



- *Introduction*

The British Aerospace Harrier is used by the RAF in the close air support role. In this, aircraft are usually employed in direct support of ground troops tackling such targets as enemy troop positions, tanks and artillery.

The Harrier uses a variety of weapons such as laser and GPS-guided bombs against buildings, infra-red missiles against tanks, cluster munitions and general-purpose bombs. When required, the Harrier can also be fitted with a pod fitted with cameras to provide reconnaissance of the target and battle areas.

The Sigma Simulations HARRIER! product provides you with an unique flight model featuring STOL capabilities down to under a 10 knot forward speed, a large selection of superb textures and numerous external configurations to suit your flying needs as well as a fully functioning 3D virtual cockpit and custom panel and sound pack.

Featuring the latest in graphic effects and XML gauge technology, we are sure that the Harrier will provide you with hours of enjoyable flying.

If you have any requests or questions regarding this product, please drop us an e-mail at support@dsbdesign.com

David Brice - Sigma Simulation Products

<http://www.dsbdesign.com>

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- *Credits*

Project Manager	_____	David Brice
Visual Models	_____	David Brice
Sounds	_____	David Brice
Aircraft Textures	_____	David Brice
Gauges Programming	_____	David Brice
Panel Textures	_____	Eric "Aeyes" De Best
Flight Dynamics	_____	David Brice, Chris Sanders
RAF Wittering Scenery	_____	Gary Summons
Specialist XML Programming	_____	Chris Sanders
Manual	_____	David Brice

BAE Systems Harrier GR.7 / GR.9

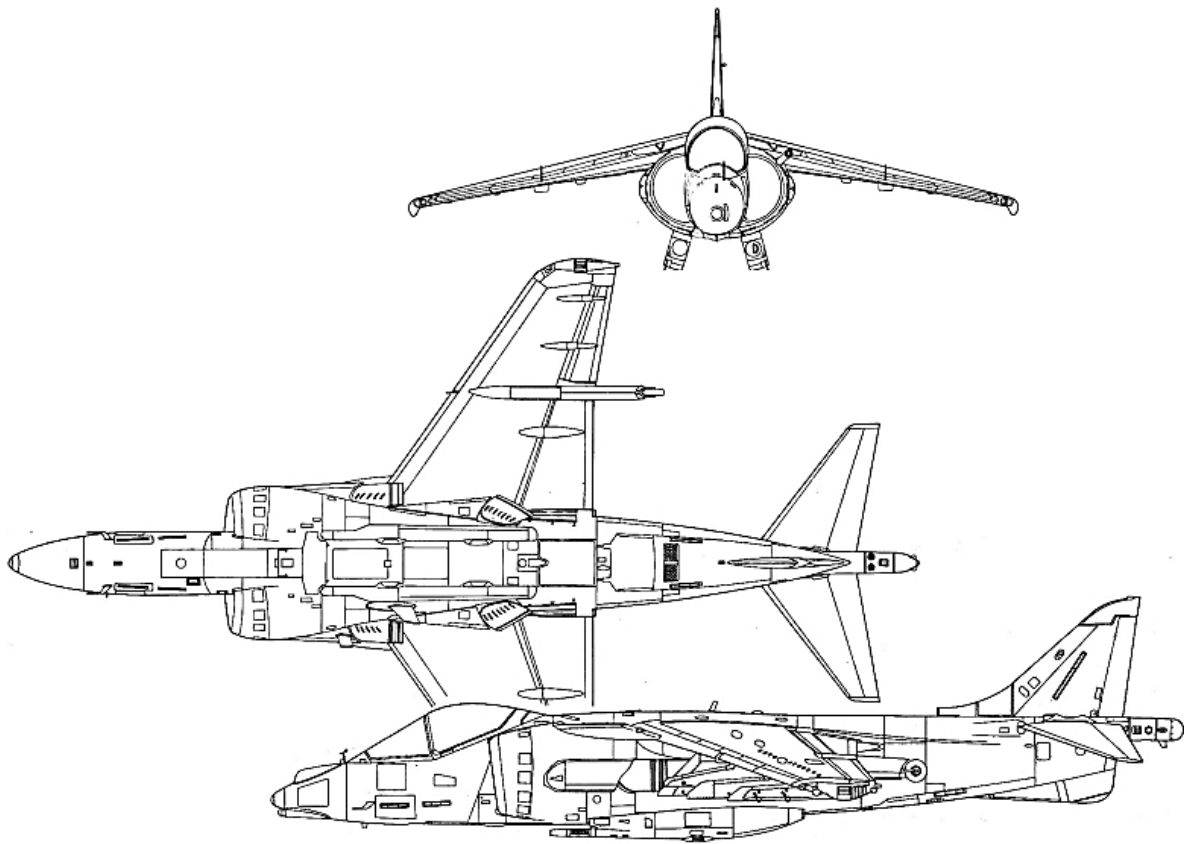
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The first Harriers entered RAF service in 1969, making the RAF the first in the world to use its revolutionary vertical take-off and landing abilities which allow the aircraft to fly in and out of areas close to the battlefield that would normally be off-limits to conventional aircraft such as the Tornado. The current versions of the Harrier are the pilot-only GR7 (which is being upgraded with more powerful engines and electronic systems to become the GR9) and the two-seat T10 which, when not used as a training aircraft, can also be used in combat.

