



SOFTWARE

The most exciting, full colour flight simulator ever written for the home computer

ALTERNATIVE +

RED ARROWS



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199 RANGE

RED ARROWS

Spectrum

Loading instructions:—

Type LOAD " " and then press ENTER key.

Flying with The Red Arrows

RED ARROWS is a flight simulator based on the Hawk and the formation of flying of the Red Arrows. For most people it is the closest that they will come to the fun and excitement of flying with the nine man team.

Red Arrows consists of two separate programs. The first offers the chance to practice individual manoeuvres, while the second gives you the chance to fly in a display as suggested by the Red Arrow pilots.

The controls and instruments are described later, but it should be noted that during formation flying, apart from Red Leader, the Red Arrows make very little reference to the instruments. This does not mean that this flight simulator is a simple case of follow the leader. You must keep exactly in formation or your rating at the end will be poor.

You will need to accelerate rapidly near the top of loops as Red Leader goes over the top and is on his way down before you reach the top. You will have the problem of keeping up when you are flying on the outside of a circle with Red Leader setting the pace from a smaller circle.

You will encounter these, and many more difficulties, as

you try to keep your exact position in the formation.

The Hawk is truly a pilot's aircraft, combining precise and responsive control with great agility, good natural stall warning, freedom from sudden departure, unrestricted engine handling throughout the normal flight envelope and superb view.

It is cleared for operation between 8g and -4g and is remarkable for its low induced drag, permitting sustained level turns of 6g at 450 knots at low altitude, and prolonged turns at 8g with only modest rates of descent or speed loss.

Dimensions

Length	11.85m	38ft 11in
Wing span	9.39m	30ft 10in
Height	4.00m	13ft 2in
Wing area	16.689m.sq	179.64ft.sq

Performance

Max. dive speed (at altitude)		Mach 1.2
Max. level speed	1040km/hr	560kt
Max. altitude	15240m	50000ft
Max. warload	3100kg	6800lb

Weights

Empty weight (no fuel, no crew)	3635kg	8013lb
Max. take-off weight	8400kg	18520lb

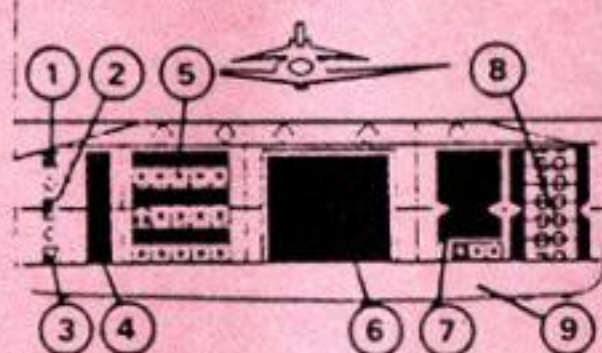
Fuel capacity

Internal	1705 litres	375 Imp gal
External (max.)	1725 litres	380 Imp gal

Powerplant

Rolls-Royce Adour turbofan. Max sea level static thrust	25.4kN	5700lb
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Instruments



1. **BRAKE WARNING LIGHT** ...Shows red if the brakes are on. Note that the brakes can be applied to varying degrees, and this light shows if the brakes are on even slightly. Note that in the air the brakes are the air brakes and on the ground they are

the wheel brakes.

2. **FLAPS WARNING LIGHT**...Lets you know if the flaps are up or down (red is up).
3. **UNDERCARRIAGE WARNING LIGHT**...Gives you the state of the undercarriage (red is down).
4. **THRUST BAR**...Tells you the thrust of the engines.
5. (a) ASI...Air speed indicator shows your air speed.
(b) VSI...Vertical speed indicator shows your speed of ascent or descent (the arrow indicates up or down). (c) ALT...Altimeter shows your altitude.
6. **MULTI-SCREEN**...You can select:—
(a) **FORMATION/RADAR**...Shows your position relative to the rest of the squadron (needed if you lose them and you cannot see them through the cockpit). If you are close to the squadron, your position in the formation can be determined. The number printed at the bottom indicates your height difference with the rest of the squadron.
(b) **VIEW**...Shows a picture of your manoeuvre.
7. **ARTIFICIAL HORIZON**...Gives you a picture and digital readout of the bank of the aircraft.
8. **ROLL BAR**...Shows the inclination of the aircraft. The bar changes colour as you go over 90 degrees.
9. **MESSAGES**...Messages from Red Leader will scroll across here.

