

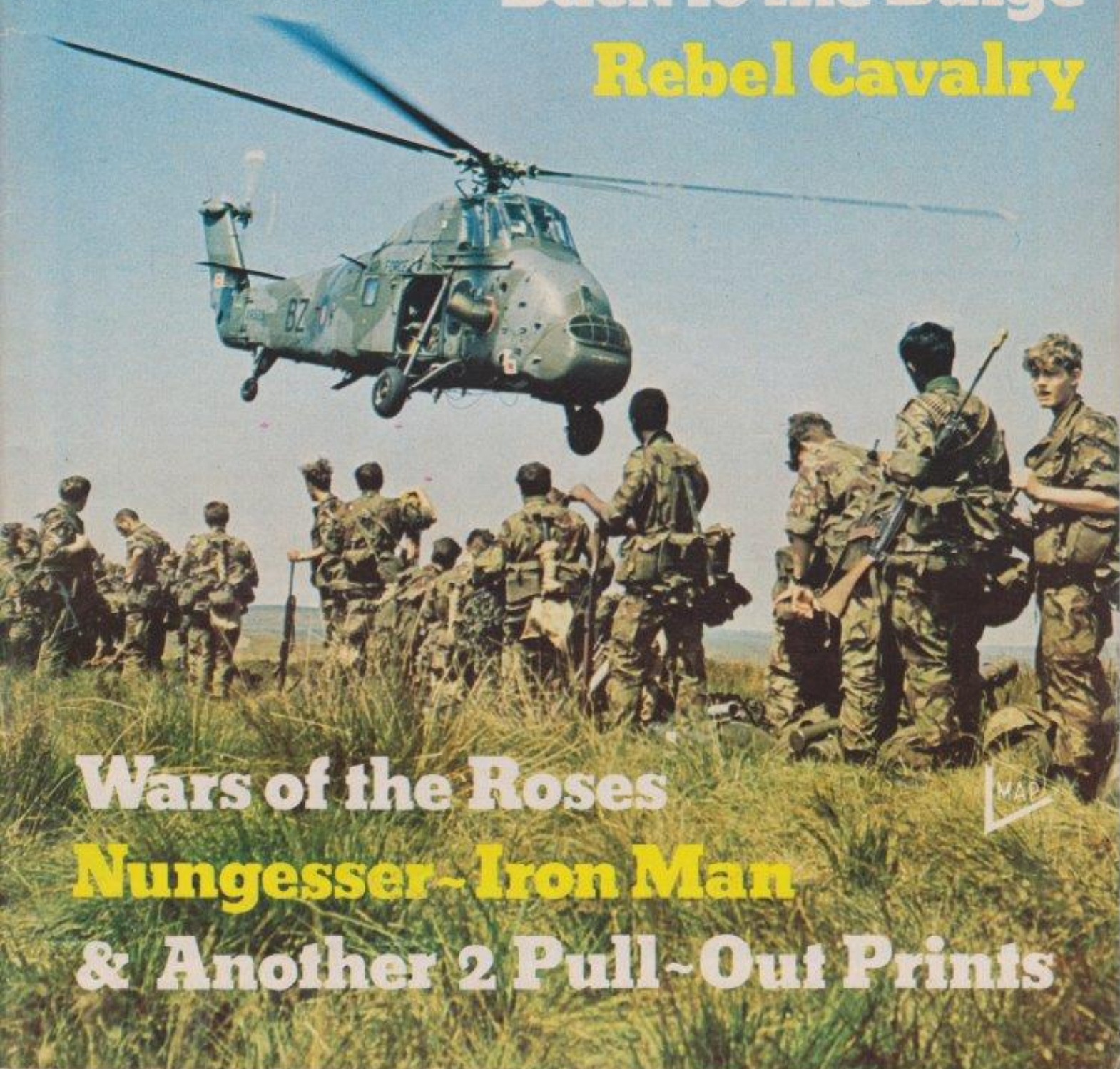
Coombs

90

Battle

JULY 1975 35p

Napoleon in the Orient
Back to the Bulge
Rebel Cavalry



Wars of the Roses
Nungesser - Iron Man
& Another 2 Pull-Out Prints

MAP

by Christopher F. Foss

The Dutch company of DAF, or to give it its full name "Van Doorne's Automobielfabrieken N.V." are well known for their large variety of civilian cars and trucks. DAF have however, been building military trucks and wheeled armoured vehicles since well before the Second World War. Since the war they have built many thousands of 4x4 and 6x6 trucks of various types for the Dutch Armed Forces as well as a large variety of trailers and two series of wheeled armoured vehicles.

