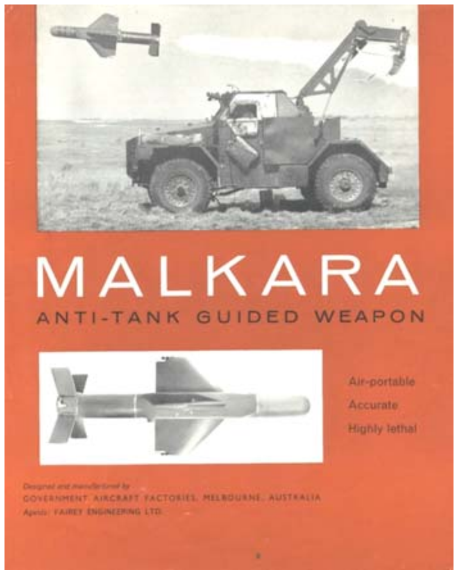
HORNET FV1620

Clive Elliott explains how the development of the Hornet missile launcher.

The Hornet missile launcher was developed under the FVRDE design specification FV1620. Depending on the stage of development the vehicle was identified as:
Truck, 1 Ton, Armoured Launcher, 4x4, Humber.
Launcher, Guided Missile, Truck Mounted.
Truck, 1 Ton, Airportable Launcher, 4x4.
Launcher, Guided Missile, Truck Mounted (Malkara) Armoured, 1 Ton, 4x4, Humber Hornet.



The Humber 1-Ton trucks were introduced in the early 1950s and were designated by the Fighting Vehicle Research & Development Establishment (FVRDE) as the FV1600 series. They demonstrate how a wide range of variants can be based on a cargo truck. Other 1-Ton trucks of the time, like the Austin K9 (FV16000 series) and Morris MRA/1 (FV16100 series) were based on a commercial chassis, but the Humber was developed exclusively for military use and was the only 'standardised' 1-Ton truck. Standardised, means that it has some components that are shared with other standardised vehicles such as Champ, Ferret, Saracen etc.

Of all the Humber variants the armoured version known as the Pig saw the longest service and is the most widely known variant. But the most ingenious variant must be the Hornet (FV1620) which became the launch vehicle for the Malkara Anti-Tank Guided Weapon (ATGW). The adoption of Malkara by the British Army spawned a range of other Humber variants to supply, test and repair the Malkara system.

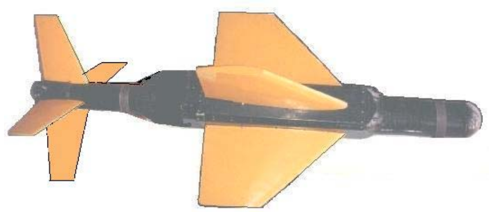
It has been said that the Hornet was a rather improvised vehicle and that a better launch vehicle could have been designed. This is quite true but the Hornet was a rapidly developed launcher that was required in a hurry, because of the situation in the Middle East. The Paras going into Jordan in 1958 with no serious firepower forced the Defence Staff to require that a Guided Weapons Squadron should be in service as soon as possible. This Squadron would ultimately be part of 16 Independent Parachute Brigade Group that did not have an RAC Unit. It would combine armoured reconnaissance with an anti-tank role. At the time there were only two heavy ATGWs under consideration Malkara and Orange William.

Malkara
Malkara was a wire guided HESH (High Explosive Squash Head) missile that started development in Australia in 1951. Malkara was adapted to fit the UK requirement for a 56lb warhead ATGW originally known here as Project J. The name Malkara is said to be an Aboriginal word for 'shield', suggestive of a strong defensive shield against tanks. The name was sourced by the Government Aircraft Factories (GAF) as a fitting title. However there is no Aboriginal language as such, just a large number of dialects. Some years ago I wrote to The Australian High Commission but they were unable to neither confirm its meaning nor identify the word as being Aboriginal!

Malkara on a display stand. To assist tracking there should be a pyrotechnic flare on the upper & lower wings, they are not seen here as the missile has been mounted incorrectly by 90°.

Orange William

Orange William was developed by the Weapon Division of Fairey Engineering Ltd and was another HESH ATGW physically very similar to Malkara. The requirement was drawn up in 1954 and it was intended to be an alternative research project to Malkara. This included fully transistorised electronics, a thermal battery and the freedom from wire guidance by the use of an infra-red link. The code name Orange William is indicative of it being developed in an era when British missiles, radar systems etc were given names from the colours of the spectrum eg Blue Steel, Red Duster, Green Archer etc.