Controls

ALL the controls may be activated from the keyboard and can be chosen by the pilot at the start of the game. If you prefer not to choose your own keys the default keys for your computer will be shown as you load the program.

If you prefer to use joysticks, eight functions can be obtained. These are:

Without "FIRE" pressed —

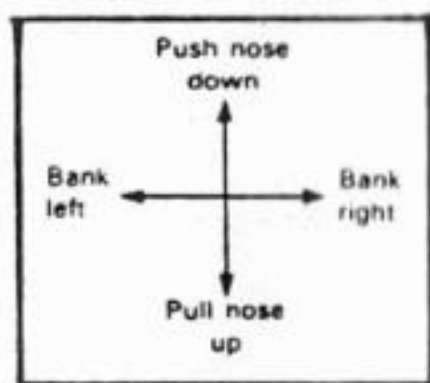
FORWARD and BACKELEVATORS
LEFT and RIGHTAILERONS

With "FIRE" pressed —

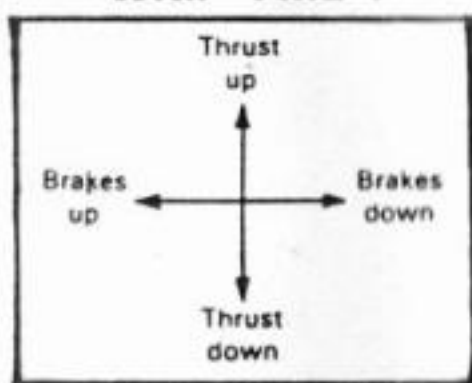
FORWARD and BACKTHRUST
LEFT and RIGHTBRAKES

The following diagrams will make the joystick functions more clear:

Without "FIRE":



With "FIRE":



Whether you are using keyboard or joystick, you will need to select keys to use for the following:

THRUST + BRAKES... for some manoeuvres the Red Arrows fly with the brakes on. This button builds thrust against brakes so that you continue with the same overall thrust. Using a brake or thrust control switches this effect off. See the Hints page for the need for this feature.

FLAPS...One key toggles the flaps up and down.

UNDERCARRIAGE...Another one key toggle.

RUDDER...The Red Arrows rarely use this, so no display of amount of rudder is provided. You need to select three keys — one for left, one for right and one to centralise the rudder.

Playing Hints

1. Red Leader is often flying at over 90 per cent thrust. For many manoeuvres, you will need more.
2. Thrust is slow to build up. For more instant thrust, build the brakes against the thrust, so that as the brakes are released instant thrust is obtained.
3. Follow the plane(s) formation in front, keeping yourself in the position shown in the diagrams on Pages 7 and 8.
4. To change formation, fast acceleration or deceleration may be needed (see hint 2).
5. Most manoeuvres take place at heights of between 250 and 5000 feet.
6. The typical speed at the bottom of a loop is 350 knots.
7. If you are not sure how to move from one formation to another, remember that as RED 8 you are mirroring the movements of RED 9. Watch what he is doing in the multi-screen display.
8. If you stall the Hawk, the plane's automatic stall recovery system will try to recover you.
9. If no option is selected from the menu, after a short while the program will enter demonstration mode. This gives you the ideal chance to watch how you should be flying.

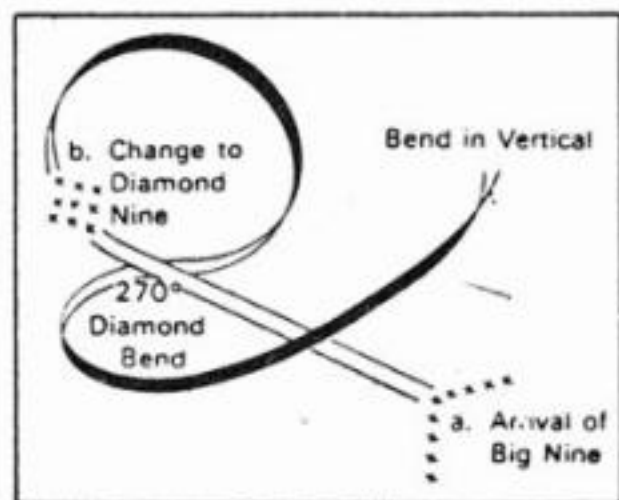
The Manoeuvres

WITH the first program you can practice any of the manoeuvres illustrated on Pages 6 and 7 by selecting the appropriate one from a menu. On the second program you will be expected to fly the full display.

