 MOD 0**

*The MK 16 Mod 0 is the 5.56 SCAR variant. It comes with a 10” barrel for CQB scenarios.* This barrel gives the weapon a maximum effective range of around 300 meters, but offers maximum mobility in dynamic urban environments. The standard length barrel is 14” in length. With the standard barrel, the SCAR-L can engage targets out to 500 meters, and is still shorter and more maneuverable in tight quarters than the M4A1 with a standard barrel. The MK 16 can engage targets out to 600 meters with the 18” long barrel attached. This capability can be replicated with existing platforms, so SOCOM determined it was not necessary to purchase MK 16 rifles. MK 17 rifles were instead to be developed with multiple caliber capability for use with 7.62x51, 5.56, and 7.62x39 with AK magazines.

**MK 17 MOD 0**

*The 7.62 SCAR heavy is also equipped with CQB, standard and extended range barrels.* The CQB barrel is 13” in length, with a max effective range of 300 meters. The standard barrel comes in at 16” and can engage targets out to 600 meters. The 20” barrel long-range variant has an effective range of 800 meters, which is equal to that of the bolt-action M24 Sniper Weapon System. The 7.62 cartridge has much greater terminal ballistics compared to the 5.56, and the ability to change barrel lengths allows operators to carry minimal equipment to meet operational requirements. The SCAR-H offers a unique combination of maneuverability and adaptability to different shooters and mission profiles, along with the lethality of the powerful 7.62 NATO round.

**MK 20 MOD 0**

*The MK 20 Sniper Support Rifle variant, like the MK 17, was chambered in 7.62x51. It features a heavier barrel and barrel extension for rigidity and accuracy, along with a 20” barrel.* The modular trigger group is configurable for either single- or double-stage operation. The MK 20 was intended to replace M21 semi-auto sniper rifles.
The FN SCAR rifles are exceptionally simple in their design, and break down very easily into their main components. The trigger module, buttstock, return spring assembly, upper receiver, barrel, and bolt carrier group are the major assemblies of the rifles. Brownells has an outstanding series of videos on the disassembly, maintenance, and reassembly of the SCAR-H rifle on YouTube:
https://www.youtube.com/watch?v=qPo6dEMpi3o.

The FN SCAR rifles are truly advanced weapons for the modern spec-ops warrior. Their combination of reliable simplicity, truly ambidextrous capability, and innovative modular barrel system create a definite advantage for our operators.

SOURCES CITED
https://www.fnamerica.com/products/scar-family/system-overview/