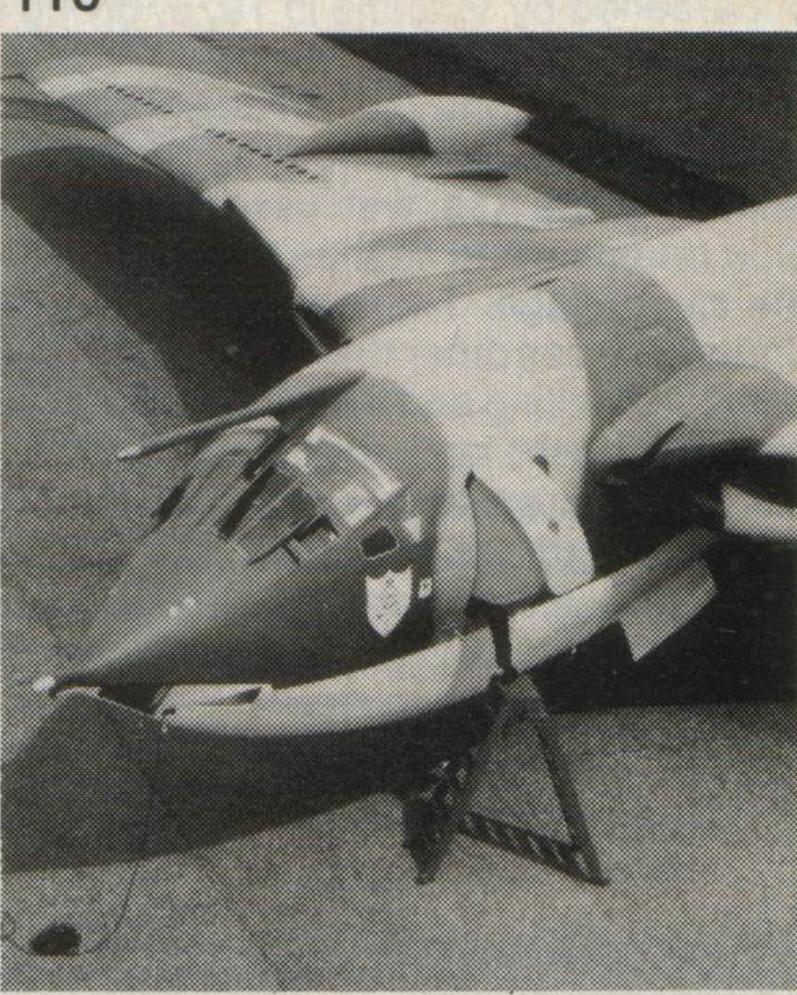
HANDLEY PAGEVICTOR



The immortal 'V' Bomber described by B Robertson

The Handley Page HP80 Victor, the third of the RAF's three V-bomber types, was evolved to Air Ministry Specification B35/46. Powered by four Amstrong Siddeley Sapphire Sa7 turbojets, the Victor B1 had a range of 6000 miles, a maximum speed of Mach 0.95 and could carry a maximum bomb load of 78000 lbs. An outstanding feature was its crescent wing, spanning 110 feet. A crew of five was carried.

Two Victor prototypes were built; the first, WB771, made its maiden flight on December 24, 1952 in natural metal finish, but for the 1953 SBAC display it was painted silver-grey with a matt black fuselage sporting a red trim line; it crashed the following year. The second prototype, flying from September 11, 1954, was similarly painted until 1956 when it was repainted overall blue.

Production orders placed from 1952 led to 50 Victor BIs being produced in batches, serialled XA917-941, XH587-594, XH613-621, XH645-651, and XH667. The first four aircraft were finished in RAF standard light-weight aluminium overall, but with XA921, and subsequent production aircraft, an overall white anti-flash paint, designed to reflect the intense heat flash radiated from a nuclear explosion, was adopted. Serials were marked large in black on each wing undersurface and on fuselage sides, initially in black but later in pale blue. Similarly, roundels, in bright colours on fuselage sides and wing uppersurfaces only, were later made pallid as shown in our colour plates. The Victor B1 first entered service with No. 232 Operational Conversion Unit at Gaydon in November 1957 and reached No. 10 Sqn. in April 1958 followed by Nos 15, 55 and 57 Sqns.

Modifications were progressively introduced on production, and retrospectively on those in service, so that eventually 24 were to a new B1A standard incorporating flight refuelling probes, drooped wing leading edges, modified cabin layout and a reshaped tail cone to embody the new tail-warning radar. Six were later converted for a dual bomber/tanker role as Victor B(K)1s and finally the Mk1s existed solely as three-point tankers with 10 original B1s converted to K1 tankers and 14 B1As to K1A tankers. They served in the Tanker Training Flight which became No. 232 Operational Training Unit and Nos. 55, 57 and 215 Sqns. Motifs on the fin, above the flash, identified each unit.

Meanwhile a new standard was being evolved for continuing production, to enable delivery of the Avro Blue Steel thermo-nuclear air-launched cruise missile. Wingspan was increased to 120 feet and four Rolls-Royce Conways were substituted. The first B2 made its maiden flight on February 20, 1959 in overall white without national markings, or its serial XH668, externally visible. Production followed of 33 serialled aircraft: XH669-675, XL158-165, XL188-193, XL230-233, XL511-513, XM714-718 finished in white with the pallid markings applicable to the B1s. A further 28 B2s had been ordered, but these were cancelled when plans were in hand to increase force effectiveness with Douglas Skybolt and Avro Blue Steel missiles. The American missile was cancelled before acquisition, but there was much experimentation with Blue Steel missiles recessed under the fuselage of the B2s.

Victor B2s served first in a trials unit, renamed the Victor Training Flight, and entered squadron service at Wittering where No. 139 Sqn. reformed in February 1962 and No. 100 Sqn. the following May. The last B2 was delivered in May 1963 but, again, there were a series of modifications and, in all, 21 Victors were withdrawn from service to facilitate their carrying of Blue Steel, revised avionics, and incorporating aerodynamic improvements to B2R (R for Retrofit) standard. A radical change in finish was heralded at the beginning of 1964 when a Victor B2R returned from its retrofit in a disruptive-pattern camouflage of Dark Green (BS381C-641) and Medium Sea Grey (BS381C-637) with only the undersurfaces in glossy white, consistent with a changed low-level approach tactic, and the later conventional bombing role when the Royal Navy took over the nuclear deterrent role. In this new role up to 35 1000 lb. HE bombs could be carried.

With the Victor Training Flight joining the two squadrons at Wittering to form a Wing introducing central servicing, the limited individual unit markings gave way to the station's red lion badge.

