

POST-WAR JETS



A detailed collection of original scale aircraft drawings

Since the earliest days of aviation, the ever-changing shape of the aeroplane has held a special fascination. Over the years, this has led draughtsmen and designers to produce superb, detailed 3-view scale drawings, generally to 1/72 scale, of a whole variety of aircraft from the first biplanes to the modern jet fighter bombers.

The purpose of this AIRCRAFT ARCHIVE series is to bring together, in a thematic and organized manner, selections of some of the best of these designs, many of which are hailed as masterpieces of the draughtsman's art. Each book covers a number of aircraft of a particular period or type and, although the emphasis is firmly on the drawings and detailed aspects of these drawings, each aircraft section includes information on technical data and numerous black and white photographs.

AIRCRAFT ARCHIVE will build up into a library which will be an indispensable source of reference, information and, indeed, sheer pleasure for aviation enthusiasts and for all interested in the construction, development and history of aircraft worldwide.

AIRCRAFT INCLUDED IN THIS VOLUME

De Havilland Venom FB Mks 1 and 4 Lockheed F-94C Starfire Avro CF-100 Canada Mk 4 Republic F-84F Thunderstreak Boulton Paul P.111A North American F-100D Super Sabre Saab A32A Lansen Nord 1500 Griffon II English Electric Canberra B(1) Mk 8 Fiat G91 Lockheed CF-104 and F104G Starfighter Saab J35A, SK35C and J35F Draken Sukhoi Su-7B 'Fitter-A' Macchi MB326 Northrop N-156F (F-5A prototype) Handley Page Victor Mk 2 Dassault Mirage IIIC BAC Lightning F Mk 6 awker Siddeley Harrier GR Mk 1 and T Mk 2 SEPECAT Jaguar A. S, E, B and M Grumman F-14A Tomcat Panavia Tornado GR Mk 1

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A DETAILED COLLECTION OF ORIGINAL SCALE AIRCRAFT DRAWINGS

Introduction

Since the earliest days of the Wright Brothers and the pioneers of European aviation, the ever-changing shape of the aeroplane has always held a special fascination. At first, the basic distinction of canard, tractor, pusher monoplane or biplane conveyed an adequate identity of the design. However, sketches soon began to appear in the magazines which reported aerial races and the latest developments were eagerly sought by enthusiasts, among them model makers and even competitive designers.

So began a practice which became a major feature among aeronautical publications and one which this series of *Aircraft Archive* sets out to preserve in collective form. What follows is a selection from the files of 'Aeromodeller' and 'Scale Models', two of the many monthly magazines from the original Model Aeronautical Press, now part of Argus Specialist Publications.

The books in this series form a representative group of subjects. Each is a typical example of skill and dedication applied by an amateur researcher over countless hours of translating measurements and photographic interpretation into a multiple-view scale drawing which, in fact, no manufacturer could ever provide! For it may come as a surprise, but the reality is that manufacturers' general arrangement drawings have little value in the factories, are rarely accurate in shape or scale and, without exception, illustrate the aeroplane in a stage long since superseded by production variants. It is the sub-assembly, or component detail drawing, which offers priceless data for the researcher to complete the jigsaw puzzle of any aeroplane. That is, of course, if such drawings become available as many of the records are now destroyed.

Access to the real thing is the ideal but how can one measure each panel, check every angle and record all the shapes? It takes a special sort of dedication to undertake such a mammoth task. A museum visit will confirm the enormity of the undertaking. Aeroplanes are almost always bigger than imagined. The tape measure becomes inadequate when required to confirm distances between extremities that are intercepted by protrusions, and the draughtsman resorts to that original method of projecting chalk marks on the floor. In this way, the preparation of a drawing reverses early procedures when designs were actually created out of chalked plans on the factory concrete!

Similarly, half a century of progress later, the three-view draughtsman can reflect with pride on the compliment that some of the museum restorations could only be completed to such fine standards through the part his work had played in the re-build.

Flattery comes in oblique forms. A priority requisite for film and documentary makers has been reference to the only general arrangement available, perpetuated for modellers and aero enthusiasts through plan services. The engineering director of a major airport has used these drawings to plan a new maintenance hangar. A restorer, on his acquisition of a foreign airframe, was able to complete his job and satisfy inspectorates through the research documentation borrowed from a three-view draughtsman, and that world famous *Magnificent Men in their Flying Machines* film depended to a considerable extent on those early sketches.

The modelling world owes another debt to the three-view draughtsman. True scale models, whether in moulded plastic or from such sophisticated composites as large radio controlled flying replicas, have emerged in vast numbers from kit boxes or individual designs, all based upon the initial researchers who produced a frozen view of the whole aeroplane.