These were the YP-104(4x4) Scout Car which was very similar in appearance to the British Ferret and the YP-408 (8x6) wheeled armoured personnel carrier, the YP-104 was only built to prototype stage and the Dutch Army eventually decided to buy the American LYNX C&R vehicle as described in *Battle* for April/May 1975; the YP-408 however is still in service with the Dutch Army.

Development

The design of the YP-408 dates from 1956 with the first mock-up being completed in 1957 and the first prototype following in 1958. These prototypes were subjected to extensive trials, both in the Netherlands and abroad, and were followed by some pre-production vehicles. The first production vehicle was completed in 1964 with the final vehicle being handed over to the Dutch Army in 1968, in all some 750 vehicles were built.

DAF YP408

Armoured Personnel Carrier





The prototype vehicles differed from the production vehicles in a number of points. First they were powered by the American Hercules JXLD petrol engine which developed 133HP at 3200 rpm, this was replaced in production models by a DAF diesel engine, as this offered a significant increase in operating range as well as less fire risk. The driver and commander had different hatches on the prototypes. Also the rear hatches over the troop compartment were of a different design. On the prototypes, hatches were provided both in the roof, and in the sides of the troop compartment, in production vehicles, hatches were provided only in the roof.

Description

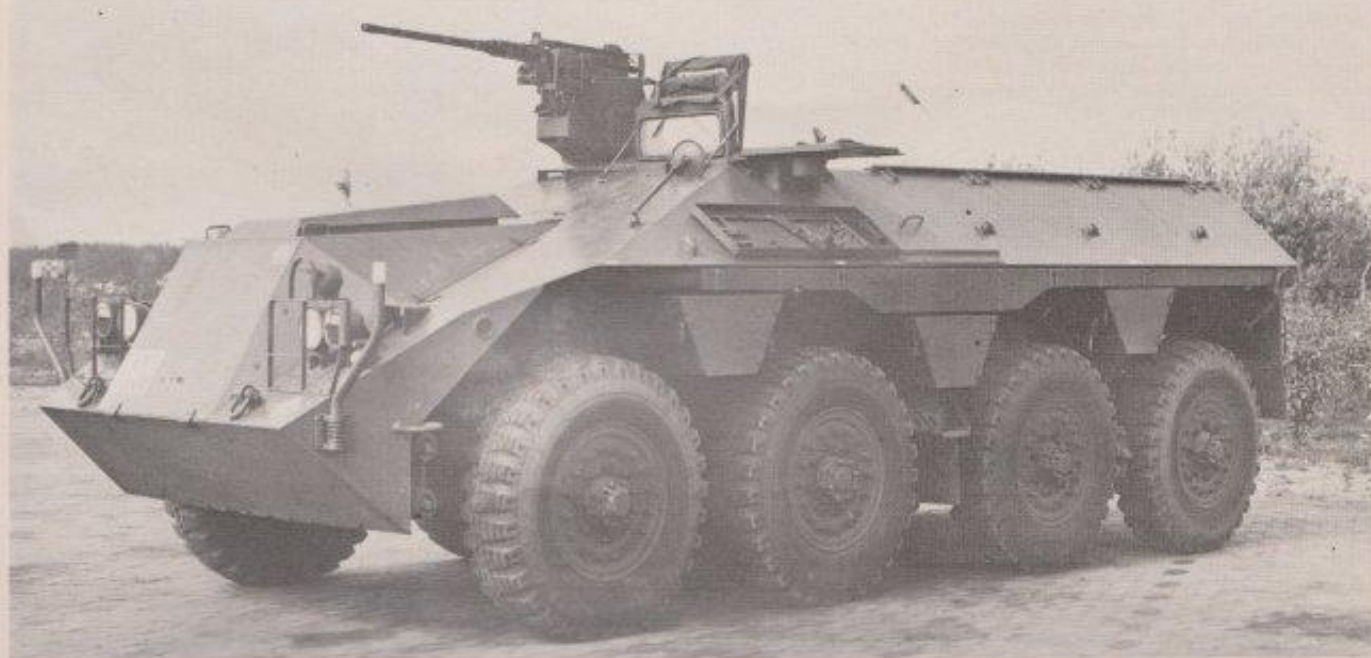
The hull of the YP-408 is of all welded construction and provides the crew with protection from small arms fire and shell splinters. The engine and transmission is towards the front of the hull. The driver is seated behind the engine on the left with the vehicle commander, who also acts as the gunner, to his right. The driver is provided with a single piece hatch cover that opens to the left. The driver is provided with one periscope to his front and another to his left, in the roof of his hatch is a periscope that can rotate through 360°. His seat has two positions — i.e. high so that he can see outside of the hull and low for when driving closed down. The commander also has two periscopes, one to his front and another to his right. His hatch has two covers which open vertically and provide him with some protection when firing his machine gun.