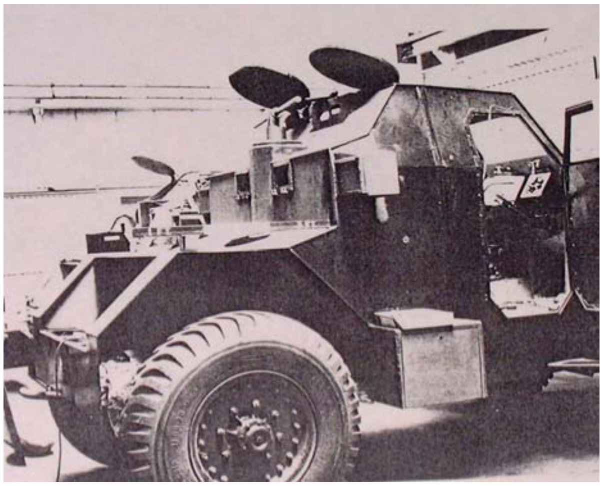
Orange William, the wings and fins are appropriately painted orange.

Orange William Launchers

The launch vehicle for Orange William was to be the FV426. Two prototypes were expected by April 1960 and were to be based on the FV421 tracked carrier. Orange William was complicated in that it required a separate control vehicle such as a Ferret. The Ferret in a forward position would identify a target; the FV426 would then fire a missile towards the Ferret. This allowed an operator in the Ferret to track the oncoming missile; meanwhile a second operator would be tracking the target. A computer would then feed the appropriate guidance to the missile via an infra-red link. The missile had to fly two sides of a large triangle, which required the positions of the launcher and control vehicle to be known with great accuracy. The infra-red link was susceptible to interference from fog, rain, snow and sunlight modulating the beam in the wake of the exhaust. To overcome this a microwave link in the region of 25 GHz was proposed, but at the time no solid state devices could operate at this frequency. This would have meant complex power supplies to provide high voltages to drive a small klystron receiver.

Although the FV426 was to be capable of floating it was not capable of easy air transportation, as it would weigh over 13.4 tons. To make Orange William an airportable system two types of lighter launch vehicles were considered. In 1959 a model of a long wheel base Land Rover was constructed that showed how two missiles could be carried. One missile was on a launcher arm that could be folded down by the side of the vehicle with stowage for a second missile. There would be a crew of two. But the favoured vehicle was inspired by the Humber Pig FV1611 and designated FV1620.

This vehicle was to carry to Orange William missiles on a double external launching arm and a further two missiles stowed under armour within the vehicle. Wharton Engineering were selected to develop Hornet by 1958 and produced a full sized wooden mock up. It was proposed that it would also be suitable to carry Malkara missiles instead. As it turned out this was to become the Malkara launch vehicle when Orange William was cancelled in 1959.



An early Hornet being constructed by Wharton Engineering

Malkara Launchers

The Government Aircraft Factories (GAF) were developing Malkara. Although the Australians were pressing ahead with the missile there were several ideas on the type of launch vehicle to be used. FVRDE developed a trailer vehicle designated FV4010. This would help gain experience in launching missiles from a vehicle that would be the basis of a launcher for combat use or to allow time for development of Hornet.

Two trailers were constructed and in 1956 one was shipped to Australia and was then painted sand colour to reflect the heat. Unfortunately extensive damage occurred to the trailer and the cable harnesses. It was felt that the roof was not sufficiently armoured in the event of a rocket motor exploding and safety rails should be fitted. There was disagreement about the FVRDE firing circuit and with what GAF wanted. The sight provided by FVRDE was altered and it was realised that the control wire dispenser allowed slackness that would cause wire snatch breakage.

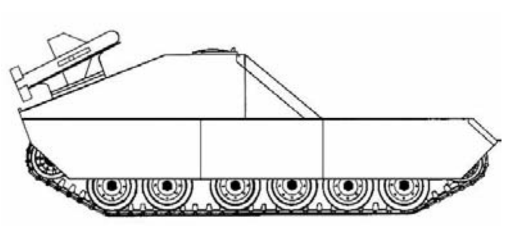
A successful launch of Malkara at Woomera.

GAF made good progress with the missile development programme, which was completed at the end of 1958. This led the way for British acceptance tests and the next year 150 Malkaras arrived at Kirkcudbright ranges. Firings achieved a 90% hit rate on moving targets, which was pretty good considering these were development missiles not production missiles. To develop a production missile, design teams were set up at the Royal Armament Research & Development Establishment (RARDE), FVRDE, GAF and Fairey. Interestingly Fairey had just seen their Orange William project cancelled and had just started on the development of Swingfire, so Malkara was to be an interim system for Swingfire. The Kirkcudbright firings were still from the FV4010 trailer and it was considered that this launcher would be embodied into a Centurion chassis also designated FV4010. As the FV4000 series is the FVRDE designation for Centurions not for trailers it was quite clear that from the outset the Centurion was the favoured launch vehicle.