Demand for accuracy and authenticity originated through the work of James Hay Stevens in 'Aeromodeller'. He was among the first to adopt 1/72nd scale, based on the Imperial measure of one sixth of an inch representing one foot. Opening standards, as set by James Stevens, were taken up through the series of *Aircraft of the Fighting Powers* volumes published by Harborough, an associated company. Wartime urgency quickly generated a new breed of detail draughtsman, typified by Harry



Cooper and Owen Thetford. After seven volumes and the creation of an *Aircraft Described* series, centred on civil aircraft by Eddie Riding, 1/72nd scale was firmly established, and the fine detail in the drawings reached levels of intricacy to satisfy the most demanding enthusiast – though not for long!

From the immediate postwar years to the present day, the levels of minutiae have soared far beyond the first conceptions. Out of *Aircraft Described* came *Aeroplanes in Outline* and *Famous Biplanes* and, through forty years of publication in 'Aeromodeller' magazine, a band of skilled contributors built up a series which now comes in book form.

The drawings reflect the individual character of the originator. Each was in its time a labour of love, the fruits of which have been the immense pleasure given to students, collectors and aeromodellers. If, by reproduction in this form we commemorate their work permanently, rather than in a transient monthly magazine, then we will have rewarded both the draughtsmen and the reader with a treasure store.



 George Cox contemplates the intricacies of the main undercarriage gear of a Republic F-84F Thunderstreak 'on loan' from the US Air Force.

 Pat Lloyd, tape measure in hand, about to get to grips with a Stampe biplane.

De Havilland Venom FB Mks 1 and 4

Country of origin: Great Britain. Type: Single-seat, land-based fighterbomber.

Dimensions: Wing span 41ft 8in 12.70m; length 31ft 10in 9.70m; height (FB Mk 1) 7ft 4in 2.23m, (FB Mk 4) 6ft 10 $\frac{1}{2}$ in 2.10m; wing area 282 sq ft 26.2m². Weights: Empty 8926lb 4050kg; loaded 15,400lb 6987kg.

Powerplant: One de Havilland Ghost 103 turbojet of 4850lb 2200kg static thrust. **Performance:** Maximum speed 640mph 1030kph at sea level; initial climb rate about 4330ft/min 1320m/min; service ceiling about 39,500ft *12,000m.* Armament: Four fixed 20mm Hispano cannon, plus (optional) up to 2000lb *907kg* of external ordnance. Service: First flight (FB Mk 1) 2 September 1949.





Venom FB.4 dispensed with the characteristic de Havilland fin shape and was fitted with an ejection seat but otherwise differed little from the Mk 1.

Lockheed F-94C Starfire

Country of origin: USA. Type: Two-seat, land-based, all-weather fighter.

Dimensions: Wing span 37ft 4in 11.38m; length 44ft 6in 13.56m; height 14ft 11in 4.55m; wing area 238 sq ft 22.11m². Weights: Empty 13,450lb 6103kg;

maximum loaded 24,200lb *10,980kg*. Powerplant: One Pratt & Whitney J48-P-5 centrifugal, afterburning tubojet of 6250lb 2835kg static thrust. Performance: Maximum speed 646mph 1040kph; initial climb rate 7980ft/min 2430m/min; service ceiling 48,000ft

14,630m; range (maximum) 1250 miles 2010km.

Armament: Forty-eight 2.75in 70mm 'Mighty Mouse' rockets in nose and wing pods.

Service: First flight 19 January 1950.

Fuselage cross-sections

Each of the F-94C's wing-tip pods held a dozen air-to-air rockets, complementing the two dozen packed in the nose.

Avro CF-100 Canada Mk 4

Country of origin: Canada. Type: Two-seat, land-based, long-range, all-weather fighter.

Dimensions: Wing span 53ft 7in 16.33m; length 54ft 2in 16.51m; height 15ft 6½in 4.74m; wing area 540 sq ft 50.16m². Weights: Loaded about 37,000lb 16,800kg. **Powerplant:** Two Orenda Mk 11 axialflow turbojets each of over 7000lb *3180kg* static thrust.

Performance: Maximum speed (dive) over Mach 1; initial climb rate over 12,000ft/min 3660m/min; service ceiling over 45,000ft 13,700m; range over 1150 miles 1850km. Armament: Eight fixed 0.5in machine guns in belly pack, plus 60 rockets in wing-tip pods. Service: First flight (prototype) 19

Service: First flight (prototype) 19 January 1950, (Mk 4) 11 October 1952; service entry (Mk 4) early 1954.

Port elevation

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Republic F-84F Thunderstreak

Country of origin: USA. Type: Single-seat, land-based fighter-

bomber. Dimensions: Wing span 33ft 6in 10.21m; length 43ft 4in 13.21m; height 14ft 4in 4.37m; wing area 325 sq ft 30.19m². Weights: Empty 13,800lb 6261kg; maximum 28,000lb *12,700kg*. **Powerplant:** One Wright J65-3 turbojet of 7220lb *3276kg* thrust.