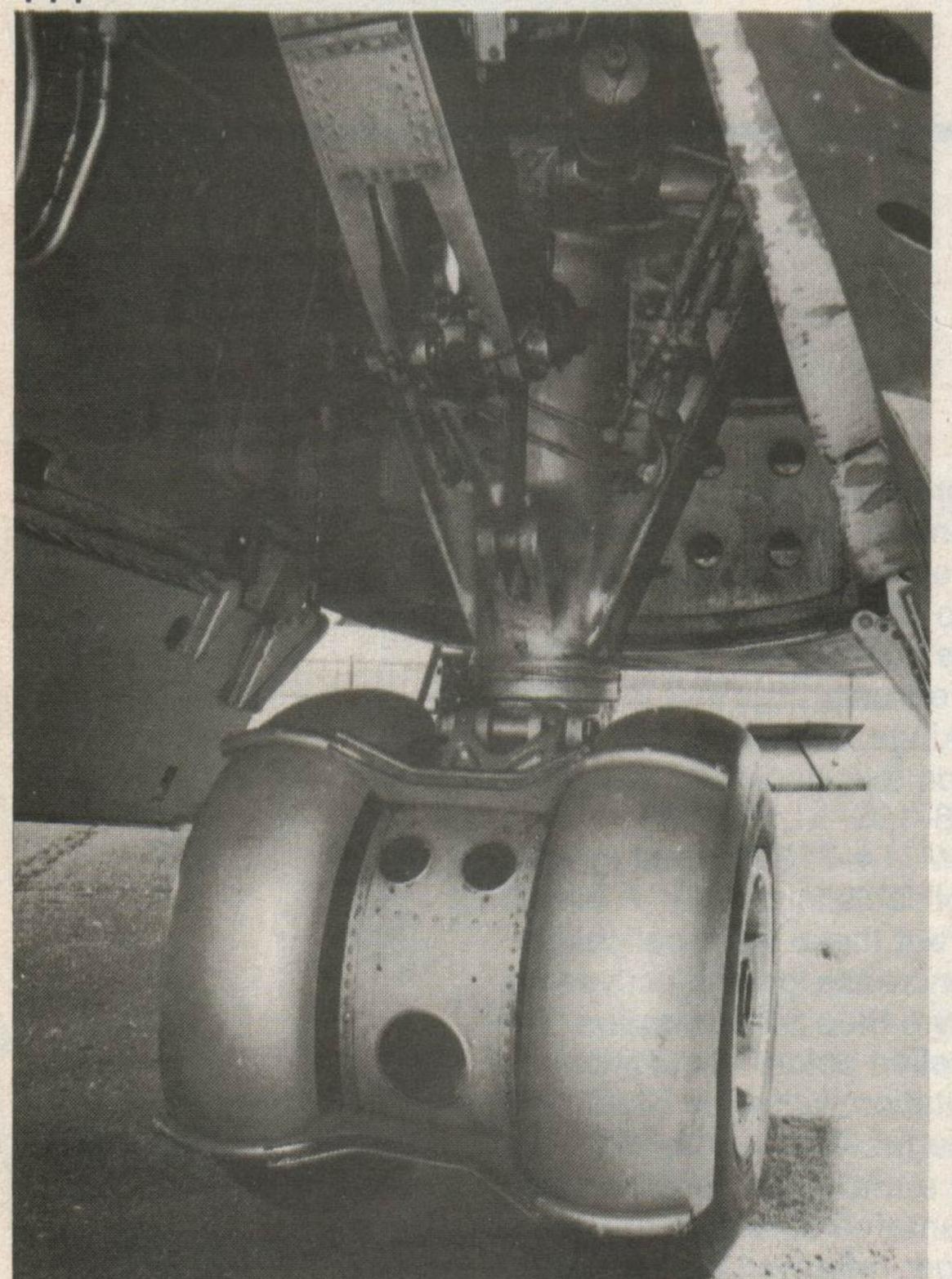
Nine B2s were modified from 1965 onwards to SR2 standard for strategic reconnaissance, with increased range and photo-mapping equipment, entering service with No. 543 Sqn. at Wyton. They were finished in the green/grey camouflage with serials (XH672, XH674, XL161, XL165, XL193, XL230, XM715, XM716, XM718)

110. A Victor SR2 at RAF Wyton. The Victor has enjoyed a lengthy career in the RAF and is one of the most requested subjects for plastic kit reproduction. If current suggestions are true we can expect at least one injection-moulded kit before the end of 1982. 1/144th scale drawings on opposite page, by A L Bentley, form part of Plan Pack 3000. The pack contains four sheets of plans to both 1/144th and 1 | 72nd scales and is priced at £4.00, plus 40p. post and packing, from MAP Plans Service.

in black. Roundels were conventional, but the wing display was limited to port-wing uppersurface only.

The final requirement was for the Victors to provide an improved tanker force to facilitate rapid overseas deployment of fighters. The B2/B2R bombers were withdrawn by the end of 1968 and the SR2s were superseded by Vulcans in 1975, giving a good reserve for the 24 required for the new Victor K2 modification programme during the 1970s to provide a tanker force throughout the 80s. The grey/green camouflage, as applied to the K1s, was used but this time with red and blue roundels and flashes to avoid white compromising the camouflage. There were no markings on the white undersurfaces other than red and black 'line-up' lines for fighter refuelling and the wing roundel display was again restricted to the port wing uppersurfaces only. Serials in black appeared large on the rear fuselage. Unit motifs for the squadrons equipped with K2s, Nos 55 and 57 Sqns, appeared on the fins, as did the circled arrow motifs of No. 232 Operational Training Unit. Victors concerned in this conversion were XH669, XH671-673, XH675, XL158, XL160-164, XL188-192, XL231-233, XL511-513, XM715, XM717.

111



HANDLEY PAGE VICTOR

Available models (non-flying)

Model Manufacturer Scale
HP Victor K2 RAREplanes (Vacform) 1/72nd

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Handley Page Victor K2. 1/72nd scale drawings.

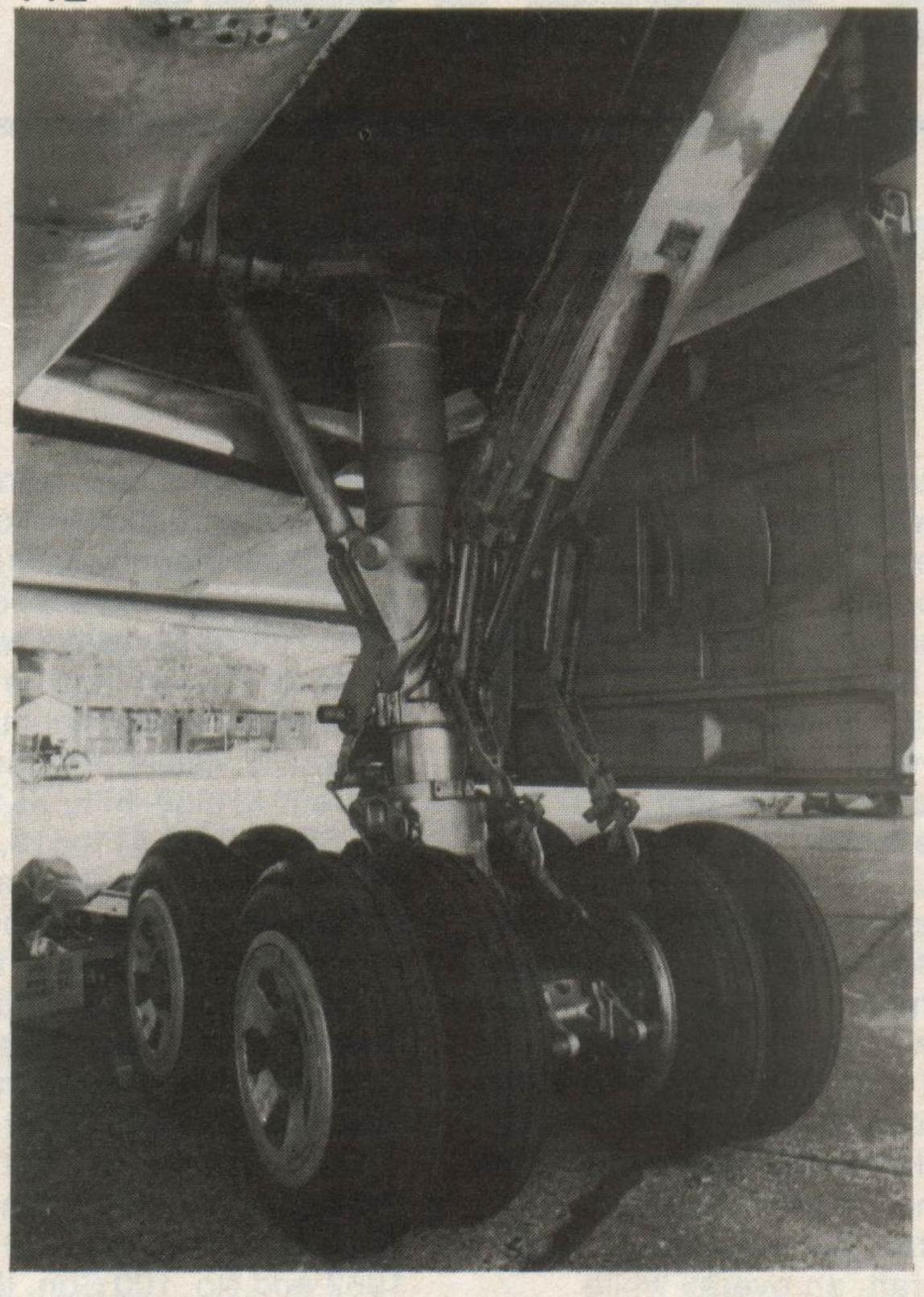
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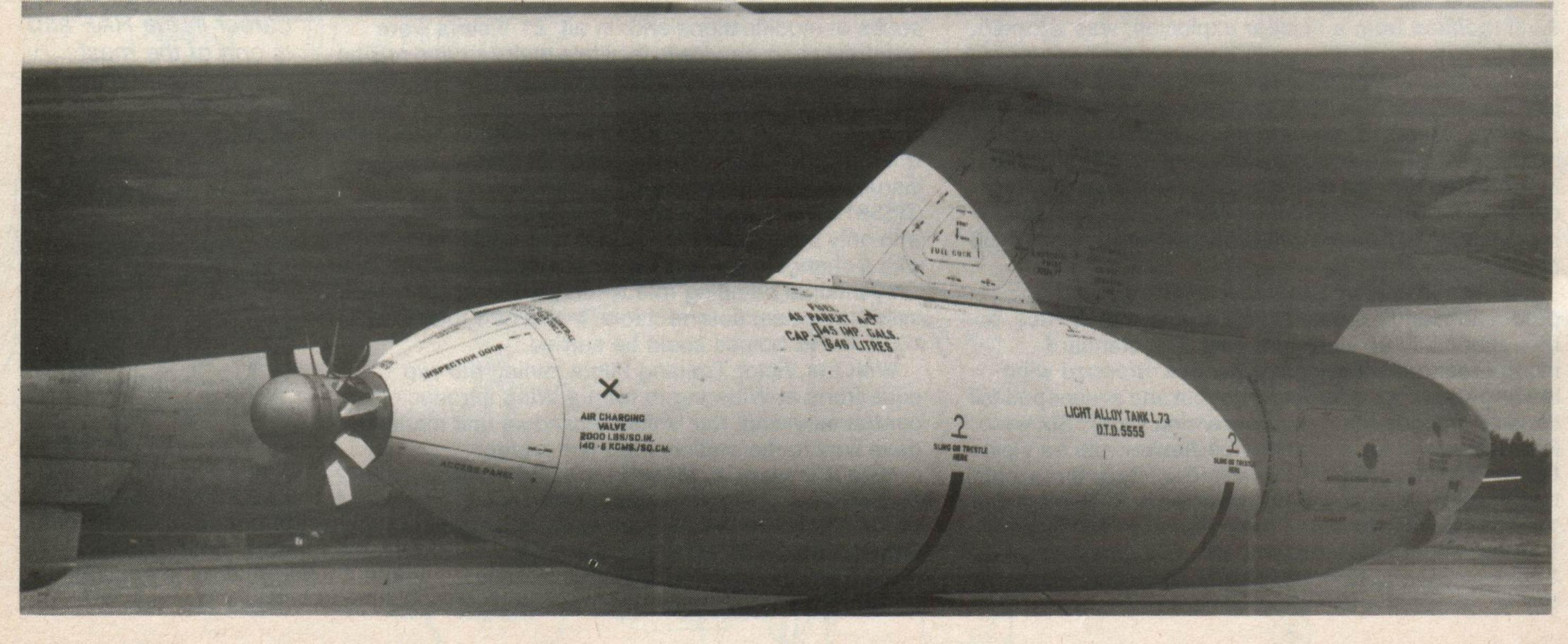
SCALE MODELS. October and November 1978.