The British launcher trailer looking less cluttered than its Australian counterpart. The launcher arm forms a convenient seat whilst waiting for a Malkara to be loaded onto the jib.

All ready for launching.

The plan had been for this Heavy Tank Destroyer GW to carry a total of 20 missiles, with a rotating launch arm so that as one missile was fired, another could be reloaded under the protection of armour. Although about 4 tons lighter than the Mk 3 Centurion, the proposed launcher was still very heavy at 46 tons, certainly not airportable. The demise of Orange William left the way open for the FV1620 to become the launch vehicle for Malkara.



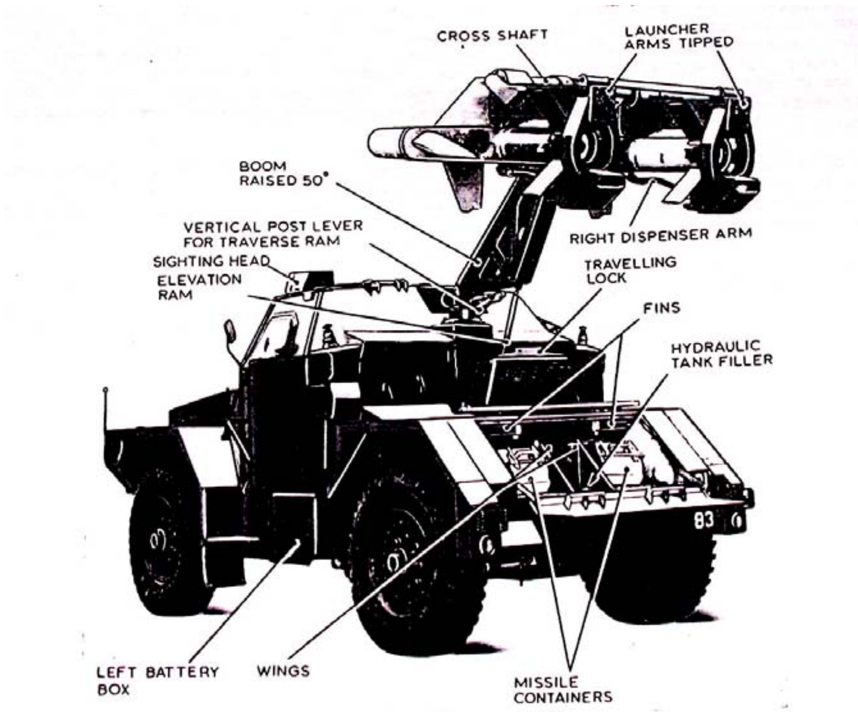
Heavy Tank Destroyer GW FV4010.

<u>Hornet Description</u>

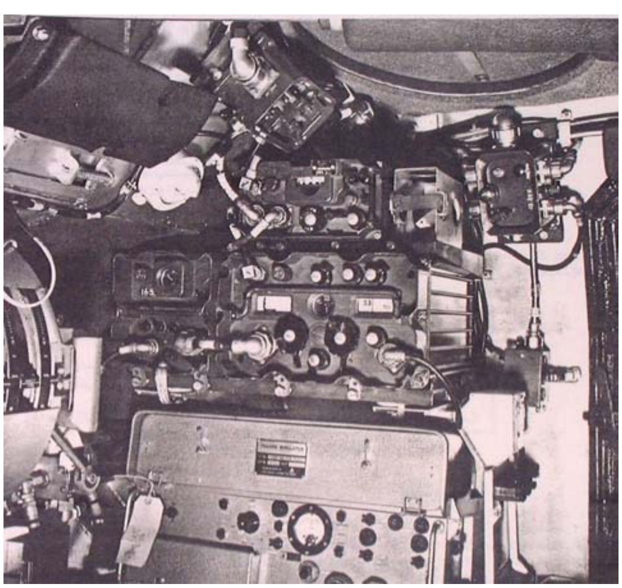
Front armour 12.5 mm, remainder 6.5 mm.
Battle height with missiles in travel position 7ft 8in.
Height with sight hood removed 6ft 11in. (see text).
Height with sight hood removed and suspension released 6ft 5in (see text)
Maximum height (with missiles elevated to -5°) 11ft 2.5in.
Maximum length 18ft 6in (see text).
Unladen weight 11,500 lb.
Laden weight, less crew 12,840 lb.
All up dropping weight (including parachute pallet) 16,100 lb.
Engine Rolls Royce B60 Mk 5F.
Wading without preparation 30 in.