Since 2000, the RAF's Harrier and the Royal Navy Sea Harriers have been under the organisational control of Joint Force Harrier. This has seen the RAF's aircraft deploy alongside the Sea Harriers on board aircraft carriers of the Navy on many routine training deployments as well as operations.

Aircraft Specifications



Crew: One

Dimensions: Length 14.36m; Height 3.55m; Wing Span 9.25m;

Engines: One Rolls Royce Pegasus F402-RR-408A turbofan engine with approximately 22,200 pounds of thrust.

Weights: Empty Equipped 7,050 kg; Maximum Take-off 31,000kg

Armament: Up to sixteen general-purpose bombs, four Maverick anti-tank missiles, Paveway 2 and 3 laser-guided bombs and CRV-7 rocket pods. Future attack weapons will include Brimstone anti-armour missiles and Storm Shadow cruise missiles. For self-defence, two AIM-9L Sidewinders or Advanced Short-Range Air-to-Air missiles (ASRAAM) can be carried.

Performance: Maximum level speed Mach .93 at 36,000 Feet; Sustained cruise velocity Mach .80 at 32,000 feet;

System Specifications

- Pentium II 500
- 512 Mb RAM
- 400 Mb of free available hard disk space
- Sound Card
- Microsoft Flight Simulator 2004
- Microsoft Windows 98(SE), Windows ME, Windows 2000 or Windows XP
- Adobe Acrobat Reader to view and print this manual*
- Video Card with at least 32mb on board RAM

*Adobe Acrobat Reader is available for free from
<http://www.adobe.com/products/acrobat/readstep2.html>

Harrier GR.7 / GR.9 Cockpit

The Harrier cockpit comes with custom made Multi Function Displays, numerous XML programmed gauges an extensive Virtual Cockpit for an immersive experience.

Users are asked to refer to the aircraft checklists and reference card for information on flying the Harrier.

The following section details the Harrier Multi Function Displays and panel.



Harrier GR.7 / GR.9 Cockpit

The Main View consists primarily of a pair of Multi Function Displays and an Up Front Controller (UFC) which controls the autopilot functions. For the purposes of the manual, the cockpit has been broken up into sections and will be described further below.

Right Side of Panel



The right hand side of the panel consists of the following gauges centred around the Primary Flight Display (PFD).

Above the PFD are digital displays showing engine N1 and N2 values, fuel flow in pounds per hour, flap status display, and left and right fuel quantities in percent. Also included is the flap status display showing angle of deflection for both the flaps (in white) and the nozzles (in red).

Below the PFD is the total fuel available in pounds, the Exhaust Gas Temperature (EGT) and the Engine RPM value.

To the right of the PFD are the fuel cutoff and engine start switches.

To the left of the PFD is the Harriers warning panel where various system status alerts are shown.

Centre Section of Panel



The center section of the panel consists of the following gauges.

The buttons available are all autopilot function buttons apart from the four bottom ones which are from left to right, open ATC Window, open GPS Window, open Map, and open checklists and reference sheets.

The switches below the UFC control lighting and electrical systems.

Left Side of Panel



The left hand side of the panel consists of the following gauges centred above the Horizontal Situation Indicator (HSI).

Above the HSI are the aircraft radio systems which are adjusted by clicking on the numbers. They are as follows from left to right, top to bottom; ADF, Nav1, Nav2, Com1 and Transponder radios.

Multi Function Displays



HSI Screen on Pilot's MFD

The **HSI** shown above is similar to that of most FS aircraft. The four numerical values at the top show aircraft heading, altitude, speed and distance from dialed in VOR/TACAN on NAV1.