The basic member of the YP-408 family is the PWI-S(GR) Group Vehicle, this carries ten fully equipped infantrymen in the rear compartment, ie 5 each side. The hinged seat backs can be folded horizontally to serve as raised seats. There are six hatches in the roof, three each side and they can be opened or closed independently of each other from within the vehicle. The infantry normally enter the vehicle via the two large doors at the rear of



Opposite, page 136, DAF YP-408 Ambulance (top) and a DAF YP-408 with .50 Browning MG and smoke dischargers. Top, DAF Ambulance PW GWT; opposite, YP-408 PWCO and below, the DAF YP-408 PW-V (Freight) Vehicle.

Photos: DAF, Holland



the troop compartment; each of these doors is provided with a vision/firing port.

The YP-408 is armed with a .50 Browning machine gun which is fitted to a mounting of DAF design and construction. The mount can be traversed by hand through 360° and locked in any desired position. The weapon has a maximum elevation of +70° and a depression of -8°. Many YP-408s have three smoke dischargers fitted to each front mudguard.

Engine and Transmission

The vehicle is powered by a DAF 575 6-cylinder in-line, water-cooled, direct injection diesel, which has a maximum output of 165 HP at 2400 rpm and gives the YP-408 a top road speed of 80km/hr. The engine is similar to that fitted in a number of civilian and military trucks.

The engine is fitted with a device which enables the driver to close off the crankcase ventilation without leaving his seat — this is required when the vehicle is fording so that water will not enter the engine. An engine driven air compressor supplies air for the air brake system and this can also be used to inflate the tyres.

The transmission and suspension of the YP-408 is almost identical to that of the DAF YA328(6x6) truck. The second front axle is steerable but not driven. The foremost front wheels are independently suspended on two trailing arms with traverse torsion bars. The wheels of the second front axle are likewise independently suspended, but the torsion bars are mounted longitudinally for reasons of space. The rear tandem axle consists of a centre axle with equalising beams and leaf

springs. Vertical movement of the equalising beams is restricted by steel cables between the beams and the vehicle hull.

The vehicle steers on the front two axles and steering is power-assisted; a steering indicator is also provided for the driver so that he knows the position of the front wheels. The engine power is transmitted from the main gearbox to the auxiliary gearbox through a short propeller shaft. A central differential is incorporated in the auxiliary box. On the left and right of the auxiliary gearbox are the transfer cases from which the power is transmitted to the final drive boxes at the front and rear wheels.

The gearbox has five forward and one reverse gears and the auxiliary gearbox has both high and low ranges.

Electrical system

The electrical system is 24 Volts and two batteries are provided; a generator with an output of 900 Watts is fitted.

Tyres

The vehicle has 11-00 x 20 combat tyres and these have reinforced sidewalls and a bead spacer between the bead heels. If one or more of the tyres is punctured the vehicle can be driven for at least another 50km, at a reduced speed however.

If one of the tyres of the first axle or rear tandem axle has a puncture, a wheel from the second front axle can be used as a spare. The punctured wheel is then fitted back on the second front axle and suspended from the hull with a special chain to keep it away from the ground.

Brakes

The following braking systems are fitted to the YP-408:-

1. Air-hydraulic service brakes operating on all eight wheels. The brake system is divided into two circuits from the two air-hydraulic brake units onwards. The braking pressure is transmitted from the air-hydraulic brake units directly to the wheel units.
2. A handbrake acting mechanically on the brake drums fitted on the propeller shaft to the rear wheels behind the two transfer cases on either side of the auxiliary gearbox.
3. An air-actuated parking brake, operated by means of a lever to the right of steering wheel.
4. An engine exhaust brake.