Two radios are fitted, a C42 for operation within the unit and a B47 for communication with infantry. Standard radios and harness: 1 x J2 Junction distribution box No.2, 1 x R Box, B Box, C Box. ATUs are mounted either side of the vehicle to the rear of the side lockers. The ATU for the C42 is on the right and for the B47 on the left. Both are armour plated and accessible from outside by sliding armour plates. Good communication is vital not just for co-ordination of attack but to maintain a resupply of missiles.
The nets required:
Squadron net (VHF), including missile resupply and repair vehicles.
Recce net (HF), when recce troop is working at long range.
Rear link (VHF or HF) from Squadron HQ, on the formation command net.
Rear link (HF) from the echelon, on the formation logistic net.
Communications with tanks or infantry from each command vehicle & Hornet.
Ground to air to light aircraft (VHF) or attack aircraft and helicopters (UHF).

The front part of the vehicle was inspired by the design of the Humber Pig, but the rear section was very different.



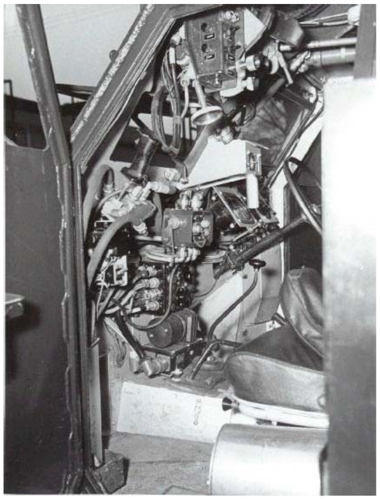
The Hornet from the rear showing the missile launching gear and spare missile stowage.



The cramped conditions in the rear of the Hornet. The C42 and B47 are fitted above the missile trainer simulator.

There is a crew of three:

1. The commander sitting on the left side commands the vehicle and may command a subsection of three Hornets. He operates the traverse control, fires the missile and guides it onto target. He also operates the radio sets when the radio operator is loading missiles. The commander would not help with the loading of missiles not so much as a matter of rank but his composure and steadiness of thumb is absolutely crucial to being able to control the missiles onto target. Bearing in mind he may be under fire whilst the missile is in flight his concentration, courage and willpower would be severely tested. His training as a parachutist was seen to be helpful in maintaining his determination to carry out his duties.



Cramped conditions for the commander. The tube at the bottom of the picture is part of the container for one of the spare missiles.

2. The signaller sits to the rear of the vehicle facing aft. He operates the two radio sets, the missile ground control equipment and the missile elevation system. He also helps reload the missiles, a process that would take 2 minutes for both missiles.

3. The driver sits on the right of the Hornet. He drives and services the vehicle, assists the commander in acquiring targets and helps during the gathering phase of the missile flight. When the commander is dismounted and guiding the missile with the separation equipment, he operates the traverse control and fires the missile. He also assists the signaller load the launcher arms with further missiles, and is capable of operating the two radios.

A Sterling machine gun is mounted by the door on each side of the vehicle. In addition the commander has access, through his roof hatch to an anti-aircraft GPMG. The launcher arm assembly consists of a mild steel post mounted in a steel ball joint at its lower end supported in bearings where it passes through the roof to the rear of the signaller's seat. Pivoted to the top of the post is a steel jib leading rearward, to the end of this is a steel cross tube and at either end is a launcher arm of light alloy. The launcher arm can traverse up to 40° left or right of the vehicle centre line. Three hydraulic rams are fitted to provide traverse, tilt and elevation. Each launcher arm supports a pneumatic tray, which incorporates a compressed air bottle. This provides air for running up the missile gyroscope and the supply for operating the release piston on the missile-securing latch. The air bottle has sufficient air for firing ten missiles and is normally recharged from a supply vehicle.

The three hydraulic rams to position the missile are powered by a pump operating from the Power Take Off (PTO) which is run at 1,800 rpm in 5th gear. The pump and filtered reservoir are mounted beneath the floor at the rear of the vehicle. A hand-operated jack is provided for emergency movement of the rams should the PTO driven pump fail. The vehicle should not be driven with the missiles elevated. This is to prevent instability of the vehicle on rough going and to prevent damage to the seals on the rams and to conserve wear on the elevation gear bushings. Engaging the PTO with the pump means it is not possible to operate the rams whilst the vehicle is in motion.

Much of the electrics are quite different from other Humbers. The distribution box is from a Saladin and the 100-amp alternator from a petrol engined FV432. A point of confusion is the designation of the B60 engine.