112

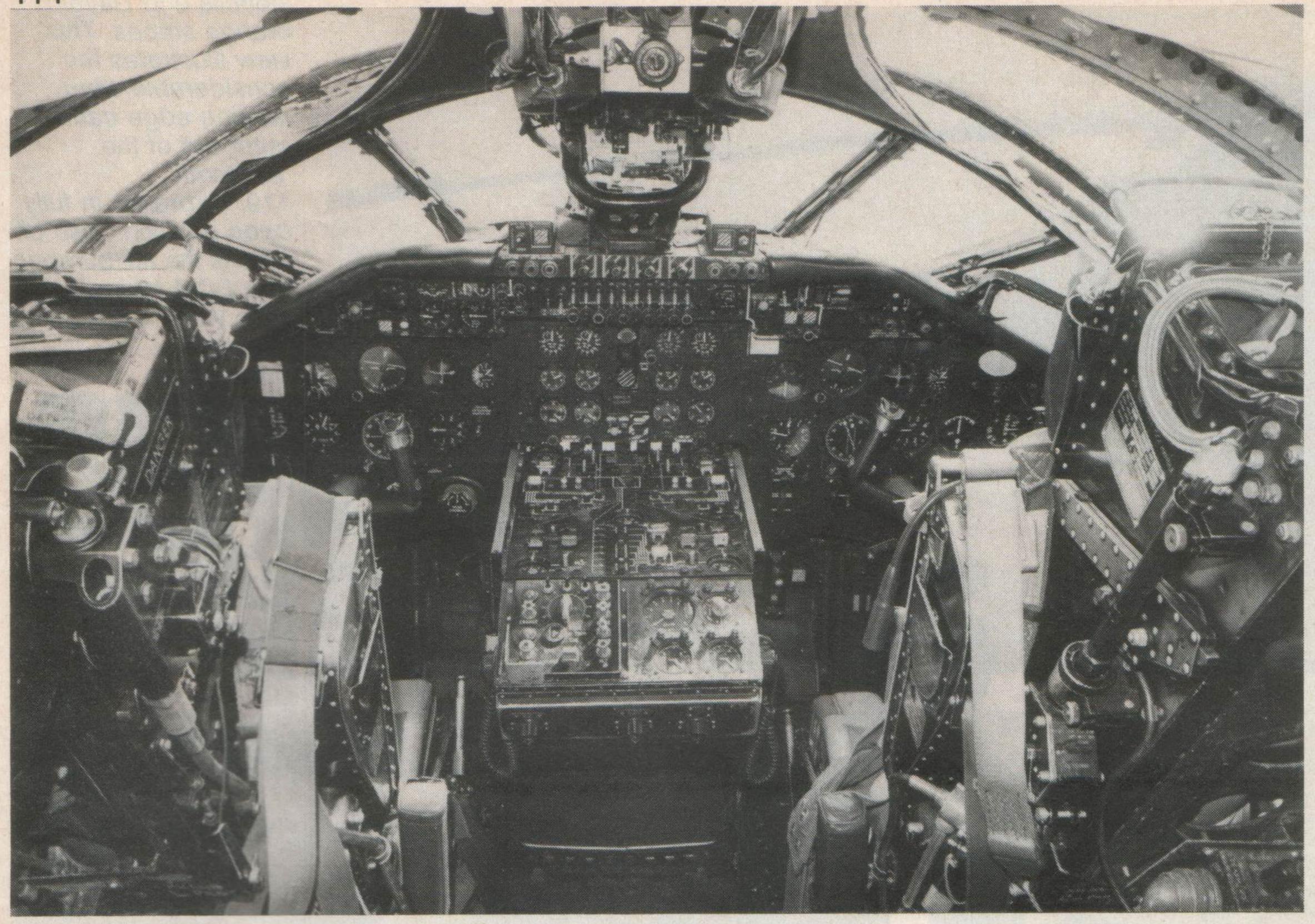


Victor K2 nose wheels and sturdy mudguards. This is the preserved aircraft at the IWM Collection, Duxford and the editors of 'WARPLANE' would like to thank the staff of the museum for their efforts in preparing the aircraft for our photographer. 112. Front view of the port main undercarriage unit - a really massive chunk of machinery. Style of tyre tread and wheel 'spoking' are noteworthy. 113. Plenty of stencil detail on this Mark 1's 145 gallon refuelling pod. It should be noted that on K2 aircraft, there are only two blades on the nose. All stencil lettering is black on overall gloss white finish with the exception of the red 'hoist' markings. 114. (Opposite). Cockpit detail of the Duxford machine. This particular layout is basically that of the bomber version. The only difference is the addition of two pod isolation cock switches on the coaming.

