

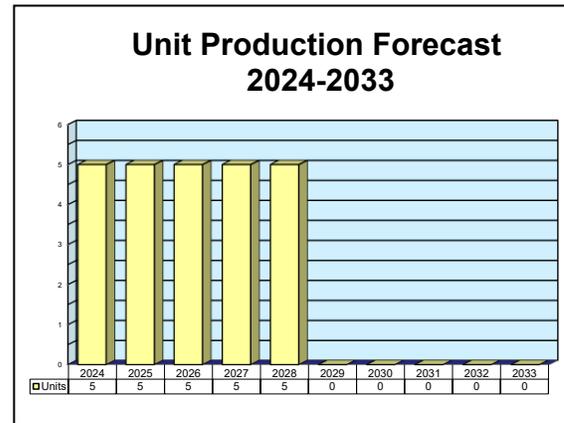
ARCHIVED REPORT

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L118/L119/L127/M119 105mm Light Gun

Outlook

- Low-rate production in the U.K. for export continues
- U.S. Army M119A2 production program remains dormant; U.S. Army continues upgrading existing M119A2 howitzers to the M119A3 configuration
- Forecast reflects low-rate production in the U.K., as well as possible renewed U.S. licensed production



Orientation

Description. Towed 105mm artillery systems.

Sponsor. The British Army sponsored the development and initial British Army procurement of the L118. The contractor privately sponsored additional follow-on development.

Status. Development through serial production.

Total Produced. Through 2023, we estimate the prime contractor and various licensees produced 1,749 units of this ordnance series.

Application. Indirect fire artillery support for maneuver forces at the company and battalion levels.

Price Range. In 2024 U.S. dollars, the L118 and L127 each carry an estimated unit price of \$685,500 on the international market.

According to U.S. Department of Defense budget request documentation, new-production M119A2 howitzers carried an FY11 unit price of \$804,000 for U.S. Army procurement.

Contractors

Prime

BAE Systems, Combat Vehicles (UK)	http://www.baesystems.com , Golf Course Ln, New Filton House, Filton, S Gloucestershire, United Kingdom, Tel: + 44 0117 9888560, Fax: + 44 0117 9888502, Prime
Astronautic Technology (M) Sdn Bhd (ATSB)	http://www.atsb.my , 2 Jalan Jururancang U1/21, Hicom-Glenmarie Ind Park, Shah Alam, Selangor, Malaysia, Tel: + 60 3 55690 100, Fax: + 60 3 55696 109, Email: sabirin@atsb.my , Licensee
Rheinmetall Canada Inc	http://www.rheinmetall.ca , 225 Blvd du Séminaire Sud, Saint-Jean-sur-Richelieu, Québec, Canada, Tel: + 1 (450) 358-2000, Fax: + 1 (450) 358-1744, Email: info@rheinmetall.ca , Licensee
Rock Island Arsenal, (TACOM LCMC Rock Island)	Bldg 90, 1 Rock Island Arsenal, Rock Island, IL 61299 United States, Tel: + 1 (309) 782-1121, Fax: + 1 (309) 782-6782, Email: usarmy.ria.imcom-central.mbx.usag-ria-pa@mail.mil , Licensee

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Thales Australia, Armaments & Ammunition	http://www.thalesgroup.com , 7 Murray Rose Ave, Sydney Olympic Park, New South Wales, Australia, Tel: + 61 2 9562 3333, Email: communications@thalesgroup.com , Licensee
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Subcontractor

HRU Technical Resources	http://www.hru-tech.com , 3451 Dunckel Rd, Ste 200, Lansing, MI 48911 United States, Tel: + 1 (517) 272-5888, Ext: 208, Fax: + 1 (517) 272-5880, Email: briggs.todd@hru-tech.com (M119A2 Engineering & Manufacturing Support Services)
Seiler Instrument & Manufacturing Co Inc	http://seilerigeo.com , 3433 Tree Court Industrial Blvd, St. Louis, MO 63122 United States, Tel: + 1 (314) 968-2282, Fax: + 1 (314) 968-9217 (M119 Fire Control Components)

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 75 Glen Road, Suite 302, Sandy Hook, CT 06482, USA; rich.pettibone@forecast1.com

Technical Data

Crew. Six (three in emergencies).