Performance: Maximum speed 695mph 1120kph; initial climb rate 8200ft/min 2500m/min; service ceiling 46,000ft 14,000m; range (clean) over 850 miles 1350km.

1952.

Armament: Six fixed 0.5in Colt-Browning machine guns and (optional) up to 6000lb 2720kg of ordnance. Service: First flight (prototype) 14 February 1951; service entry 3 December

Close-in view of the 'Streak's nose shows complex undercarriage gear and cannon ports above intake. Starboard elevation, F-84F-45-RE

Boulton Paul P.111A

Country of origin: Great Britain Type: Single-seat, land-based research aircraft.

Dimensions: Wing span 33ft 5½in 10.20m; length 26ft 1in 7.95m; height 12ft 6½ in 3.82m. Weights: No data available. Powerplant: One Rolls-Royce Nene centrifugal-flow turbojet of 5000lb 2268kg thrust. Performance: No data available. Armament: None. Service: First flight (P.111) 10 October 1951, (P.111A) 2 July 1953.

The P.111A was modified from the earlier P.111, having air brakes added and the one-piece windscreen replaced by that shown.

North American F-100D Super Sabre

Country of origin: USA. Type: Single-seat, land-based fighterbomber.

Dimensions: Wing span 38ft 91/2in 11.82m; length (exc probe) 49ft 6in 15.09m; height 16ft 23/4in 4.95m; wing area 385 sq ft 35.76m².

Weights: Empty 21,000lb 9528kg;

maximum loaded 34,832lb *15,804kg*. Powerplant: One Pratt & Whitney J57-21A two-shaft, afterburning turbojet of 16,950lb 7690kg maximum thrust. Performance: Maximum speed 865mph 1390kph (Mach 1.3) at altitude; initial climb rate (clean) 16,000ft/min 4875m/ min; service ceiling about 45,000ft

13,700m; range (external fuel) about 1500 miles 2415km. Armament: Four fixed 20mm M39E cannon, plus (optional) up to 7500lb 3400kg of external ordnance. Service: First flight (YF-100A) 25 May 1953.

BLACK STRIP WITH RESCUE INSTRUCTIONS IN YELLOW

RED

DK.BLUE

BLACK

Colour code

STANDARD NATO EJECTOR SEAT WARNING AND RESCUE ON YELLOW ARROW

YELLOW DISC

RESCUE INSTRUCT-IONS IN YELLOW ON BLACK RECTANGLE

Scrap views, F-100D-65-NA Details of markings applied to 56-3000A as flown by Col R F Toliver, CO 20th TFW

RED,WHITE,RED, WARNING STRIPES 79 Squadron: White outline to pale blue shield, white, black and orange head, orange "sparks" with red shading, red patch under orange claws 20 TH.T.F. WING

Pale blue ground, white cloud and base to black eagle. Shield dark blue, yellow and red. Banner and stars, yellow.

55 Squadron. All dark blue except for white dice, numerals and border to yellow title. 77 Squadron: Red ground, white cards and name panel, black then white circles on outside.

The famous 'Triple Zilch', subject of George Cox's drawings – surely the most colourful F-100 ever flown.

Saab A32A Lansen

Country of origin: Sweden Type: Two-seat, land-based all-weather attack fighter.

Dimensions: Wing span 42ft 8in 13.00m; length 49ft 2in 14.99m; height 16ft 5in 5.00m.

Weights: Empty about 15,500lb 7030kg; loaded about 22,000lb 10,000kg.

Powerplant: One Svenska Flygmotor RM5 (Rolls-Royce Avon) axial-flow, afterburning turbojet of about 10,000lb 4535kg maximum thrust. Performance: Maximum speed over 700mph 1125kph; initial climb rate about

12,000ft/min 3660m/min; service ceiling 49,210ft 15,000m; range (external fuel)

about 2000 miles 3200km. Armament: Four fixed Hispano Mk V 20mm cannon, plus up to 3000lb 1360kg of external ordnance. Service: First flight (prototype) 3 November 1952; service entry December 1955.

The smooth lines of the Saab 32 are evident in this photo. A32A was the Lansen's Swedish Air Force designation.

DRAWN BY JENOCH

▲ Early Lansens had a rounded tip to the fin leading edge, modified on production aircraft to the square contours seen here. 'Lansen' is Swedish for 'Lance'.

Wing and tailplane cross-sections

F·F

Nord 1500 Griffon II

Country of origin: France. Type: Experimental single-seat, landbased interceptor fighter. Dimensions: Wing span 26ft 0in 7.93m; length 46ft 0in 14.00m; height 16ft 5in 5.00m. Weights: Loaded about 13,225lb 6000kg. Powerplant: One SNECMA Atar 101E axial-flow turbojet of 7715lb 3500kg static thrust, plus one Nord ramjet. Performance: Maximum speed 930mph 1500kph at 10,825ft 3300m; initial climb rate 17,050ft/min *5200m/min*. Armament: None. Service: First flight (Griffon I) 20 September 1955, (Griffon II) 23 January 1957.