It is generally believed that it was a Mk 5A engine because some official publications say so or through personal observation of the engine plate. But when the B60 engine was modified to accept the alternator, the engine became a Mk 5F and the engine plate was then overstamped. It is often difficult to see this overstamping when trying to peer up at the engine through the wheel arch. But I accept that in some cases the engine stamping may not have taken place.

The two radios are supplied from batteries located in a locker on the left just to the front of the rear wheel. The 28-volt supply for the vehicle and power for the missile ground control unit (GCU) and simulator is located in a similar position on the right hand side.

In addition the firing system and GCU requires a 400 Hz AC supply, this is produced by a rotary converter mounted under the bonnet. The use of 400 Hz means that many components could be smaller than those for lower frequencies could and for that reason 400 Hz is used in aircraft electrics. This was of course all second nature to GAF who were aircraft manufacturers. The GCU mounted behind the driver's seat provides commands to the missile from the controls of pitch and yaw from the commander's thumb control stick. A similar sized unit mounted beneath the radios on the left of the vehicle is used with the GCU as a simulator, so that the crews can be trained within the vehicle itself.

An arming sequence with interlocks ensures that missiles can only be fired when properly elevated and use of the training simulator renders the firing circuits safe. The commander views the target through a x10 monocular. Protected by a shroud on the roof, this periscope sight can be moved independently or tracked automatically as the missiles traverse.

There are four types of missile:
DRILL MISSILE. Used for general practice and handling by crews. Containing no internal parts, it is ballasted to give the correct weight. Painted black with lettering in white.
SERVICING MISSILE. Dummy components, but with correct resistance values to train personnel assembling and testing missiles. Painted golden yellow with black lettering.
TRAINING MISSILE. This is the Mk 1 missile, which became the training missile when the Mk 1A came into use. Painted deep bronze green with golden yellow lettering. Turquoise blue head and red band around motor.
SERVICE MISSILE. This is the Mk 1A missile, which has a high explosive (HE) warhead and incorporates modifications. A thermal power pack, instead of batteries. Electric lights instead of pyrotechnic flares on wings to assist the controller track the missile. By changing from a 4-core control wire to 3 cores a longer wire could be carried, combined with a larger compressed air bottle and the more powerful Marloo motor, the range was extended from 2,190 metres to 4,030 metres. Painted entirely deep bronze green with a red band around the motor and head. Lettering in golden yellow.

PARTICULARS OF MISSILES:
Weight: 212-222 lb. according to missile type and mark.
Length: 77.5 inches (6ft 5.5in)
Diameter: 8 inches
Wing span: 32 inches
Propulsion: 18-second boost/sustainer type solid fuel rocket motor.
Velocity: 136 metres/sec (300 mph).
Maximum range: Mk 1 2,190 metres, Mk 1A 4,030 metres.
Minimum range: 360 metres appx. (But 580 metres was the minimum achieved)

OPERATION: Two ready to fire missiles are mounted on hydraulically controlled launcher arms. Two spare missiles are stowed longitudinally inside the vehicle. To reload, the launcher arms are lowered; the driver and signaller stand on the rear of the vehicle lifting the missile onto its mounting. The self-retaining wings and fins are then fitted onto the missile body. The missile front body is supplied in three forms. The warhead is manufactured in UK, weighs 56 lb, consisting of a steel casing, and contains 35 lb. of explosive. The fuse is electrically operated by impact switches and there are two independent arming devices. The practice head weighs 53.2 lb, and consists of an alloy casting enclosing a ballast weight.

The parachute head weighs 52 lb, and allows recovery of the missile. After the missile has flown a predetermined distance, a fine wire loop within the main control wire is broken; this sends an up demand to the missile. At a height of appx. 800 ft, a charge that was programmed at launch, operates blowing off the head and releases a 12-ft. parachute allowing the missile to descend. Thus allowing recovery of the missile centre body for repair, reassembly and subsequent reuse. Only a few missiles were actually reconstituted in this way to prove the recovery of practice shots.

A command break up unit could be fitted to Mk 1A missiles to destroy the missile for safety reasons or in case of a wire break. A continuous signal is sent to the missile via the dispenser wire, if interrupted by a wire break or on command, an explosive bolt is fired. This blows off the front body causing the missile to become unstable and thereby grounded.

Hornet Launcher Trials

Infra-red headlights were mounted in mesh fronted boxes above the normal headlights. It was later realised that enemy forces would very likely be equipped with similar infra-red viewing equipment. The infra-red filters were then removed and an extra pair of headlights was thus available. Later Pegasus and RAC badges were mounted over the front of the infra-red headlight boxes. There was no provision for infra-red guidance of the missiles. This had been intended but there were immense problems avoiding the rocket motor from swamping night viewing equipment.