Muzzle Brake. Double-baffle.

Recoil System. Hydropneumatic.

Breech Mechanism. Manually operated vertical sliding block.

Carriage Type. Bow.

Shield. None.

Ammunition. The L118 (L19A1 ordnance) fires the following 105mm semi-fixed ammunition types:

- L31 (High Explosive)
- L42 (High Explosive Squash Head)
- L41 (Squash Head/Practice)
- L45, L37 and L38 (Smoke)

The L119/M119 (L20A1 ordnance) fires all NATO-standard 105mm semi-fixed ammunition.

The L127 (L27A1 ordnance) is compatible with Swiss-pattern 105mm ammunition.

Dimensions. The following data reflect the basic L118. The L119/M119 exhibits the same dimensions, except as noted below; traveling weight for the L119/M119 appears in parentheses.

	<u>SI Units</u>	<u>U.S. Units</u>
Caliber	105mm	4.13 in
Length overall	6.63 m	21.75 ft
Barrel length (L19A1)	37 cal/3.885 m	37 cal/12.746 ft
Barrel length (L20A1)	28.79 cal/3.02 m	28.79 cal/9.92 ft
Traveling width	1.78 m	5.84 ft
Firing width	1.78 m	5.84 ft
Traveling height	1.37 m	4.49 ft
Firing height	2.65 m	8.69 ft
Traveling weight	1.86 (1.82) tonnes	2.05 (2) tons
Firing weight	1.86 tonnes	2.05 tons

Performance. The following data reflect the basic L118; data for the L119/M119 are in parentheses where different. The ordnance can traverse 360 degrees on its platform. The L118 series can accommodate a maximum tow speed of 95 kmph (59 mph). The U.S. Army routinely uses the M998 series HMMWV as a tow vehicle for the M119A1/A2.

	<u>SI Units</u>	<u>U.S. Units</u>
Elevation	+70 deg	+70 deg
Depression	-5.5 deg	-5.5 deg
Traverse	5.6 deg left/5.6 deg right	5.6 deg left/5.6 deg right
Maximum range	17,200 (11,500) m	18,809.92 (12,577) yd
Maximum rate of fire	8 (15) rd/min	8 (15) rd/min

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	SI Units	U.S. Units
Sustained rate of fire	3 (3.5) rd/min	3 (3.5) rd/min

The L119A1/L20A1/L27A1 ordnance has a rated barrel life of 8,700 equivalent full charges. During the Falkland Islands War (1982), 30 British Army L118 pieces fired some 17,000 rounds without a single malfunction.



105mm M119A2 Howitzer Fire Mission at FOB Kalsu, Iraq

Source: U.S. Army

Variants/Upgrades

Variants. None.

Modernization and Retrofit Overview. The United States and United Kingdom have each conducted a significant modernization and retrofit program for the L118/M119 system. In addition, BAE Systems Land & Armaments (formerly RO Defence) offers a midlife upgrade package.

U.S. Army LASIP Upgrade Package. The Block I portion of the Light Artillery System Improvement Program (LASIP) involved the relocation of the sight system. The program also integrated a redesigned low-temperature recuperator, a modified cam follower, new

trail lift handles, a modified firing safety mechanism lock, and improved brakes.

Enter the M119A2

The Block II improvements included a new direct fire sight, an improved elevating hand wheel and elevating clutch, a new rammer/extractor tool, new firing platform clamps and buffer compensating tubes, and a widened track. All M119A1 pieces remaining in the U.S. Army inventory underwent the LASIP upgrade. They now carry the M119A2 designation.

British Army LINAPS Upgrade. Between 2000 and 2002, the British Army integrated the Laser Inertial

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Automatic Pointing System (LINAPS) with the L118 in order to enhance firing speed and accuracy. LINAPS consists of a GPS receiver integrated with the BAE Systems (formerly Marconi) FIN3110L inertial navigation system. The system upgrade also includes integration of a control unit, a power management system, and a wheel odometer.