Criffon II in flight, successor to the less powerful Criffon I. Ventral intakes are nowadays very fashionable, as on the F-16 and EFA, and canard foreplanes are also much in vogue.

Plan view, Griffon II

DRAWN BY E TAGE LARSEN

English Electric Canberra B(I) Mk 8

Country of origin: Great Britain. Type: Long-range, land-based night interdictor or high-altitude bomber and target marker.

Dimensions: Wing span 63ft 11½in 19.49m; length 65ft 6in 19.96m; height 15ft 7in 4.75m wing area 960 sq ft 89.17m².

Weights: Empty 23,165lb 10,510kg;

normal 46,990lb 23,215kg; maximum 50,990lb 23,135kg.

Powerplant: Two Rolls-Royce Avon Mk 109 axial-flow turbojets each of 7500lb 3402kg static thrust.

Performance: Maximum speed 560mph 902kph at 40,000ft 12,190m; initial climb rate 3600ft/min 1100m/min; service ceiling 48,000ft 14,630m; range about 800 miles 1300km.

Armament: Four fixed 20mm Hispano cannon in detachable belly pack; up to 3000lb *1361kg* of bombs in fuselage bay, plus up to 2000lb *907kg* of bombs or rockets under wings. Service: First flight (prototype) 13 May 1949, (Mk 8) 23 July 1954.

The B(I).8 prototype, VX185, was converted from the sole B Mk 5, the record-breaking 'double-crosser' of the Atlantic.

camouflage patterns. ►

Fiat C91

Country of origin: Italy. Type: Single-seat, land-based light ground-attack fighter. Dimensions: Wing span 28ft 1in 8.56m; length 33ft 9½ in 10.30m; height 13ft 1½ in 4.00m; wing area 176.74 sq ft 16.42m².

Weights: Empty about 7200lb 3267kg;

maximum take-off 12,125lb 5500kg. **Powerplant:** One Bristol Orpheus 801 turbojet of 4850lb 2200kg static thrust. **Performance:** Maximum speed 650mph 1045kph at 4920ft 1500m; initial climb rate about 6000ft/min 1800m/min; service ceiling 40,000ft 12,190m; range (clean, at sea level) about 400 miles

650km.

Armament: Four fixed 0.5in Colt-Browning machine guns, plus (optional) up to 1000lb 454kg of external ordnance. Service: First flight (prototype) August 1956; service entry February 1959.

▲ Fiat (now Aeritalia) C91T two-seat trainer in Luftwaffe service. The general similarity of the C91 design to that of the F-86 Sabre was no accident.

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Fuselage cross-sections

A Port elevation

Lockheed CF-104 and F-104G Starfighter

Country of origin: USA. Type: Single-seat, land-based strike fighter.

Dimensions: Wing span (without tip tanks) 21ft 11in 6.68m; length 54ft 9in 16.69m; height 13ft 6in 4.11m; wing area 196.1 sq ft 18.22m².

Weights: Empty 14,082lb 6387kg;

maximum take-off 28,779lb 13,054kg. Powerplant: One General Electric J79-GE-11A afterburning turbojet of 15,800lb 7170kg maximum thrust.

Performance: Maximum speed 1450mph 2330kph (Mach 2.2) at 36,000ft 10,975m; initial climb rate 50,000ft/min 15,240m/ min; service ceiling 58,000ft 17,680m;

range (ferry) 2180 miles 3500km. Armament: Two or four AIM-9 AAMs and (optional) one 20mm M61 cannon, or up to 4000lb 1820kg of ordnance. Service: First flight (XF-104) 28 February 1954, (F-104G) 5 October 1960, (CF-104) 26 May 1961.

CF-104 without wing-tip stores. Note slight drooping of movable wing surfaces.



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Starboard elevation, F-104G
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DRAWN BY D H COOKSEY

Scrap underplan, F-104G







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Japanese F-104J was generally similar to the F-104C. This example has tip tanks and wing pylons fitted, and is flying with air brakes open. ►



Saab J35A, SK35C and J35F Draken

Country of origin: Sweden. Type: Single-seat, land-based fighter and (SK35C) trainer.

Dimensions: Wing span 30ft 10in *9.40m*; length 50ft 4in *15.35m*, (J35F) 52ft 0in *15.85m*; height 12ft 9in *3.9m*; wing area 529.6 sq ft *49.2m*².

Weights: Empty (J35F) 18,185lb 8250kg; loaded (J35A) 17,850–20,170lb 8100– 9150kg; maximum loaded (J35F) 27,050lb 12,275kg. Powerplant: One Svenska Flygmotor RM6 (Rolls-Royce Avon) afterburning turbojet of 15,000lb *6805kg* thrust, (J35F) RM6C of 17,635lb *8000kg* maximum thrust.