The early vehicles had an exhaust system running to the rear of the vehicle exiting behind the rear left wheel. The projecting pipe was in danger of being stood on whilst reloading the missiles. The vehicle's rear lights are protected in a mesh frame with a non-slip track on the upper part, to be used as a step whilst reloading. Lest the exhaust pipe was stepped on as well, it was protected by a small sloping shield. Later the exhaust system was routed under the front of the vehicle; a shorter silencer was mounted beneath the radiator and protected by an enlarged belly plate. The exhaust outlet was now forward of the front wheel on the driver's side.

FVRDE prototype, note fixed wire dispenser arms and rear exhaust protection plate.

Mounting lugs for two or four sandtracks were fitted on the bonnet. In desert use engine overheating was a problem and short steel struts were welded to hold the bonnet open and assist cooling. Other changes included: The rear hinged observation flaps were made sliding, as were the access panels to the ATUs. Provision of a pair of triple smoke dischargers. A locking latch for the traverse arm. A larger shroud for the turret periscope. Storage for two wheels chocks. A container for a range finder on the main support arm. A mounting on the left launcher arm to carry a tester for the firing circuits. Two externally mounted fire extinguishers. A GPMG mount on the roof. The oil can holder moved lower down. The wing mounted numberplate moved to the radiator.

Variations

Some modellers have failed to differentiate between prototypes referred to as ‘Phase 1’ vehicles and the production vehicles. This has led to models that on one side have features of a prototype and the other those of a production vehicle. Some authors have quoted dimensions and details for prototypes without realising there are differences on later models. These mistakes are even seen in MOD publications! It is confusing that official data gives differing vehicle lengths of either 16ft 7in or 17ft 7in.

The first measurement is the minimum length with the missiles tipped upwards, but with the launching arms lowered. The second figure is the maximum length with the missiles lowered in their travel position. To confuse matters further these measurements relate to the first prototype.

Later vehicles had a more sophisticated wire-dispensing arm, which increased the vehicle length a little. From the early days with the FV4010, one of the great problems had always been wire break at launch. The Hornet wire support arms were originally rigid and angled downwards to avoid burning of the wire from the motor exhaust. Unfortunately the rigidity of the arms caused wire breaks. A new arm was developed that sprung upwards on launch to avoid wire snatch, but the mechanism gave an additional 3 inch projection rearward.

The addition of smoke dischargers increased the vehicle length by a further 7.5 inches. Allowing for adjustment in both the tip and elevating rams an overall length of 18ft 6in could be expected. For air transportation the maximum length can be reduced by 20 inches, by freeing the launcher arms the tipping ram making the missiles near vertical. The arrival of the smoke dischargers meant that the vehicle numberplate fitted had to be moved from the nearside wing to the radiator.

The heights that get quoted again relate to the prototypes before the mounting for the anti-aircraft GPMG and the range finder were provided. These additional structures, which project to the height of the periscope shroud, would also need to be removed to get a height reduction. The quoted difference between vehicle heights with shroud and without is 9 inches. It is difficult to see how this can be achieved, since the height of the shroud is only 6.5 inches, which itself is recessed by a further 2 inches below the maximum height of the roof. Although a reduction of 6 inches is still achievable by winding down the vehicle suspension. Another pitfall for modellers is the position of the jerrycans. On the prototypes a jerrycan was fitted above the offside locker. When the transistorised power supply was developed this allowed sufficient room for an extractor fan. The armoured cowl for the fan then occupied the space for the jerrycan. So the space above the nearside locker now accommodated the jerrycan holder.

The early position of the upper jerrycan holder. Note the exhaust now goes to the front of the vehicle emerging just in front of the front wheel.

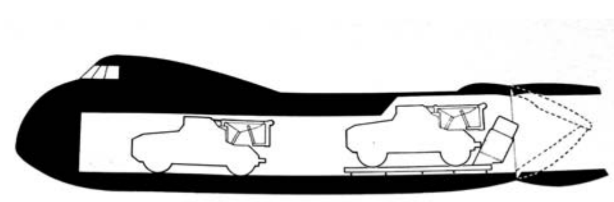
The later Hornet, which now has an armoured extractor fan, cowl in place of the upper jerrycan. Note locker on front wing – see text.


The jerrycan holder has now moved to the other side of the vehicle.