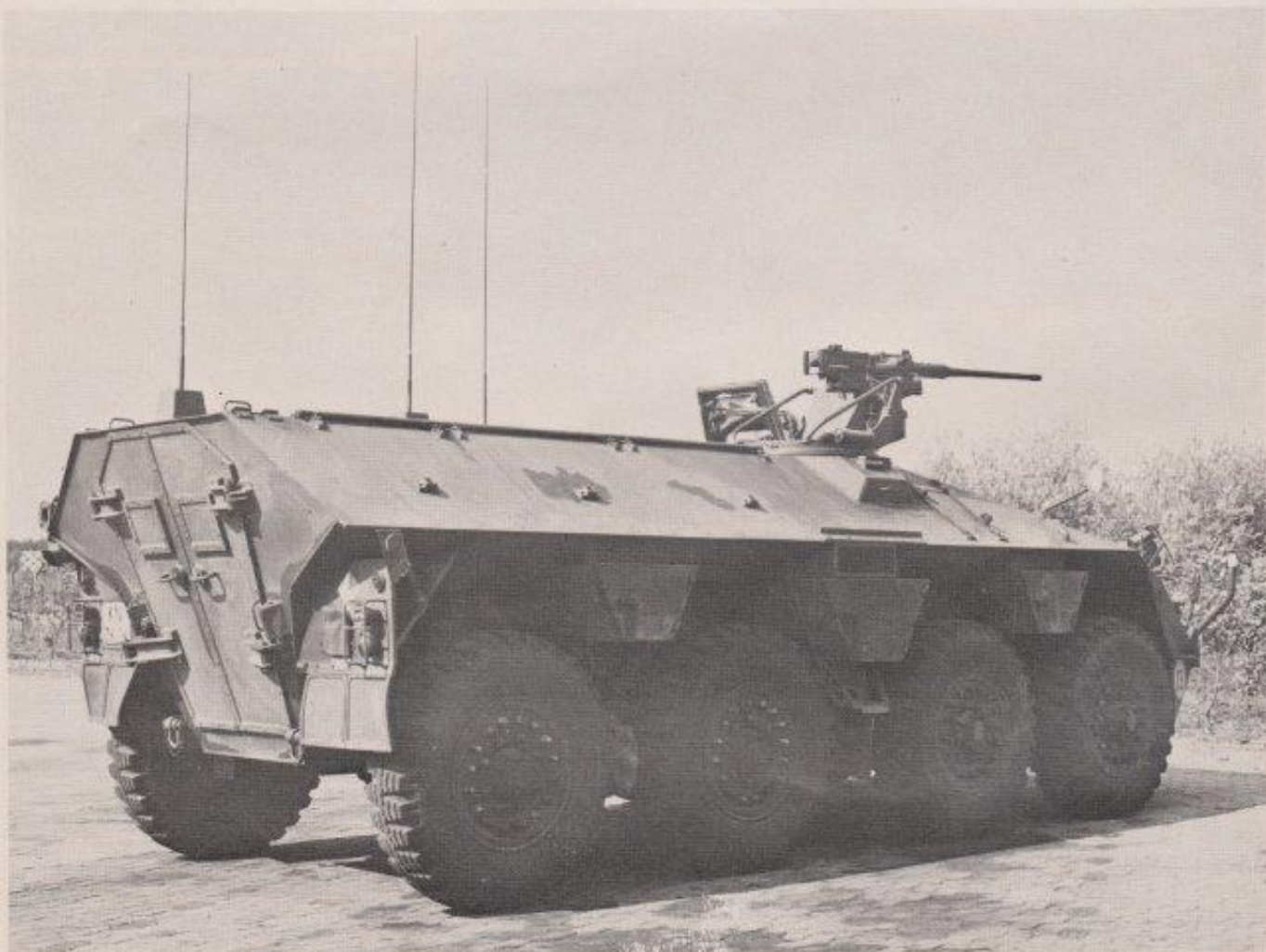
Night Fighting Aids

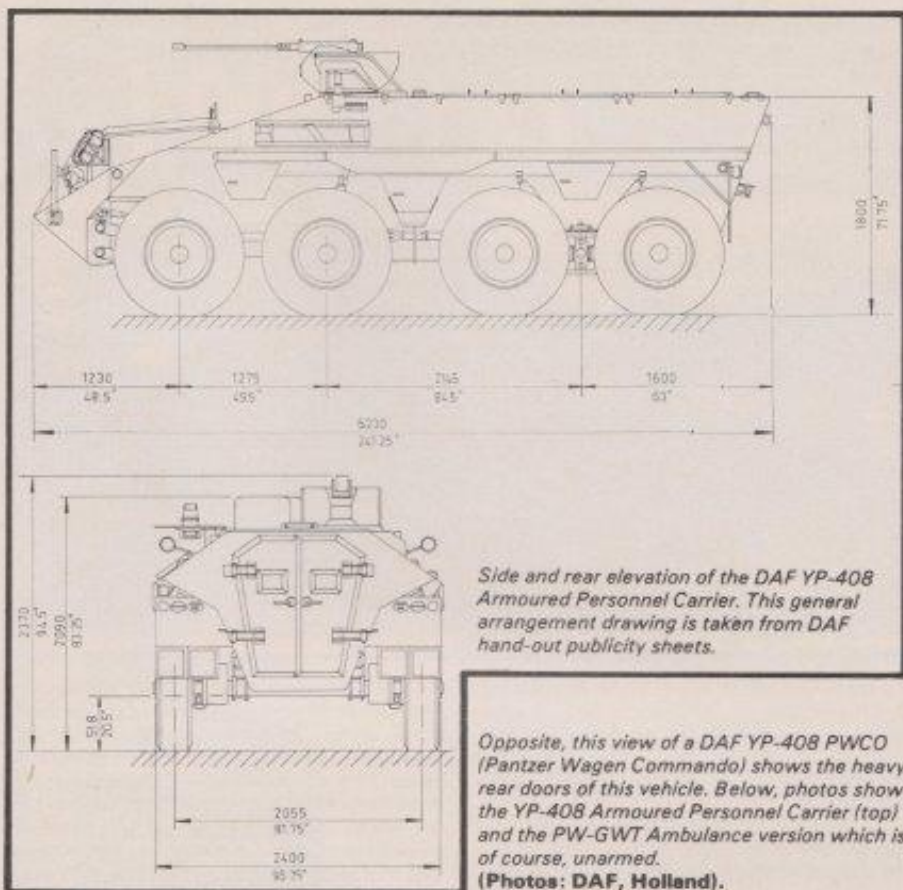
The periscope in the driver's roof hatch can be exchanged for an infra-red periscope that can be traversed through 360°, infra-red headlamps are also available. The machine gun can be fitted with an infra-red sight and an infra-red searchlight can also be fitted to the weapon.

NBC Equipment

The YP-408 is not fitted with a NBC system as this was not a design requirement.

As has been stated, the basic member of the YP-408 is the PWI-S(IGR); this stands for Pantser Wagen Infanterie-Standard (Group) and a number of vehicles have been developed from this basic vehicle. They all have a basically similar hull which has been adapted for the special roles required.





Side and rear elevation of the DAF YP-408 Armoured Personnel Carrier. This general arrangement drawing is taken from DAF hand-out publicity sheets.

Opposite, this view of a DAF YP-408 PWCO (Pantzer Wagen Commando) shows the heavy rear doors of this vehicle. Below, photos show the YP-408 Armoured Personnel Carrier (top) and the PW-GWT Ambulance version which is, of course, unarmed. (Photos: DAF, Holland).



PWI-S(PC) Platoon Commander's Vehicle

This is essentially a PWI-S(GR) vehicle fitted with additional radios and has a crew of nine men — platoon commander, gunner, driver and six infantrymen. Both the PWI-S(PC) and the PWCO have a periscope in the rear troop compartment that can be rotated through 360°; it has a 15° field of view and a magnification of times 3.

PWCO (Company or Battalion Commander's Vehicle)

This is one of the command models of the YP-408 and has a crew of six men—driver, gunner and four staff men including the commander. Inside of the rear troop compartment the seats have been retained on the right side but on the left side they have been replaced by a folding table, map shelf, lights and stowage compartments. Additional radios are provided and externally the vehicle can be recognised by its three radio aerials. It is also provided with a heater which operates independently of the main engine, located in the crew compartment. When being operated in the same place for an extended period a tent can be erected at the rear of the hull and a flexible exhaust pipe extension is provided to avoid exhaust gases entering the vehicle when being used in the static role. The electrical system includes a 3kVA alternator and two additional batteries to allow for the higher current consumption caused by the radio equipment, heater and fluorescent lighting.