Performance: Maximum speed Mach 1.8 at altitude, (J35F) 1320mph 2125kph (Mach 2.0) at altitude; initial climb rate about 39,370ft/min 12,000m/min, (J35F) 49,210ft/min 15,000m/min; service ceiling (J35F) 60,000ft 18,290m; range (clean) about 800 miles *1300km*, (maximum external fuel) about 2000 miles *3250km*.

Armament: (J35A, J35F) Two fixed 30mm Aden cannon, plus external ordnance up to 6830lb *3100kg*. Service: First flight (prototype) 25

October 1955, (J35A) 15 February 1958, (SK35C) 30 December 1959; service entry (J35A) early 1960.





TANKS AND TWO ROCKET PODS



Scrap plan view, SK35C

Scale 0 1 2 3 4 5 6 7 8ft 0 1 2m

DRAWN BY E TAGE LARSEN













Sukhoi Su-7B 'Fitter-A'

Country of origin: USSR Type: Single-seat, land-based ground attack fighter.

Dimensions: Wing span 29ft 3½in 8.93m; length (inc probe) 57ft 0in 17.37m; height 15ft 0in 4.57m.

Weights: Normal take-off 26,450lb 12,000kg; maximum take-off 31,965lb

14,500kg.

Powerplant: One Lyulka AL-7F-1 afterburning turbojet of about 22,000lb 10.000kg maximum thrust. Performance: Maximum speed 1085mph 1750kph (Mach 1.7) at 36,100ft 11,000m; initial climb rate about 29,500ft/min 9000m/min; service ceiling about

50,000ft 15,240m; range about 900 miles 1450km. Armament: Two fixed 30mm cannon, plus up to about 2200lb 1000kg of external ordnance. Service: First flight (prototype) 1956;

service entry about 1960.

Fuselage cross-sections

DRAWN BY IAN R STAIR



Forward retracting u/c_







Macchi MB.326

Country of origin: Italy Type: Two-seat, land-based trainer. Dimensions: Wing span (over tip tanks) 34ft 8in 10.57m; length 34ft 111/4in 10.65m; height 12ft 21/2in 3.72m; wing area 204.52 sq ft 19.0m². Weights: Empty 4930lb 2237kg; maximum take-off 7347lb 3334kg.

Powerplant: One Bristol Siddeley Viper 11 turbojet of 2500lb *1134kg* thrust. Performance: Maximum speed 500mph *805kph* at 20,000ft *6100m*; initial climb rate 4500ft/min *1375m/min*; service ceiling 44,000ft *13,400m*; range 690 miles *1110km*.

Armament: (Optional) Two fixed 7.7mm

machine guns, plus up to 500lb 227kg of bombs or rockets under wings. Service: First flight (prototype) 10 December 1957, (production aircraft) 5 October 1960; service entry January 1962.













Northrop N-156F (F-5A prototype)

Country of origin: USA. Type: Prototype single-seat, land-based light tactical fighter.

Dimensions: Wing span 25ft 3in 7.70m; length 45ft 1in *13.74m*; height 13ft 1in *3.99m*; wing area 170 sq ft *15.79m*². Weights: Empty equipped about 8000lb 3630kg; maximum about 20,000lb 9075kg.

Powerplant: Two General Electric J85 afterburning turbojets each of 3850lb 1750kg maximum thrust.

Performance: Maximum speed about 1000mph 1600kph at 36,000ft 10,975m; initial climb rate 28,700ft/min 8750m/ min at sea level; service ceiling 52,000ft 15,850m; range (external fuel) about 1400 miles 2250km.

Armament: Bombs, rockets, gun pack or AAMs up to total of about 2000lb 900kg (considerably enhanced for production F-5A).

Service: First flight 30 July 1959.













Handley Page Victor Mk 2

Country of origin: Great Britain. Type: Long-range, land-based, strategic bomber, (SR Mk 2) strategic reconnaissance aircraft and (K Mk 2) tanker aircraft.

Dimensions: Wing span 120ft 0in 36.58m; length 114ft 11in 35.03m; height 30ft 11/2 in 9.18m; wing area 2597 sq ft

241.22m².

Weights: (K Mk 2) Empty 110,310lb 50,050kg; maximum 238,000lb 107,985kg. Powerplant: Four Rolls-Royce Conway RCo17 Mk 201 turbojets each of 20,600lb 9345kg static thrust.

Performance: Maximum speed 610mph 982kph; service ceiling 55,000ft 16,765m;

range (at altitude) 4600 miles 7400km. Armament: Thirty-five 1000lb 454kg bombs or one HS Blue Steel stand-off nuclear missile or other ordnance up to about 30,000lb 13,600kg, (SR, K Mk 2) none.

Service: First flight 20 February 1959; service entry February 1962.