Confusion exists about the detachable locker on the front offside wing. It has been suggested that such a locker may not be original kit. But it housed the separation equipment that allowed a controller to guide the missile from a vantagepoint up to 80 metres away whilst the Hornet remained hidden. The separation kit was introduced in mid 1963 and Hornets were fitted with these at the rate of one a week. A control cable connecting the separation sight to the Hornet could be plugged in by the door on either side. By inserting an arming plug, it is then possible to fire the missile from the separation equipment. The cable carried not just firing circuits but an intercom link between the separated controller and the driver. It was expected that the set up of the separation kit would take 10 minutes, but in practice this was more like 35 minutes. Provision of the locker for the remote firing kit meant that there was no longer room for the spotlight by the driver's door or the crew's bedrolls.


Intense concentration during training with the separation firing kit, in operational use the controller would be wearing a headset to give the order to fire the missile.

<u>Airportability</u>
The essence of the Hornet/Malkara project was the ability to transport a guided weapons squadron quickly by air anywhere, although this was taken to mean the Middle East. Hornet was only viable with its backup vehicles, which also had to be airportable. The aircraft available at the time were Beverley, Argosy and Belfast. There were two means of transport, airportability by driving the vehicle on and off the aircraft or parachuting the vehicle. All Squadron combat vehicles were airportable, but Hornets were only airportable in Beverley or Belfast



A simplistic view of airmobility from a Fairey sales brochure. It was not possible to fit Hornets into an Argosy like this! But it does illustrate the two concepts of how it was hoped a Hornet could be either driven on and off the aircraft or with special preparation is parachuted.

With the suspension wound down and the missiles tilted it is still not possible to permit Hornet to enter Argosy. The controller's sight making the Hornet 1½ inches too tall.

The Hornet could be mounted on AATDC standard 12000-lb stressed platform and air dropped by using 4 x 66-ft parachutes, after being towed out of the aircraft by a 21-ft extractor parachute.

Considerable preparation was needed for a battle ready Hornet airdrop the weight of vehicle and pallet was 16,100 lb.

<u>Units</u>

The first prototype Hornets bore the markings of FVRDE who carried out the automotive trials. The Guided Weapons Wing of the RAC Gunnery School Lulworth undertook initial firing trials at Lulworth in the spring of 1960. This led to hot weather trials in Libya in the summer of 1960 and again in the following summers of 1961 and 1962.

Prototype Hornet being lifted on ship at Southampton in 1961.

In September 1962 Cyclops Squadron of 2 RTR assumed the responsibility of user trials of Hornet/Malkara into service, so that a Parachute Squadron RAC could later be formed.

The Parachute Squadron RAC officially came into service on 3rd February 1965 when it became part of 16 Parachute Brigade. The squadron was formed from the Special Recce Squadron made up to strength with all the parachute trained Hornet crews from Cyclops. The SRS was an armoured reconnaissance unit, which was commanded by Major G.K.Biddie, who then became the Para Squadron commander. The Squadron now had dual responsibilities not just armoured reconnaissance but a GW anti-tank role as well. This should not be seen as a dilution of the anti-tank role in fact quite the opposite as good reconnaissance was essential to the effectiveness of the anti-tank warfare.

The formation parade 3rd February 1965 when the Parachute Squadron RAC officially came into service.

Vehicle markings in Cyclops Squadron (Sept 1962 – Jan 1965) included a black and silver badge of the 2nd Royal Tank Regiment on the sides of the vehicle. Now being part of the Strategic Reserve badges of the 3rd Division (three black triangles on a red circle) were displayed front and rear. The tac mark of '32' was overlaid in white on the red and yellow badge of the Royal Armoured Corps. In service with 16th Parachute Brigade a Pegasus badge replaced the 3rd Division badge. The RAC badge was retained but overprinted with the tac number of '2'.

Cyclops tac sign on Hornet.