PW-GWT (Ambulance)

Externally this vehicle can be recognised by its lack of armament, the red cross markings, and its single radio aerial at the rear of the hull. Internally the stretcher frame is pivot-mounted at the front and hung on two hooks at the rear; this pivot mounting permits the stretcher frame to be swung over towards the door opening, enabling the stretcher to be slid in or out in the shortest time. The PW-GWT normally has a crew of three — driver and two medical orderlies and can carry two stretcher and four sitting patients. Additional spare stretchers are carried outside the vehicle on the left side of the hull.

PW-V (Freight)

This has been designed to carry stores and ammunition in the battle area and has a crew of two — driver and gunner/commander. They are both at the front of the vehicle and separated from the rear compartment by a heavy grille so that if the load shifts forward it will not endanger the crew. A total of 1500kg of freight can be carried by the PW-V and its inside is identical to that of the PW-GWT. This enables the vehicle to be converted to the ambulance role in a few hours provided the equipment is available. The PW-V is the only member of the YP-408 which is not fitted with a radio.

PW-MT (Mortar Tractor)

This has been developed for towing the French 120mm Brandt Mortar and has a crew of seven men consisting of driver, gunner, mortar group commander and four men. The mortar ground commander is seated behind the driver so that he can direct the driver to the best position. Behind the commander are the 50 rounds of mortar ammunition in a special rack designed so that the mortar bombs will remain in position when the vehicle is travelling across rough country. The other four men are seated at the very rear of the vehicle. The rear doors on this model are different from those on the standard vehicles as they have been shortened at the bottom so that they can still be opened when the mortar is hooked up to the vehicle.

The PW-MT (Mortar Tractor) version of the Netherlands DAF YP-408 seen here, complete with Brandt Mortar and crew, in action.

Photo: DAF Holland

The mortar is the Brandt MO-120-RT-61 rifled model which has a maximum range with a standard mortar bomb of 8125m. In addition it can also fire smoke and illuminating rounds.

Basic data of the YP-408 is as follows:-

Weight loaded	12,000kg
Weight empty	9,500kg
Length overall	6.23m
Width	2.4m
Height (top of hull)	1.8m
Height (with MG)	2.37m
Ground clearance	518mm
Track	2.055m
Range — road	500km
Range — cross country	400km
Maximum road speed	80km/hr
Angle of approach	42°
Angle of departure	70°
Gradient	60%
Turning radius	9m
Vertical obstacle	.7m
Trench Crossing	1.2m
Fording	1.2m



HARRIER OPS from page 121

done by the use of a special alignment module which monitors the ship's system and continuously updates the aircraft's. A normal short take-off technique is used but the pilot rotates the nozzles to the required angle when the end of the deck disappears under the nose instead of at a precalculated speed as on land. The trim setting is important as the aircraft becomes airborne at about 100 knots and at that speed it is longitudinally unstable. Nevertheless it is possible to make a 'hands-off' take-off at the correct trim setting for the configuration and the aircraft rotates itself to the required angle of attack. There is very little sink, even at maximum all-up weight from a 560 foot deck, and the take-off has not proved susceptible to deck motion or to cross winds. Once airborne the pilot moves the nozzles aft and completes a climbing transition to wing borne speed. The aircraft is landed back on board vertically and it can approach the carrier from abeam or ahead which markedly increases flexibility. The visual clues provided by the superstructures are so good that hovering and landing is even easier and more precise than on land. Night operations have proved relatively easy using normal carrier lighting.

The Harrier has proved that it is possible to operate from such a wide variety of unusual bases that its survivability on the ground is virtually guaranteed. It is consequently one of

the most cost effective aeroplane in the sense that it can disperse, survive and fight on when others are neutralised on the ground. Its concept of operations could have important possibilities as a secure second strike deterrent.

In addition to its ability to operate very successfully from ships, it is a most flexible ground attack aircraft with a unique capability for air combat and a unique capacity for operations at exceptional intensity. There are many reasons for this — not the least being

the ability to operate from several strips in one area and short sorties with the pilot remaining in the cockpit for several sorties. In this way the Harrier can deliver up to four times the ordnance of a conventional squadron operating from a rear fixed base known and targeted by the enemy and thus extremely vulnerable. In these days of financial stringency and defence cuts that seriously weaken our forces it is most encouraging that in an emergency, one Harrier squadron can be made to do the work of about four conventional squadrons.

Pictured during Exercise "Big Tee" at Watton on May 21st 1974, Harrier GR1 XV754 "07" of No 1 Squadron based at Wittering. Note simplicity of "field hangar" and steel matting beneath main undercarriage and outriggers.

Photo: R. L. Ward



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