111. Rear view of



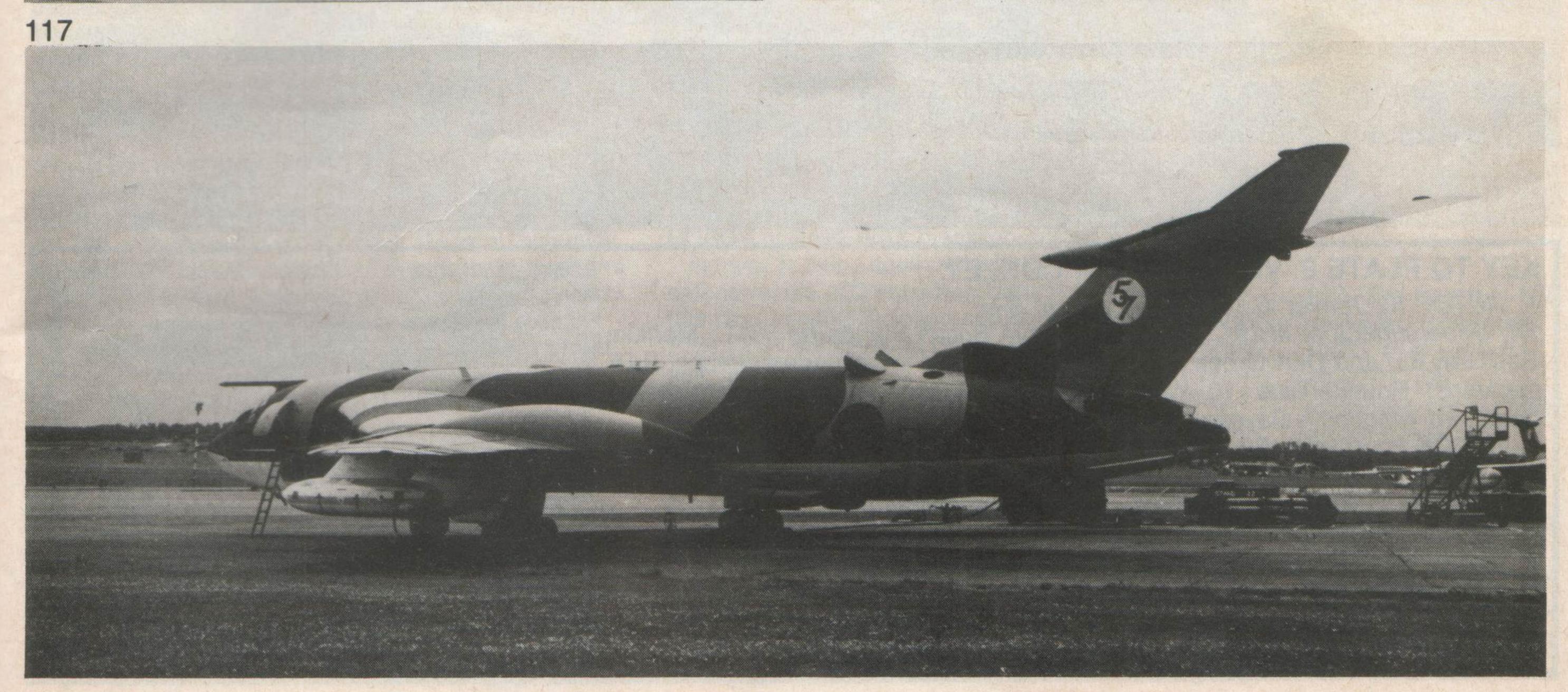
113



115. Front view of the nose undercarriage – note the small clearance between tyres and mudguards.
116. Bomb bay detail.
Note the two fuel tanks – standard for the 'two-pointer' tanker versions, petal in front of bay to break up the airflow and the flaps in fully down position.
117. Victor K2 of 57 Squadron in standard camouflage scheme – all colours are matt.