3 Div sign seen on Hornet in service with Cyclops, the User Trials Unit of the Strategic UK Reserve.

Tactics

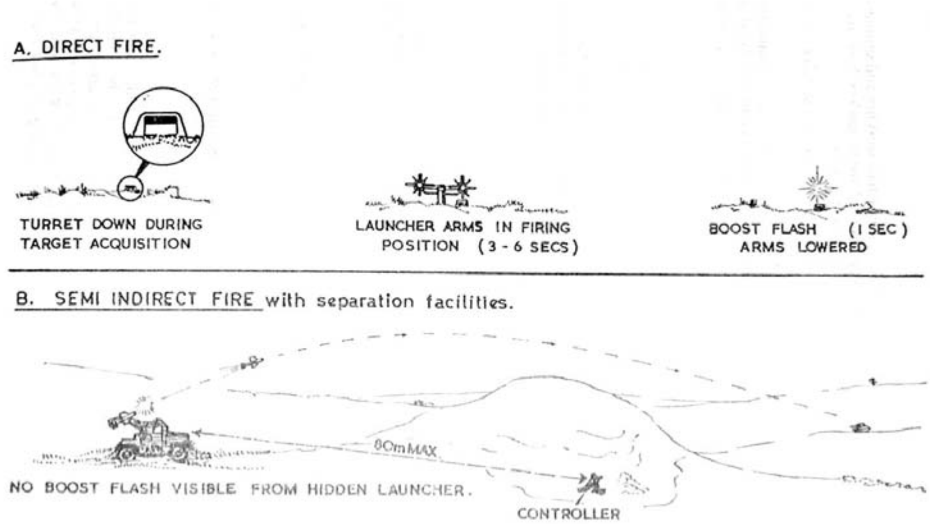
There were 12 Hornets in service and 12 in reserve and they were extremely valuable. Even a single missile at 1965 prices cost £3,000. Therefore the risk of exposing the Hornet to attack and the cost of a missile had to carefully considered. An assessment had to be made whether the target represented a cost-effective kill by using Malkara or whether a WOMBAT or Karl Gustav could achieve a cheaper kill. The Hornets were not to be used to hunt around looking for targets of opportunity; this was the role of for the Ferrets. This illustrates well the fusion of the two roles of the Parachute Squadron RAC. Armoured reconnaissance by the Ferrets seeking out targets and the tank killing by the Hornets. The Hornets were not to be used at close range not just because they were so valuable but because they cannot be used at a range below 450 metres. At this range the missile is on a programmed flight and cannot be brought under control. Even targets between 450-700 metres are likely to be very difficult to properly control.

Squadron Structure (Personnel)
Parachute Squadron. 7 x Officers, 112 Soldiers.
Parachute Squadron Workshop. 1 x Officer, 32 Soldiers.

Squadron Structure (Vehicles)
Squadron HQ. 1 x Ferret (liaison), 3 x ¾- Ton FFR.
3 GW Troops. (Each troop) 4 x Hornets, 1 x Ferret (liaison), 1 x Humber Missile Resupply, 1 x Humber Missile Test + Trailer.
Reconnaissance Troop. 6 x Ferrets.
Administrative Troop. 2 x ¾ Ton FFR, 3 x ¼ Ton GS, 3 x 3 Ton GS.
Parachute Squadron Workshop (REME). 1 x Recce Veh Whld Lt, 2 x ¾ Ton GS, 5 x ¾ Ton FFR, 2 x 1 Ton Malkara Repair, 1 x 3 Ton RAOC Stores, 2 x Missile Test Trailers.

N.B. 1 x ¼ Ton GS fitted as an ambulance.

When a Hornet is put on display it is generally in an ostentatious manner with the missiles raised. Yet in service it would have the missiles up for no more than 6 seconds during the acquisition and firing sequence. The total time of flight for the maximum range of 4,000 metres would be 28 seconds. Only when a target was to be engaged would the missiles be raised and only to a height that was calculated to give the right trajectory for the required range. After 1 second from launch the flash from the booster motor would be seen, the launcher arms could then be lowered which means for up to 5 seconds the top of the Hornet would be visible and vulnerable. The purpose of the separation kit was not just to guide the missile from some vantagepoint but allow the Hornet to fire its missiles from a totally obscured position.



End of service
Malkara officially went out of service in 1969 having been succeeded the previous year by Swingfire.


The disbandment of the Parachute Squadron RAC on 12th February 1976. A Hornet stands by as the Squadron flag is lowered for the last time.

Very few Hornets survive, most were shot up on ranges and two passed to the Joint Air Transport Establishment (JATE) for equally decisive ends. One was rebodied as a Humber Pig for Northern Ireland as there was a desperate shortage of reliable Humbers chassis.

The final air drop for a Hornet. The only recognisable feature is one side door, although similar to a Humber Pig door, it is clearly from a Hornet, as the studs for the jerrycan holder can still be identified. On a Pig the jerrycan holders are on the rear doors.

Public perception

I have been displaying a Hornet at shows now for ten years. It always surprises me how the public will generally show far more interest in the Land Rover or Jeep that is parked next to me. I think this is because someone in the family used to drive one or would perhaps like to drive one. Yet few ex-serviceman even seem to have seen a Hornet or believe it is 'real'. The public seem bitterly disappointed that the Hornet has not been in a 'war' and thus give it low credibility, yet considering the Hornet project cost the tax payer about £90 million I would have thought it should have commanded more curiosity. The only curiosity that the public seems to show is not about the missiles but endless silly questions about the smoke dischargers!

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