The first operational Victors were finished in anti-flash white, with pink, white and pale blue national markings. $\pmb{\nabla}$

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Port inboard profile, K Mk 2







Colour code

R-Red; W-White; B-Blue; DG-Dark Green; MSG-Medium Sea Grey; LAG-Light Aircraft Grey; B-Black; S-Silver; DRO-Dayglo red-orange; Y-Yellow; NM-Natural metal. Walkway areas at wing roots and on tailplane are cutlined with a continuous 1/4 in thick are outlined with a continuous, 1/4 in thick yellow line with a fringe of red stripes.

Victor K.2 in current 'hemp' and light grey finish, based at RAF Marham in Norfolk.







Inboard plan view, K Mk 2 51n 398 Stn 303 True plan view of elevator Nose U/C door inner surface detail Air brake radius rods Air brake jack Port nose wheel omitted to show lower leg details 5 U/C details Nose W Elevator power units Scrap views, B, SR and K Mk 2 Undercarriage details

Victor SR.2s at Wyton. As nuclear/ conventional strategic bombers, then reconnaissance platforms and now aerial tankers, Victors have certainly given value for money.



Scale 1 2 3 4 3 5 7 8"







Bomb bay S.R. Mk 2 showing L P a typical layout



View looking up in the bomb bay of the K.2, with refuelling equipment removed

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Scrap views, SR and K Mk 2 Bomb bay details

Co-pilot's position, Victor K.2. Only the pilot and co-pilot have ejection seats. W







Dassault Mirage IIIC

Country of origin: France. Type: Single-seat, land-based interceptor fighter. Dimensions: Wing span 26ft 11½in 8.22m; length (exc probe) 48ft 4¾in 14.75m; height 13ft 11½in 4.25m; wing area 377 sq ft 35.0m².

Weights: Empty equipped 13,555– 13 9951b 6150–6350kg: mission take-of

13,995lb 6150–6350kg; mission take-off

17,545–21,445lb *7960–9730kg*. **Powerplant:** One SNECMA Atar 9B afterburning turbojet of 13,225lb *6000kg* maximum thrust.

Performance: Maximum speed Mach 2.15 at 36,100ft 11,000m; initial climb rate over 16,400ft/min 5000m/min; service ceiling 55,770ft 17,000m; range (clean, at altitude) over 1000 miles 1600km. Armament: Two fixed 30mm DEFA 5-52 cannon, plus (optional) one Matra R.530 AAM and two AIM-9 Sidewinder or R.550 Magic AAMs, or up to 3000lb *1360kg* of bombs.

Service: First flight 9 October 1960; service entry October 1961.

ò DRAWN BY D H COOKSEY Y. OUTLINE 0 Y & B DIAGONAL Underplan, IIIC 1 STRIPES 0 00 M Starboard side 0 1 I 3 0 . 0 0 NE PAS MARCHER 112/12222 W PAS 0 Plan view, IIIC Starboard side 0000 2 0 B 3 MG. RCHEF









▲ RAAF Mirage IIIO is one of many export variants of the Mirage III/V family. This one has a dramatic yellow high-visibility scheme.



Fuselage cross-sections

Port elevation, IIIC

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Scrap views, IIIC Intake centrebody





BAC Lightning F Mk 6

Country of origin: Great Britain. Type: Single-seat, land-based interceptor fighter. Dimensions: Wing span 34ft 10in

10.62m; length 55ft 3in *16.84m*; height 19ft 7in *5.97m*; wing area 380.1 sq ft *35.31m*².

Weights: Empty about 28,000lb 12,700kg;

loaded about 50,000lb 22,700kg. **Powerplant:** Two Rolls-Royce Avon 302 afterburning turbojets each of 15,680lb 7115kg maximum thrust.

Performance: Maximum speed 1500mph 2415kph at 40,000ft 12,200m; initial climb rate 50,000ft/min 15,240m/min; service ceiling 60,000ft 18,290m; range 800 miles 1290km.

Armament: Two Red Top or Firestreak AAMs, plus (optional) two fixed 30mm Aden cannon in belly fairing; other weapons possible (see drawings). Service: First flight (P.1A) 4 August 1954, (F Mk 6) 17 April 1964.



Fuselage cross-sections







A Port elevation

1 Black on white



DRAWN BY CJ NICHOLS






Lightning F.6 with Red Top missiles and overwing tanks. The refuelling probe became standard fit.

3. Matra 100. 4. 260gal ferry tank. 5. Twin Matra 155. 6. Matra 155. 7. Twin 1000lb or fire bombs. 8. 1000lb bomb or fire bomb. 9. Twin Aden gun pack, interchangeable with forward ventral fuel tank. 10. Retractable glass-fibre rocket launchers (22 rockets per side), interchangeable with missile packs and reconnaissance pack. **11**. Reconnaissance pack. **12**. Daylight camera carrier, night camera carrier or line scan and camera carrier.