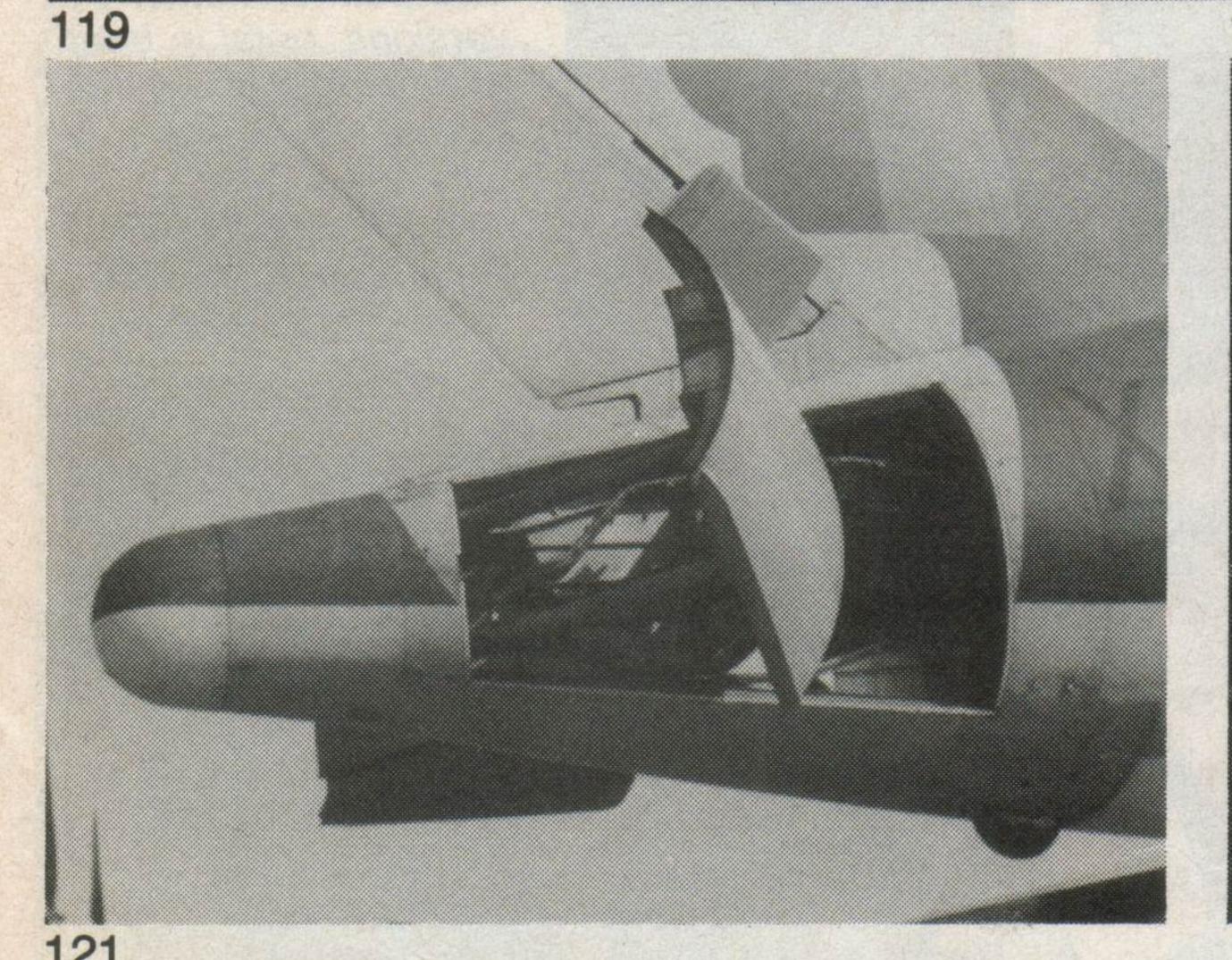




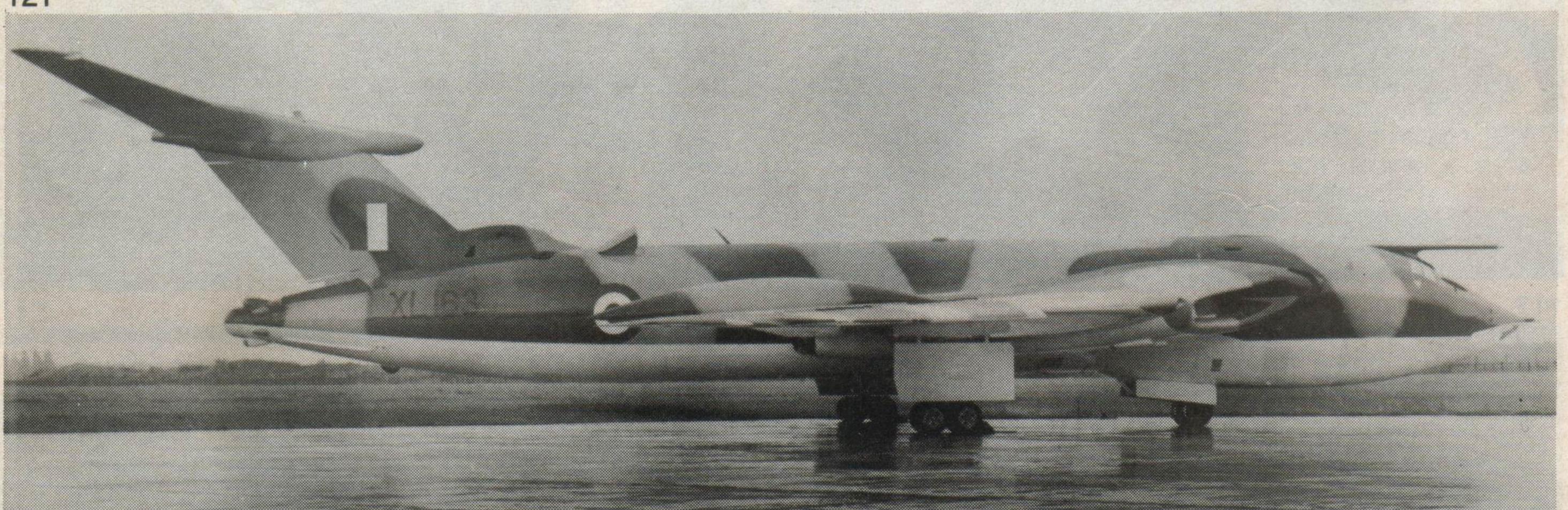




118. Starboard flight refuelling pod. Note stencils and Dayglo orange stripes. This view illustrates the considerable wing leading edge camber outboard of the 'sawtooth'. 119. Airbrakes in fully open position. Also of note is the tail bumper and ECM fairing. 120. Victor of 214 Squadron, undergoing maintenance, provides clear view of the airbrake position with internal details. 121. Victor B2 XL163 in standard camouflage but note soft demarcation between upper colours.







KEY TO PLATE 8. VICTORS BY R CORLEY

1. VICTOR K2 Tanker XL191, 55 Squadron RAF.

1A. Uppersurface of XL191. Camouflage from British Standards 381C: Medium Sea Grey 637 and Dark Green 641 uppersurfaces and White undersurfaces. RAF markings – Roundel Blue 110, White and Post Office Red 538. Flashes on refuelling pods and wingtips – Dayglow Orange.

2. VICTOR B2 XL 158, B9 Squadron, RAF, carrying Blue Steel stand-off bombs. Depicted after having visited Jamaica for that country's independence celebrations in 1962. RAF Insignia in pale anti-radiation paint.

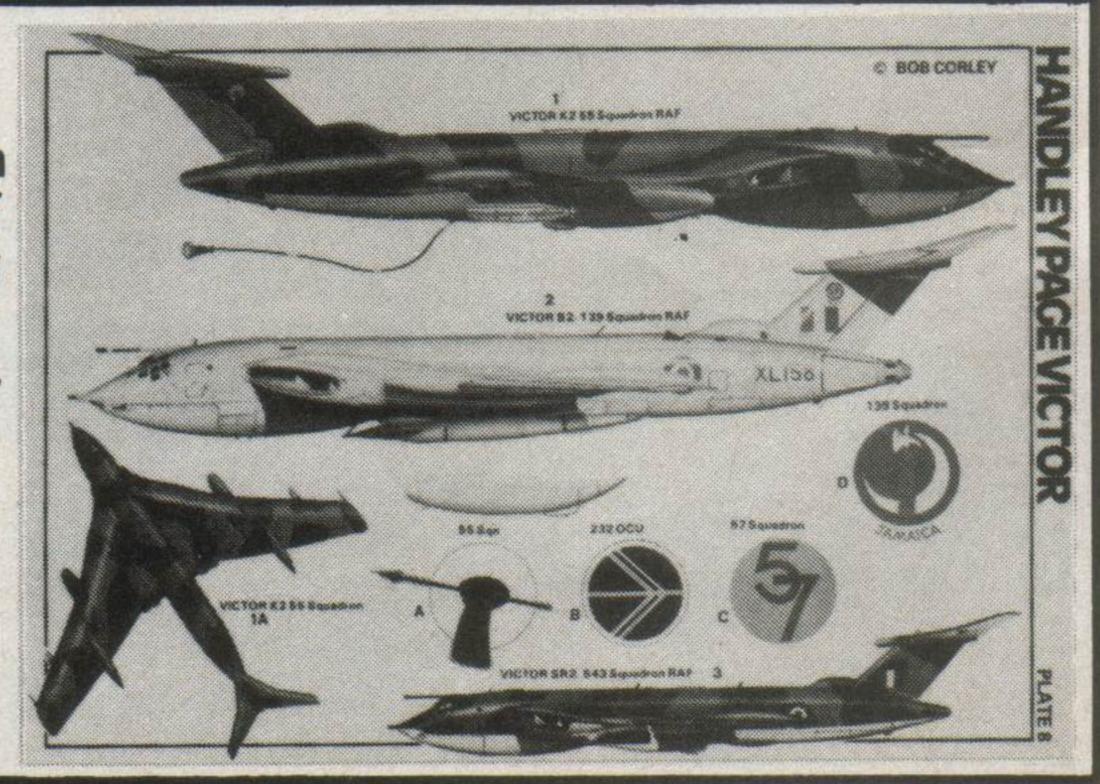
3. VICTOR SR2 XM716 of 543 Squadron, RAF. Colours as for K2.

A. Badge, 55 Squadron. Spear faces forward both sides.

B. Badge, 232 OCU. Arrow faces forward both sides.

C. Badge, 57 Squadron. On some machines, circle was white.

D. Badge, 139 Squadron. Badge uses pale colours of roundels.



GENERAL DYNAMICS F16



The fabulous 'Fighting Falcon' described by T Lynch

The F-16 resulted from the lightweight fighter research programme that was implemented in the early 1970s to bring back some rational ideas in aircraft design and curb the uncontrollable cost overruns that had plagued military budgets for aircraft in the 1950s and 60s. Fighters, with the F-4 and others of the period, had become too complicated, heavy, cumbersome and expensive and in 1970 the US Secretary of Defense announced a new policy of 'fly before buy', where two or more companies would compete with an aircraft of their design against one or more competitors, but all within guidelines laid down in the originating specifications. This was new to North American aerospace industries, especially having to project costs and not being allowed cost overruns. Aircraft produced for these run-offs would be designated 'YF'.

In February 1972, five companies were in the LF competition, but through eliminations, Northrop and General Dynamics were chosen to make fly-offs to decide on the winner. Final selection took place in January 1975, with the YF-16 being chosen, largely because of weight/cost per unit considerations. \$417 million was awarded to build six 'A' models and two two-seater 'B' models, the first being delivered in December 1976. An initial order for 650 for the USAF was followed by the announcement, on June 7, 1975, by a European consortium of Norway, Holland, Belgium and Denmark that they had selected the F-16 as the replacement for their ageing F-104s. Initial orders were for 306, with an option on 42 others. General Dynamics entered into a co-production contract with Belgium and Holland aerospace industries, which gave both a hearty slice of their own aircraft production and attendant technical know-how, as well as a portion of other aircraft for countries that entered after the deal was closed. Although oft-criticised, GD has lived up to the letter of the contract.