BAE Systems Midlife Upgrade Package. The BAE Systems midlife upgrade package for the Light Gun features components that the contractor can retrofit to existing pieces or incorporate on new-production pieces. These components include an improved-design cover plate with improved gearbox seals, an extended towing eye, improved brake components, handgrips added to the trails, an improved-design recoil system, and a new lightweight aluminum platform. Redesigned

components allow the crew to emplace the piece without removing the wheels. Additionally, a single strut and traverse link replaces the A-frame.

Additional Upgrade Options. As the British Army will retain the L118 in service for the foreseeable future, BAE Systems is also developing a new line of ammunition for the piece. The British Army will reportedly fund at least a portion of the contractor-proposed midlife upgrades.

BAE Systems Land Systems has teamed with RDM Technology BV of the Netherlands to integrate the L19A1 and L20A1 ordnance with the venerable U.S. 105mm M101 howitzer, which has been in service since before World War II. Canada and Chile have both purchased this enhancement package.

Program Review

Background. In 1965, the British Army issued a requirement for the development of a new light 105mm artillery system to replace all existing 105mm Model 56 pack howitzers and remaining 25-pounder (87.6mm) pieces then in frontline service with the Royal Artillery. Specifically, the British Army sought a new ordnance design with increased range, better agility and speed, and a more stabilized firing platform. The Royal Armament Research and Development Establishment began design work in 1966. The evaluation trials continued through 1973, when the British Army type-classified the Royal Ordnance design, designated the L118 Light Gun, as standard.

Baptism of Fire in the Falklands

The (then) Royal Ordnance Factory delivered the first production pieces to the Royal Artillery in 1974; by 1981, the L118 equipped all 13 British Army light artillery brigades. The L118 received its baptism of fire with British forces on the Falkland Islands in 1982. The performance of the L118 in that conflict laid the foundation of the piece's excellent reputation.

Description. The British Army currently maintains 208 pieces in its active and reserve inventories. The light weight and compact size of the L118 series accommodate a wide variety of air and ground transport options.

L118. This is the basic Light Gun model, in service with the British Army. The piece consists of seven components:

Ordnance Comparison. The L118, L119 and L127 models differ only in their ordnance, as follows:

<u>System</u>	<u>Ordnance</u>	<u>Rifling</u>	<u>Grooves</u>	<u>Firing</u>	<u>Muzzle Brake</u>	<u>Range</u>
L118	L19A1	321.0 cm	28	Electric	Double	17.2 km
L119	L20A1	277.0 cm	36	Percussion	Single	11.0 km

- Elevating mass (ordnance, recoil system, cradle, trunnions, balancing gear, and electric firing mechanism)
- Saddle
- Ordnance controls
- Trails with spades
- Platform
- Suspension
- Sighting system

The crew can quickly remove the multi-baffle muzzle brake for cleaning. All major metal components consist of high-strength, corrosion-resistant chrome-nickel-molybdenum steel.

L127. This version of the L118 features the L27A1 ordnance, which is compatible with Swiss-pattern 105mm ammunition. The British prime contractor developed this model in 1978, at the request of the Swiss government. However, after the delivery of six pieces, the Swiss showed no further interest in the weapon.

L119. The British prime contractor integrated the L20A1 ordnance with the basic L118 to accommodate U.S.-pattern semi-fixed 105mm ammunition with percussion priming.

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<u>System</u>	<u>Ordnance</u>	<u>Rifling</u>	<u>Grooves</u>	<u>Firing</u>	<u>Muzzle Brake</u>	<u>Range</u>
L127	L27A1	305.2 cm	32	Percussion	Double	13.7 km

Australia Adopts L118 & L119

In 1969, the Australian Army initiated Project Hamel to evaluate options for replacing the 105mm M101 towed howitzer. Eventually, Australia selected the Light Gun design, procuring both the L118 and L119 as the Hamel gun. Initially, Australia procured six Light Guns from the U.K. in 1983. In 1984, the L118 and L119 entered serial production at the Australian government's Maribyrnong and Bendigo factories. In 1985, the total program cost reached the equivalent of \$101.6 million. Production deliveries for Phases 3 and 4 of Project Hamel commenced in 1984; the production run was completed by 1992.