Hawker Siddeley Harrier GR Mk 1 and T Mk 2

Country of origin: Great Britain. **Type:** Single-seat, land-based, V/STOL tactical attack and reconnaissance aircraft and (T Mk 2) two-seat trainer. **Dimensions:** Wing span 25ft 3in 7.70m; length 45ft 6in 13.87m, (T Mk 2) 55ft 9½in 17.01m; height 11ft 3in 3.43m, (T Mk 2) 12ft 2in 3.71m; wing area 201 sq ft 18.67m². Weights: Basic operating weight 12,200lb *5535kg*, (T Mk 2) 13,000lb *5900kg*; maximum take-off 22,000lb *9980kg*. Powerplant: One Rolls-Royce Pegasus Mk 101 vectored-thrust turbofan of 19,000lb *8620kg*.

Performance: Maximum speed 740mph 1190kph (Mach 0.98); initial climb rate 50,000ft/min 15,240m/min; service ceiling over 50,000ft; range (ferry) 2070 miles 3330km.

Armament: Two fixed 30mm Aden cannon in detachable pods; up to 8000lb *3630kg* external ordnance. Service: First flight (P.1127) 21 October 1960, (GR Mk 1) 28 December 1967, (T Mk 2) 24 April 1969; service entry (GR Mk 1) April 1969.







Sporting No. 1(F) Squadron markings, a Harrier GR.1 hovers over its hideaway. Current GR.3s have bulbous laser noses and other refinements.

Starboard elevation, GR Mk1



Numerical key

1. 'Ejection seat' – R triangle, R and W lettering. 2. 'Trestle here' – BL arrow and lines. 3. 'Armament safety key – locked' – BL lettering, Waligning bars. 4. 'Fire access' – R bordered by 1in R outlines. 5. Crosses 8in × 1in R, panel edged 1in R line. 6. 'Wing trestle, not A/C jacking' – BL letters and tee. 7. Incidence degrees – BL 1in × ¾in bars at 2° intervals +4° to –10°. 8. R 1in band round edge of fwd T/P aperture. 9. 'Danger Power control & Jet blast' – R. 10. Normal canopy release. 11. 'Ensure personnel are clear of footstep before releasing canopy' – BL. 12. 'Keep clear of footstep when canopy is released. Push in to lock canopy' – BL. 13. 'Emergency canopy release other side'. 14. Mic. Tel. – Y and BL symbol. 15. Hoisting point – Pale green and BL symbol. 16. Vector angles – 134 in $\times 12$ in BL bars at 10° intervals from thrust line, 1 in numbers at 0°, 30°, 60°, 90° and 98½°, port fwd nozzle only. 17. 'Earth. Fuel. Nitrogen. Engine oil' etc – BL on W panel. 18. 'Air brake lock'. 19. 'APU output'. 20. 'Electrical ground supply'. 21. 'Slinging point'. 22. 'Hydraulic fluid No 2 System – Defuelling pressure connection'. 23. Yellow dotted lines indicate where to break into canopy for rescue. 24. 'Water'. 25. 'Nitrogen'. 26. 'Danger – Keep clear'. 27. 'Danger – Explosive release' – in R triangle similar to ejection seat marking. 28. 'Starter inlet and exhaust'.

Note: Ringed numbers indicate positioning of descriptive matter.







▲ Cockpit views – compare with drawing opposite. The closein photo shows part of the rear cockpit of the T.60 (similar to T.2).







 T.2 take-off. Note long 'sting' at tail, to counterbalance the extension of the forward fuselage in the trainer version.

-06 OSE

THESE LINES SHOW POSITION OF MLC. MINATURE CORD INTENDED TO BE EXTERNALLY ACTIVATED AN SHATTER ETHER CANOPY TO FADULTIATE RESCE OF APPEARS AS GREVISH CORD DIRECODED IN CANOP (ON T2 ONLY)





US Marine Corps AV-8As were broadly similar to the GR.1 but, externally, had a prominent dorsal antenna. These two are from VMA-231.



SEPECAT Jaguar A, S, E, B and M

Countries of origin: France and Great Britain.

Type: Single-seat, land-based tactical attack aircraft and (B, E) two-seat trainer; (M) prototype single-seat, carrier-based tactical attack aircraft.

Dimensions: Wing span 27ft 10¼in 8.49m; length 50ft 11in 15.52m, (B, E) 53ft 11in 16.42m; height 15ft 1½in 4.64m; wing area 258.33 sq ft 24.00m². Weights: Normal take-off 22,040lb 10,000kg; maximum 30,865lb 14,000kg. Powerplant: Two Rolls-Royce/ Turboméca RT172 Adour 102 augmented turbofans each of 7305lb 3315kg thrust. Performance: Maximum speed 1120mph 1800kph (Mach 1.7) at 36,100ft 11,000m; time to 30,000ft 9145m, 2.5min; service ceiling 46,000ft 14,000m; range (external fuel) 2800 miles 4500km. Armament: Two fixed 30mm DEFA cannon, (S) two fixed 30mm Aden cannon, (B) one fixed 30mm Aden cannon; up to 9900lb *4500kg* of external ordnance.