The F-16 aircraft is notable for its small size and lightweight, yet hearty, construction plus advanced aerodynamics and high reliability in adverse conditions. The fuselage has a flared side strake which blends with the cropped delta-wing platform. This flare provides significant body lift at high angles of attack, provides great frame rigidity and allows greater internal fuselage volume for fuel and equipment. The wings have a 40 degree sweep-back and are fitted with a single piece

leading edge device and trailing edge flaperon. The high-lift devices are controlled automatically as a function of angle of attack and Mach speed. The flaperon acts as an aileron for rolling movements and a flap for manoeuvring aid or landing. The tailerons of the horizontal tailplane are fabricated of graphite epoxy over an aluminium honeycomb core, are super-lightweight but strong and interchangable from side to side. Speed brakes are fitted either side of the engine exhaust, inboard of the tailplanes, and consist of four segments when deployed. All flight controls are 'Fly-by Wire' via a four-channel redundant system.

The engine is the Pratt and Whitney F100-PW-100 unit, developing 15000 lbs./thrust dry, 25000 lbs./thrust with full afterburn. It is a twin spool design, with a three-stage fan section and is $46\frac{1}{2}$ ins. in diameter, 191 ins. long and has its intake on the underside of the fuselage. It weighs 3000 lbs.+ and burns 0.68 lbs. per hr. at dry setting and 2.55 lbs. per hr. at afterburner. Fuel capacity is 6934 lbs. of fuel, both internally and externally.

The weapons system consists of one M-61 20 mm GE Gatling gun with a 500-round drum and a weapon capacity of 10500 lbs. on nine store stations. 15200 lbs. can be lifted with a reduction in fuel load. Close-in defence is handled by the AIM-9 Sidewinder on wingtip stations. (Later F-16s are equipped with the 9L, the newest). Various missile/bomb loads are available and the F-16 is capable of lifting and launching any of the HOBOS or PAVEWAY precision-guided weapons.

Norway is being equipped with 60 F-16s, in a purely defensive role. 332 Squadron, defunct for several years, has been recommissioned and equipped with the first F16s. They are based at Rygge and act as a conversion unit. 331 (F-104s) and 334 at BODO and 338 (F5s) at Orland will convert in stages. (Norwegian F-16s have a braking 'chute in a fairing at the base of the vertical rudder).

Denmark – with 58 on order – will be fully equipped by next year for 727 and 730 Squadrons at Skrydstrup. Each squadron is split into a F-16 conversion unit and a F-100 unit until enough aircraft have been delivered to fully equip the second unit. (Denmark has had an identification light added to the nose radome).

The Netherlands squadrons will close down as (Continued on page 86)

delivered in August
1977. This aircraft,
75-0751, was
re-vamped in the 'Wild
Weasel' role. The
'Fighting Falcon' has
inspired scores of
model kits, flying and
non-flying, and in all
possible scales. Even
more are to follow so
no-one can complain
of a lack of choice . . .

GENERAL DYNAMICS F16A FIGHTING FALCON

Cutaway perspective by Jeremy C. Cave, ASAI

41. Forebody blended win

- 42. TACAN aerial
- 43. Ammunition drum (50
- 44. Ammunition feed and
- 45. Antenna
- 46. Ammunition drum flex
- 47. Hydraulic gun drive mo
- 48. Fuel tank access panel
- 49. Leading edge manoeu
- 50. Hydraulic service bay

TECHNICAL SPECIFICATION

Type: Single-seat fighter bomber (B) operational trainer.

Engine: One 24,000lb (10,885kg) thrust Pratt and Whitney F100-PW-100

two-shaft afterburning turbofan.

Dimensions: Span without Sidewinders 31ft 0in (9.45m) with Sidewinders

32ft 10in (10.01m); length (F-16) 16ft 5.2in (5.01m) Weights: Empty (YF) about 12,000lb (5443kg); (F) about 14,800lb (6,733kg) maximum gross (YF) 27,000lb (12,245kg); (F) 33,000lb (14,969kg)

Performance: Maximum speed 1,300mph, Mach 1.95 (2090km/h); initial climb

(YF) 40,000ft (12,200m)/min; service ceiling about 60,000ft (18,300m); range on internal fuel for interaption mission about 1,300 miles (2100km); attack radius 120 miles (193km) at low level with maximum weapon load; attack radius with six MK 82 bombs 339 miles (546km).

Armament: One 20mm M61 multi-barrel cannon on left side of fuselage;

nine pylons for total external load of up to 15,200lb (685kg)

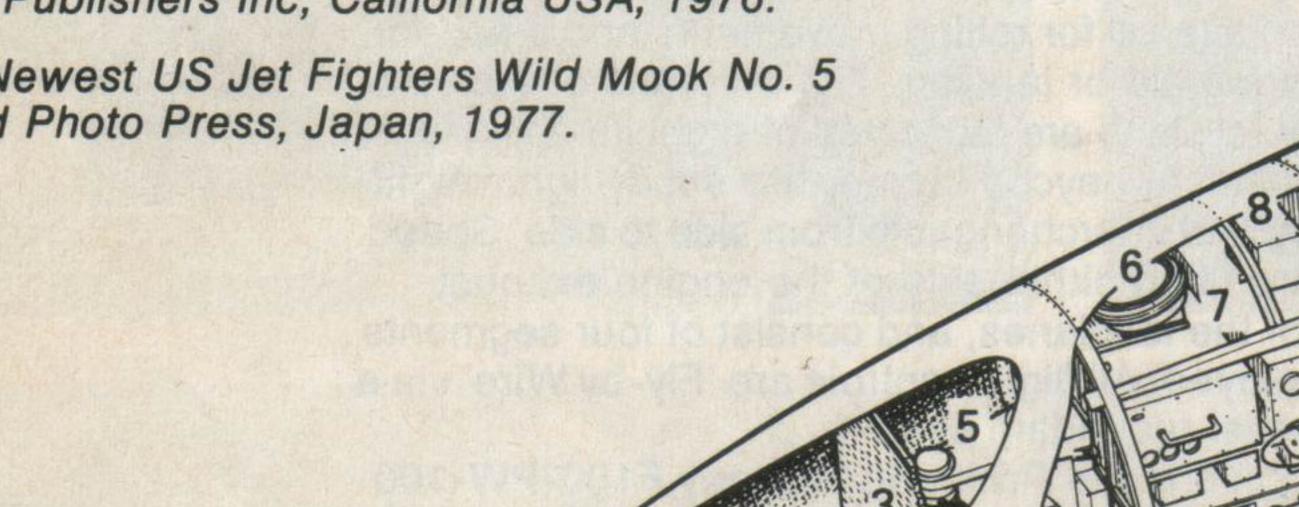
(YF, seven pylons for total of 11,500lb, 5271kg).