U.S. Adopts L119 as M119A1

In May 1984, the U.S. Army evaluated the L118/L119 to fill the 216-piece requirement for its new light divisions (6th Infantry Division, 7th Infantry Division, 10th Mountain Division, and 25th Infantry Division).

The U.S. Army completed the operational testing of 20 pieces leased from the British prime contractor in 1985. The U.S. Army selected the L119, type-classified the M119A1, in February 1986.

The U.S. Army purchased 147 complete M119A1 howitzers directly from the British prime contractor. The Watervliet and Rock Island Arsenals produced an additional 688 M119 series howitzers under license before production ceased in 2011.

Funding

The U.K. Ministry of Defence funded the initial development and British Army procurement of the L118. The prime contractor has since privately funded additional development.

According to U.S. Department of Defense FY24 budget request documentation (March 2023), U.S. Army funding for the M119A3 modification program is as follows. This does not reflect any new production. All amounts are in millions of U.S. dollars.

U.S. FUNDING

	FY20 <u>QTY</u>	FY20 <u>AMT</u>	FY21 <u>QTY</u>	FY21 <u>AMT</u>	FY22 <u>QTY</u>	FY22 <u>AMT</u>
M119 Modifications	-	6.3	-	2.0	-	-
Total	-	6.3	-	2.0	-	-
	FY23 <u>QTY</u>	FY23 <u>AMT</u>	FY24 <u>QTY</u>	FY24 <u>AMT</u>	FY25 <u>QTY</u>	FY25 <u>AMT</u>
M119 Modifications	12	2.3	493	13.1	96	7.4
Total	12	2.3	493	13.1	96	7.4
	FY26 <u>QTY</u>	FY26 <u>AMT</u>	FY27 <u>QTY</u>	FY27 <u>AMT</u>	FY28 <u>QTY</u>	FY28 <u>AMT</u>
M119 Modifications	-	1.3	-	1.2	-	1.2
Total	-	1.3	-	1.2	-	1.2

Contracts/Orders & Options

BAE Systems has not released contractual information regarding the L118/L119 program. Further, open-source research has revealed no new export orders since Jan 1, 2012.

Since Jan 1, 2018, the U.S. Department of Defense has not awarded any new contracts in support of the M119 howitzer program.

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Worldwide Distribution/Inventories

Export Potential. The Light Gun has become a formidable competitor with a proven combat record – beginning with the Falkland Islands War (1982) – and the undeniable market advantage of being adopted by the U.S. Army. The British Light Gun design remains the weapon of choice in the 105mm artillery market segment.

Countries. Australia; Bahrain; Bosnia & Herzegovina; Botswana; Brazil; Colombia; Ireland; Kenya; Malawi; Malaysia; Morocco; the Netherlands; New Zealand; Oman; Portugal; Spain; Switzerland; Thailand; United Arab Emirates; the United Kingdom; and the United States.

Forecast Rationale

The BAE Systems Land & Armaments production line in the U.K. for the 105mm L118 series Light Gun remains active for export on an as-needed basis.

Thai Orders Maintain Production Line

Open-source reporting suggests that production of the L119 for the Royal Thai Marine Corps continues. The British prime contractor expects to maintain a production level averaging seven pieces per year.

According to U.S. Department of Defense budget request documentation, the U.S. Army no longer maintains a procurement line for the M119 program.

Rock Island Arsenal completed upgrading all M119 howitzers to the M119A2 configuration in 2011. Current upgrade work involves an effort to digitize the M119A2 fire control suite to the M119A3 configuration.

Combat-Proven Light Fighter

The L118 series 105mm Light Gun soldiers on as the weapon of choice within the 105mm towed artillery market segment. The system has a proven combat record. It is especially well suited to operations with airborne, air assault, and light infantry units – as combat operations in Afghanistan clearly demonstrated.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR UNIT PRODUCTION												
Designation or Program	High Confidence					Good Confidence			Speculative			Total
	Thru 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
BAE Systems												
L118/L119 (M119A1)												
	914	5	5	5	5	5	0	0	0	0	0	25
Total	914	5	5	5	5	5	0	0	0	0	0	25