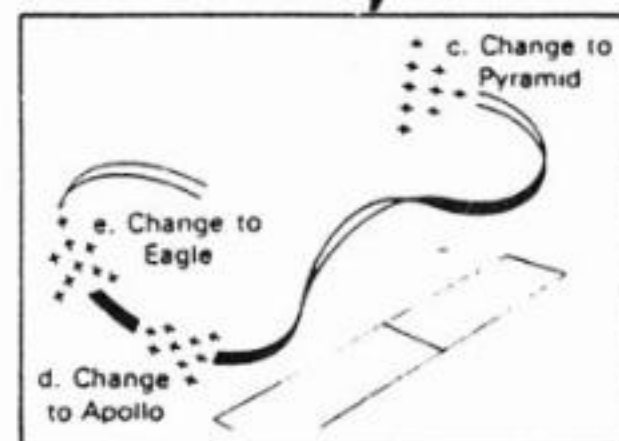
As you do the display, messages from Red Leader will scroll across the bottom of the screen. Each will be followed by the word GO, which is the signal to move into a new formation. Two numbers will follow, which is the acknowledgement from the team.

You will be expected to follow the formations as RED 8. Study them well and get plenty of practice using the practice program.

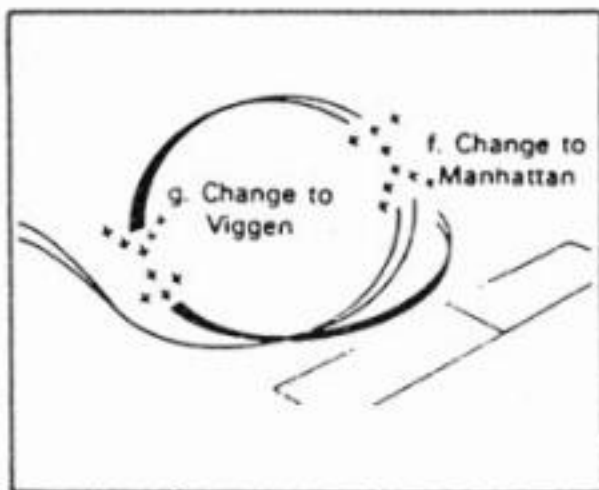
Then when you feel you have acquired the required skills on each manoeuvre try to keep with the team in a perfect display.



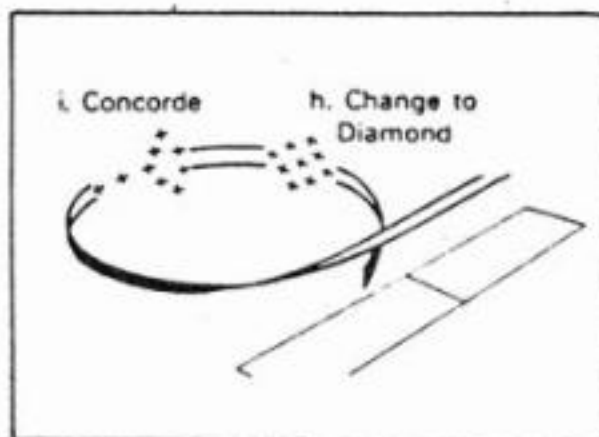
1. Arrival - Big Nine Loop



2. Pyramid Roll



3. Eagle/Manhattan Loop Viggen Flypast



4. Concorde Flypast

The Formations

AS you perform the manoeuvres illustrated, you will see commands for the formation changes scroll across the display panel. At the command GO, follow position 8 (shown as) into the next formation, as shown below. You will see the team acknowledge the order (by giving the figures in brackets).

ARRIVE in
BIG 9 formation



DIAMOND (6,7)



PYRAMID (2,3)



d. APOLLO (2,3)



EAGLE (2,3)

MANHATTAN (2,3)

VIGGEN (2,3)

CONCORD (2,3)



This is you
RED 8



This is
RED 9

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RED ARROWS



ALTERNATIVE SOFTWARE LIMITED
UNITS 3-6 BAILEYGATE
INDUSTRIAL ESTATE
PONTEFRACT
WEST YORKSHIRE WF8 2LN

TELEX 557994 RR DIST G
FAX 0977 790243
TELEPHONE 0977 797777