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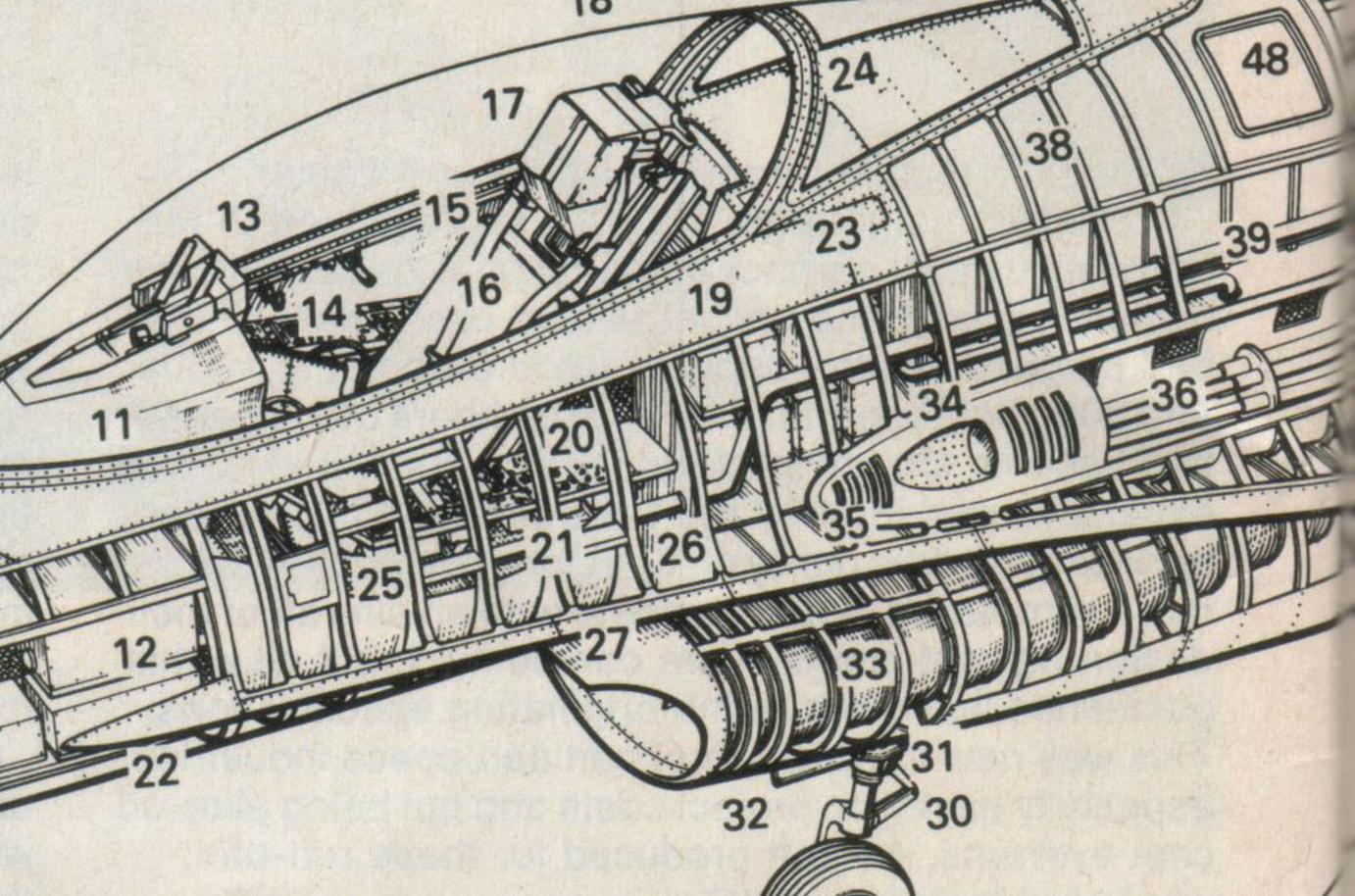
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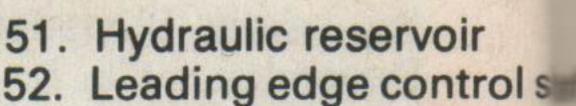
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- 21. Cockpit frame construction
- 22. Fuselage forebody strake fairing
- 23. Canopy hinge
- 24. Cockpit canopy seal
- 25. Throttle
- 26. Cockpit rear bulkhead
- 27. Boundary-layer splitter-plate
- 28. Fixed geometry air intake
- 29. Aft retracting nosewheel 30. Shock absorber scissor link
- 31. Retraction strut
- 32. Nosewheel door
- 33. Air inlet duct
- 34. Gun gas suppression nozzle
- 35. Cooling louvres
- 36. Cannon barrels
- 37. General Electric M61 20mm
- 38. Forward fuselage fuel tanks
- 39. Air conditioning system
- 40. Canopy aft glazing







53. Centre fuel tank panels 54. Flight refuelling recept

55. Intake duct

56. Centre fuselage fuel tar 57. Wing mounting bulkhe

58. Wing attachment fitting 59. Starboard flaperon

60. Fixed trailing edge sect

61. Static discharges 62. Starboard wing

63. M.K. 82 500-16 (227-Kg 64. Missile launcher shoe

65. Aim-9L Sidewinder miss

66. Starboard navigation 67. Leading-edge monoeu

68. Leading-edge flap hing 69. Port underwing tank, 3

70. Mainwheel door

1. Air Data Probe - unit out of Belo

2. Radome
3. Planar Radar Scanner

4. Angle-of-Attack Transducers

5. Scanner Drive Motors

6. ADF Antenna

7. Battery and front electronics equipment bay

8. Air-data converter

9. Forward warning antenna

10. Cockpit front bulkhead

11. Instrument panel shroud 12. Missile control electronics

13. Marconi-Elliot head-up-display unit

14. Starboard instruments console

15. Lightweight ejection seat

16. Pilot's safety harness

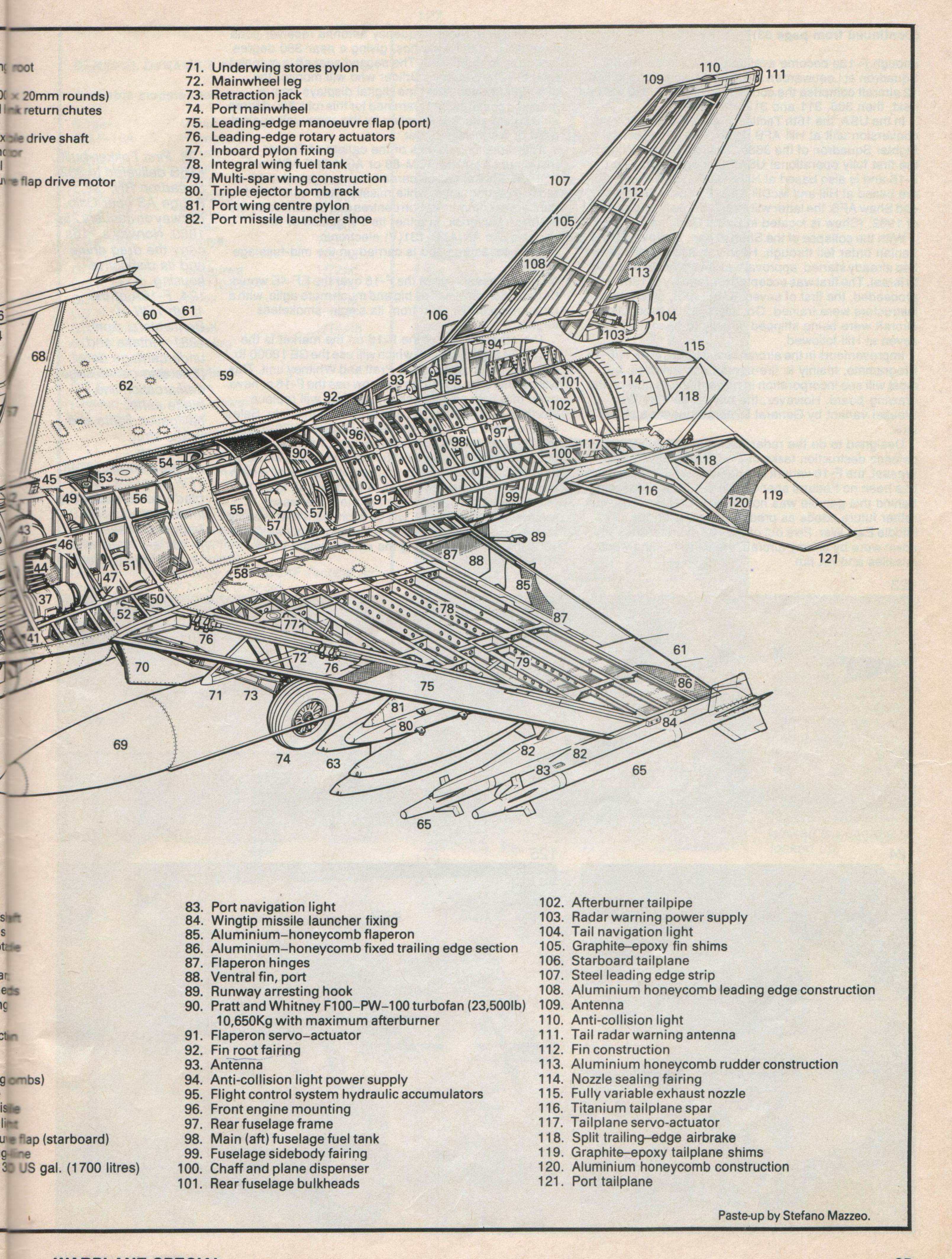
17. Headrest

18. Frameless bubble canopy

19. Canopy fairing

20. Port instrument console

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WARPLANE SPECIAL 85

(Continued from page 83)

enough F-16s become available to equip each. 322 Squadron at Leeuwarden are the first, although the first 12 aircraft comprise the conversion unit first. 323 will be next, then 306, 311 and 312 at Volkel.