The three arrows on the compass dial indicate the following; **A - ADF, V - TACAN/NAV1, V2 - NAV2**

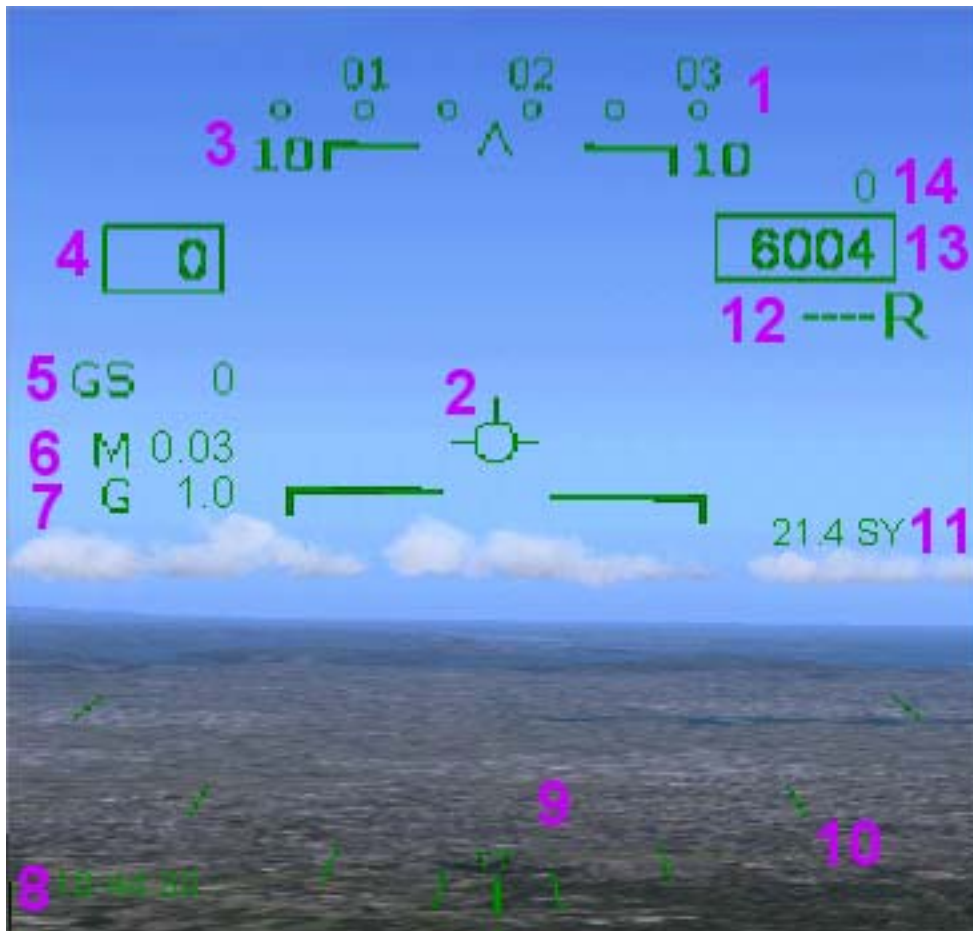
The dashed stripe and boxes display the current autopilot heading.



Primary Flight Display

The Harrier Primary Flight Display or **PFD** displays a full digital attitude indicator including ILS display. The upper section of the PFD displays aircraft heading, speed, altitude and distance from current NAV1 DME. The bottom section displays autopilot preset IAS, autopilot heading, and selected autopilot altitude per 100 feet.

Head Up Display in Detail



Harrier GR.7 / GR.9 Head Up Display

The HUD contains a variety of functions as outlined below;

1. Compass displaying aircraft current heading.
2. Static velocity vector.
3. Pitch and roll ladder in 10 degree increments.
4. Indicated Airspeed.
5. Current Groundspeed.
6. Current Velocity (in Mach value).
7. Current G Load on airframe.
8. Current GPS Local Time
9. Aircraft roll marker
10. Aircraft roll marker reference points
11. Distance from current NAV1 DME station.
12. Radar Altimeter value. (active under 5,000ft AGL)
13. Altimeter value above sea level.
14. Vertical Speed Indicator value.
15. **STALL** - Displays in the centre of the HUD when under stall conditions.
16. **BINGO** - Displays in the Centre of the HUD when fuel is low.