

## The FV-721 Alvis Fox and the Sabre

In 1964 the Fighting Vehicle Research Development Establishment (FVRDE) proposed that a light tracked vehicle be put into service, which led to the development of the [Scorpion](#), [Scimitar](#) and other [CVR\(T\) variants](#) to replace the FV601 Alvis [Saladin](#) 6x6 armoured car and FV603 [Saracen](#) 6x6 Armoured Personnel Carrier.

In 1965 it was also proposed that the highly-successful Daimler Ferret be developed further by Daimler, who built 14 prototypes for user acceptance trials. Accepted for production in July 1970 the order went to the Royal Ordnance Factory in Leeds rather than to Coventry. Once the last of the Ferrets were built in 1972, Daimler ceased building armoured vehicles, bringing 70 years of experience to a close. After the Daimler production line closed, Alvis became the 'parent' company for the Ferret and was responsible for the supply of spare parts. Whilst the ROF had considerable experience of building tracked tanks, the move from Daimler deprived armoured vehicle development with the crucial link to the automotive industry, arguably with consequences for the Fox design. The [ROF](#) was subsequently bought out by [Vickers Defence Systems](#) in 1986, who were in turn bought by [Alvis](#), before being incorporated into [BAE systems](#) in 2004, now one of the largest defence contractors.

The intention, therefore, was that the [Scorpion CVR\(T\) family](#) and the Vixen from the CVR(W) family would replace the Ferret. The FV-722 Vixen was conceived as a replacement for the Mk 1 Ferret liaison vehicles. In 1971 the ROF produced a prototype for testing and evaluation. With 3-4 crew, the vehicle was armed with a 7.62 machine gun mounted in a small turret originally developed for the FV432 tracked APC. The project was cancelled in the defence cuts of 1974. The [prototype](#) can be seen at Bovington. The Fox then replaced the Ferret in the wheeled liaison/recce role. Daimler also unsuccessfully proposed a Ferret Mk 6 having a two-man turret armed with a 30mm RARDEN cannon, but this came to nothing.



Production of the Fox began in 1972 and the first vehicle was completed in May 1973. The Fox is armed with a [30 mm L21A1 RARDEN cannon](#) and a co-axial 7.62 mm machine gun, protected with aluminium armour and was intended as a larger successor to the Mk 2 Ferret and Saladin. The Rarden cannon was manually fed with three-round magazines; 99 rounds were carried; 2,600 rounds were also carried for the L37A2 7.62 machine gun. The Rarden fired an APDS-T rounds; standard British APSE-T, HEI-T and PRAC-T rounds as well as standard Oerlikon Contraves HE, AP and Practice rounds. The gun is fired in rapid single shots but bursts of up to six rounds can be fired. The empty cartridge cases are automatically ejected outside the turret. The 4-barrelled 66 mm smoke dischargers were moved from the front of the vehicle to either side of the turret. All of the welded aluminium turrets for the Fox light armoured car were manufactured by Alvis Vehicles.

The powerpack is a 4.2 litre Jaguar XK engine with a reduced compression ratio (7.75:1) in order to use military petrol. The valve gear is lead-proofed and a single two-choke Marcus carburettor is fitted, as is a Ki-gas cold diesel-injection starting system. The cooling system has twin radiators horizontally disposed across the top and to the rear of the engine and, sealed to the radiator, a pair of ducted centrifugal fans. An oil/water heat exchanger unit serves both the engine and the transmission. The radios are in the rear of the turret, as with the Ferret, but the batteries are stowed below the false floor in the crew compartment.

The [H-differential](#), fluid flywheel, five-speed Wilson pre-selector gearbox, prop-shaft drivetrain, forward/reverse transfer box and epicyclic reduction gears configuration was retained from the Ferret. The powerpack, gearbox and drivetrain can be withdrawn from the vehicle through the rear of the hull. The independent suspension comprises in each case an upper and lower wishbone, a coil spring and a hydraulic telescopic damper. The upper and lower wishbone linkages incorporate lubrication reservoirs and the dampers are enclosed in the recoil springs. The independent suspension allows wheel movements of 0.279 m and the tyres are of the run-flat type. The Fox can ford to a depth of 1 m without preparation. The vehicle had a combat weight of 6.75 tonnes and was designed to be air-portable. A Lockheed Martin C-130 can carry three Fox vehicles or two for parachute dropping.

