AS-20 / AS-30 / AS-30L

* While the Americans were working on the Bullpup, the French were working on a similar series of ASM. After the war, Nord (later Aerospatiale) of France developed a radio-guided air-to-air missile with the company designation of "Type 5103" and the service designation "AA-20". It took little modification of the type to convert it to an ASM, with the company designation "Type 5110" and the service designation "AS-20".

The AS-20 was very similar to the original AA-20 except for a larger warhead. The bigger warhead was made possible by replacing the air-to-air missile's proximity fuze with a simpler and more compact impact fuze. The AS-20 had four cruciform sweptback fins and was propelled by a dual-thrust (boost-sustain) solid rocket motor, with two lateral nozzles for the boost burn and a steerable centerline nozzle for the sustain burn. The missile was visually guided over a radio link, and was optically tracked using tail flares.

NORD AS-20:

spec	metric	english
wingspan	80 centimeters	2 feet 8 inches
length	2.6 meters	8 feet 6 inches
diameter	25 centimeters	9.84 inches
total weight	143 kilograms	315 pounds
warhead weight	33 kilograms	73 pounds
speed	Mach 1.7	
range at altitude	10 kilometers	6 MI / 5 NMI

Over 8,000 AS-20s were built, with initial deliveries in 1961. Users included France, West Germany, Italy, and South Africa. The AS-20 was phased out of front-line service in the 1970s, but was retained as a training round.

* Development of the highly successful "Nord 5401" or "AS-30" began in 1958 as a follow-on and a simple scale-up of the somewhat undersized AS-20. The AS-30 was propelled by a boost-sustain solid rocket motor, with twin nozzles, one on each side of the rear of the missile. Initially, vibrating vanes were used to direct the missile by selectively deflecting the thrust from each nozzle. The warhead could be either general purpose blast-fragmentation or a penetrating type, with impact or delay fuzing.

NORD AS-30:

spec	metric	english

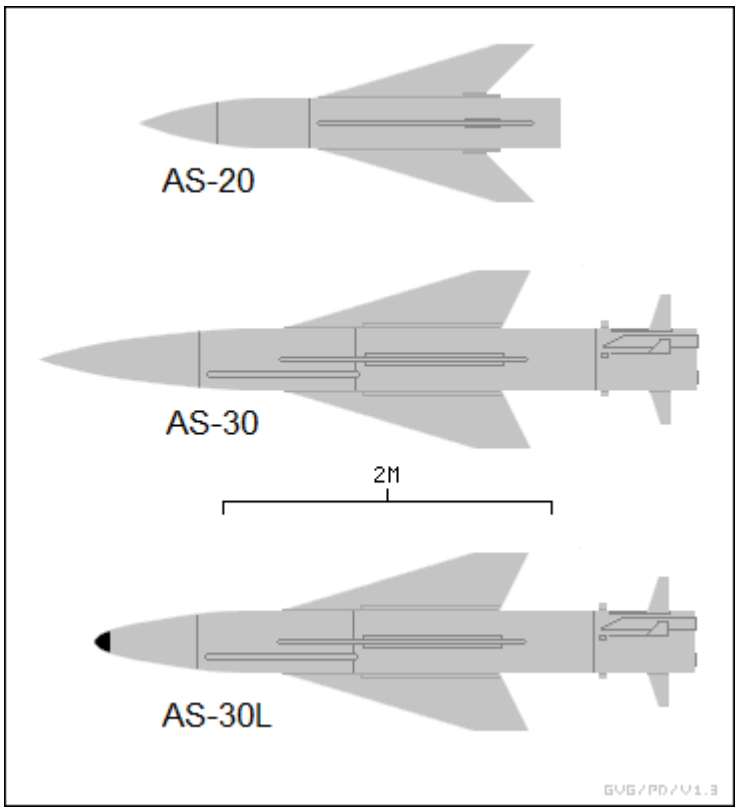
wingspan	1 meter	3 feet 4 inches
length	3.84 meters	12 feet 7 inches
diameter	34 centimeters	13.4 inches
total weight	520 kilograms	1,146 pounds
warhead weight	240 kilograms	529 pounds
speed	Mach 1.5	
range at altitude	11 kilometers	7 MI / 6 NMI

Early production also used visual guidance using tracking flares and a pitch-yaw joystick, as with the AS-20. However, an improved version of the AS-30 was introduced in 1964, which eliminated the vibrating vanes and instead used four pop-out tailfins for guidance. A new semi-automatic guidance system was introduced as well, in which all the pilot had to do was keep the target lined up in his sight. The guidance system sensed the location of the missile using an infrared sensor, and the system's computer adjusted the weapon's flight path to keep it on track.

About 3,870 AS-30 missiles were built. Users included France, Britain, West Germany, Switzerland, South Africa, India, and Peru, though only France used the semi-automatic guidance system. Apparently a lightweight version of the AS-30 was developed to allow the weapon to be carried on smaller aircraft; what few details available indicate that it had a half-sized warhead and shorter wings.

* In 1974, Aerospatiale and Thomson-CSF began work on a laser-seeking version of the AS-30, the "AS-30L", using technology licensed from Martin Marietta in the US. Thomson-CSF developed a laser targeting pod named "ATLIS (Automatic Tracking Laser Illumination System)" and a matching laser seeker head for the missile. By 1980, preproduction AS-30Ls were being fired by French Armee de l'Air Jaguar strike fighters equipped with the ATLIS II pod, which was fitted with a TV camera to aid in targeting. First production deliveries of the AS-30L were in 1983.

Unlike the AS-30, the AS-30L has roll-stabilization and an inertial guidance system to keep it on track until the seeker can pick up laser light reflections. The improved missile's physical specifications and performance are otherwise very close to the original AS-30, though it is a bit shorter because of the blunt nose of the laser seeker head.



The AS-30L is used on strike aircraft such as the Jaguar and the Dassault Mirage F1. Production quantities have been relatively low, in the high hundreds, though the weapon has been supplied to eight other countries. The French supplied the weapon to Iraq, who used it on the Iranians during the Iran-Iraq war. Ironically, the French used the AS-30L on the Iraqis during the Gulf War, with the missile demonstrating 80% accuracy in hitting targets even in the face of intense air-defense fire.