Service: First flight (prototype) 8 September 1968; service entry (A, E) May 1972, (S/GR Mk 1, B/T Mk 2) June 1973.



Prototype Jaguar E, French two-seater, shows original intake splitter plates and early-style nose gear door.





S06 during flight trials, with preproduction nose shape and low fin.





A Port elevation, Jaguar GR Mk 1

E01 again. Two-seat Jaguars have a strike capability – they are far too expensive to use as mere trainers!











Grumman F-14A Tomcat

Country of origin: USA. Type: Two-seat, carrier-based, multi-role fighter.

Dimensions: Wing span (maximum sweep) 38ft 2in 11.63m, (minimum sweep) 64ft 11/2in 19.54m; length 62ft 8in 19.10m; height 16ft 0in 4.88m; wing area 565 sq ft 52.49m².

Weights: Empty 40, 104lb 18, 191kg;

normal loaded 58,539lb *26,552kg*; maximum loaded 74,348lb *33,724kg*. Powerplant: Two Pratt & Whitney TF30-412A two-shaft, afterburning turbofans each of 20,900lb 9480kg thrust. Performance: Maximum speed 1544mph 2485kph (Mach 2.34); initial climb rate (normal loaded) 30,000ft/min 9150m/ min; range (external fuel) 2000 miles

3220km.

Armament: One fixed 20mm M61A1 cannon; four AIM-7 plus four or eight AIM-9 AAMs, or up to six AIM-54 AAMs plus two AIM-9 AAMs; (attack role) up to 14,500lb 6580kg of ordnance. Service: First flight (prototype) 21 December 1971; service entry 31 December 1972.





F-14A with a full complement of AIM-54 Phoenix missiles and wings at maximum sweep.

Tomcat front cockpit.

Extended refuelling probe.















Panavia Tornado GR Mk 1

Countries of origin: Great Britain, West Germany and Italy.

Type: Two-seat, land-based, multi-role strike aircraft.

Dimensions: Wing span (maximum sweep) 28ft 2¹/₂in *8.60m*, (minimum sweep) 45ft 7¹/₂in 13.91m; length 54ft 10¹/₄in 16.72m; height 19ft 6¹/₄in 5.95m. Weights: Empty equipped 31,065lb 14,095kg; take-off (clean) 45,000lb 20,420kg; take-off (maximum) about 60,000lb 27,225kg.

Powerplant: Two Turbo-Union RB199-34R Mk 101 augmented turbofans each of over 16,000lb 7260kg maximum thrust. Performance: Maximum speed (clean) over 1450mph 2335kph (Mach 2.2) at altitude, over 920mph 1480kph (Mach 1.2) at sea level; time to 30,000ft 9150m from brakes release, under 2min; service ceiling over 50,000ft *15,250m*; range (ferry) about 2400 miles *3850km*. **Armament:** Two fixed 27mm IWKA Mauser cannon, plus up to 18,000lb *8165kg* of external ordnance. **Service:** First flight (prototype) 14 August 1974, (GR Mk 1) July 1979; service entry 6 January 1982.

> Linear Cutting Miniature Deton: All a/c will eventually "Explosive Canopy" warnin







A November 1981 photo showing GR Mk 1s from the Tornado Weapons Conversion Unit (TWCU) lined up at RAF Honington.

Starboard elevation





[RESCUE -------] craft

Hingeing Radome + "mini-skirt"

Ground Mapping & Terrain Following

Radars in hingeing "Maxi-Skirt"

NB. Large amount of deo ravel - varies with load, a/c otion, wing sweep angle etc.

DG



Scrap view In-flight refuelling probe (not to scale)

Scrap view

Thrust reverser bucket mechanism

55 V

Colour notes

Colour notes Air intake interiors – DSC; antennas – white or straw colour; walkway markings and most stencilling – MB; arrester hook – light grey; anti-chafe paint, early machines – light grey, later machines – dark grey; anti-collision lights have red lenses; fin tip – DSC with MB leading edge; HF antenna – DG with MB leading edge; danger triangles – red and white; fire access (6 off) – red and white; 'Danger hot gases' and 'Danger arrester hook' – red; rescue instructions – black on yellow; radome – semi-gloss black; anti-glare panel – MB; probes – natural metal; wing slot seal bag – medium brown textile; hot gases 'diamond' – red broken line and arrows, black divergent lines; taileron range of movement markings – red.

1 Orange &

black

0

Symbols on fwd fuselage

~ Orange







The Publisher wishes to thank the following draughtsmen whose drawings appear in this volume

ARTHUR BENTLEY A H HALEY D H COOKSEY E TAGE LARSEN GEORGE COX PAT LLOYD GEORGE CULL C J NICHOLS J R ENOCH IAN STAIR



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