The Fox had aluminium armour and was fitted with a flotation screen, carried collapsed around the top of the hull which could be erected by the crew in 2 minutes. The vehicle is then propelled and steered across the river or stream by propulsion by its wheels. The front of the flotation screen contains transparent panels for viewing and a bilge pump with a capacity of 205 litres/min is fitted as standard on all vehicles. The Fox can travel down or up river banks with a gradient of up to 46 per cent.

The driver sits at the front and has an integral wide-angle periscope/hatch cover that lifts and opens to the right. Unlike the Ferret, which necessitated a change of front hatch, the periscope could quickly be replaced by a passive night-driving periscope. The centre-mounted turret holds the commander-loader on the left and gunner on the right. They each had a rear-opening hatch cover. The commander has a periscopic binocular surveillance instrument in a rotating mount with a magnification of x 1 & x 10 and seven observation periscopes. The gunner has a periscopic binocular daylight sight linked to the main armament, with similar magnification and two observation periscopes.

Mounted to the right of the main armament is a GEC-Marconi Defence Systems SPAV L2A1 passive night sight with a high-magnification of x 5.8 (8° field of view) for gunnery and a low magnification of x 1.6 (28° field of view) for surveillance. There can be no confusion between the two because when the high magnification is being used a shutter isolates the low magnification, and when the other is being used an iris diaphragm isolates the high-magnification objective. The image intensifier tube is protected from the effect of gun muzzle flash by a flash shutter which is operated electrically from the gun firing circuit. When high magnification is selected an illuminated ballistic graticule with brightness control is automatically inserted into the optical system. The exposed objective window is cleared by a wiper and washer and the sight is protected by an armoured cowl with a door which is kept closed when the sight is not in use. The L2A1 night sight will also detect infrared devices.

The Fox first entered service in 1975, with B Squadron 1 RTR at Aliwal Bks Tidworth, being withdrawn in 1994. Even after disposal of the Fox many Ferrets remained in service, and would do so for the next two decades. Over a period of 21 years 325 Foxes were built. Unlike the Ferret, the Fox was not heavily produced nor widely exported, going only to Malawi and Nigeria. It is said that the army never intended to adopt the Fox in the first place. It was forced on them by the government. B Sqdn based on Salisbury Plain was supplied, according to the plan, so that it was 'in service with the British Army' to help export sales so that it could be sold to Nigeria and - hopefully - other commonwealth nations.

In 1995, after withdrawal of the [Scorpion](#) in 1992 and the withdrawal later of the Fox in 1994, some 136 Fox turrets were mated with the hull of a Scorpion to produce the [Sabre](#) as an economically manufactured CVR(T) which was cheaper to produce than the [Scimitar](#). The concept behind the hybridization was to solve some of the stability issues experienced with the FV107 Scimitar by creating a lower profile. It was not a success: the vehicle lacked defensive capabilities. Therefore further modifications were made to the turret of the Sabre to include redesigned smoke grenade launchers and the 7.62mm GPMG was replaced by the L94A1 7.62mm chain gun. Domed hatches were installed to improve the headroom for the commander and gunner. Sabres were assigned to the reconnaissance platoons of armoured and mechanised infantry battalions. The Sabre was withdrawn from service in 2004. It has no FV number assigned.

A small number of Fox turrets were added to modified [FV 432s](#) in the mid-1970s for the 29 Inf. Brigade Berlin to provide a turreted vehicle, but at the same time appease the Russians who didn't like the idea of a Chieftain driving around Berlin. The FV432's commander's cupola was removed, and a [low profile flat hatch fitted](#) in its place, so not to foul the turret elevation and rotation. This project was abandoned after 13 FV 432 APCs were converted; these were later used for gunnery training at Lulworth RAC Gunnery School.

The Fox only had limited success compared to the Ferret, and much of this may be attributed to production being taken away from the legacy and experience of the Daimler Motor Company. In addition, the gearbox and drivetrain which was successful in the Ferret was employed to drive a much heavier, yet much faster vehicle. Damaged engines and gearboxes were common, as reading the [threads posted on the HMVF](#) shows. Over ten times as many Ferrets were built as the Fox, and this is reflected in the relative numbers of Alvis Foxes now in private ownership. [Thirteen Foxes](#) are listed by the AFVS, included in the total of [56](#) listed by the HMVF.

Reference: [FV-721 Fox](#)