In the USA, the 16th Tactical Fighter Squadron is the conversion unit at Hill AFB, Utah. The 34th Tactical Fighter Squadron of the 388th Tactical Fighter Wing is the first fully operational USAF unit equipped with the F-16 and is also based at Hill AFB. Seventy-five F-16s are based at Hill and McDill AFB, Florida, 108 at Nellis and Shaw AFB; the latter will see 72 F-16s by the middle of 1982. (Shaw is located in South Carolina).

With the collapse of the Shah in Iran, approval for the Iranian order fell through. However, since production had already started, approval was given for 75 to be sold to Israel. The first was accepted on January 1, 1980 and proceeded, the first of seven, to Hill AFB, where Israeli instructors were trained. On July 1, 1980 production aircraft were being shipped directly to Israel and the seven at Hill followed.

Improvements in the aircraft result from the AFTI/F-16 Programme, mainly in fire-control and avionics, but most will see incorporation in newer fighters now on the drawing-board. However, the private-venture Wild Weasel variant by General Dynamics bears a closer look.

Designed to do the radar-suppression/anti-aircraft defence destruction tasks of the USAF's EF-4E Wild Weasel, the F-16 variant is a gamble by GD, since there has been no Federal spending in this area. Reasoning behind this gamble was not present USAF needs, but rather future needs as predicted, based on the 1973 Middle East War. Five out of the 102 Israeli planes shot down were by enemy aircraft; the 97 remaining went to missiles and AA fire.

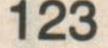
To this end, radar frequency antenna receiver pods were fitted to the wing-tips, giving a near-360 degree coverage to the F-16B. The second seat aft is manned by the ECM/Weapons Officer who will monitor the situation through real-time digital displays from a modified computer programmed for this role; 360 degree air warning attack is supplied by the same unit against SAM or AA missile threat.

Anti-radiation missiles of the calibre of Texas Instrument's HARM AGM-88 or AGM-78F ARM or AGM-45 Shrike, can be carried for use against radar or radar-directing units, while missile sites, concealed bunkers or communication centres can be tackled by the AGM-65 Maverick, in either its TV-guided or IIR variants. An AN/ALQ-131(V) electronic counter-measures pod is carried on the mid-fuselage station.

Largest advantage of the F-16 over the EF-4E would be detection size; half as big and much more agile, with a much reduced IR yield from its single, smokeless engine.

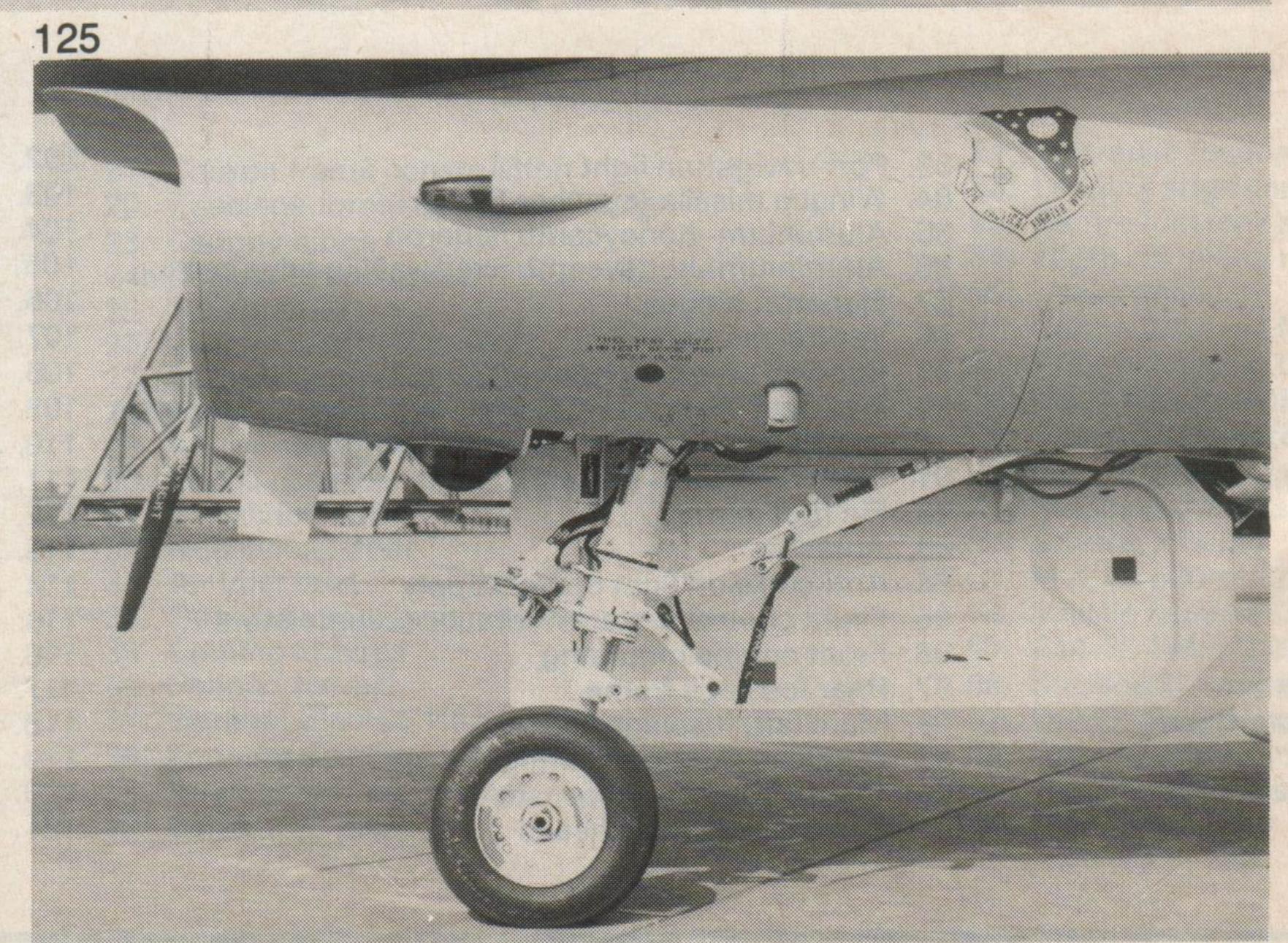
The other variant of the F-16 on the market is the F-16/J79 export variant, which will use the GE 18000 lb. J79-GE-17X in place of the Pratt and Whitney unit. This will be offered to countries that now use the F-16 or have need of a new air defence aricraft and will replace Northop F-5s, early F-4s and F-104s in this role. Sales are projected at the 500-unit level. Using the J79 engine, the fly-away cost will plummet a cool £1 million per unit over the cost of a regular F-16. Visual changes will be an extended fuselage fairing, increasing the overall length from 45.56 feet to 48.02 feet. A modified air inlet, to reduce airflow by 25 per cent to meet the lesser requirements of the J79, will be prominent too. Penalty for the big dollar saving will be an added empty weight of 1300 lbs., which will bring the empty weight up to 16165 lbs.

123. First Fokker-built F16B delivered to 332 Squadron RNF at Rygge AS near Oslo, Norway on January 25, 1980. Norway's F16s carry the drag chute and its distinctive housing. 124. F-16A of the 474th TFW at Bentwaters, April, 1981 - intake and undercarriage detail. Note also camouflage demarcation line, blade aerial, navigation lights and intake strut. 125. Nose undercarriage of 474th TFW machine. Note blade aerial under the intake lip and TFW badge. (All service F-16s are fitted with 'Aces 2' ejector seats.)









GENERAL DYNAMICS F-16 FIGHTING FALCON

Available models (non-flying)

Model	Manufacturer		Scale
GD F-16A	Hasegawa		
	(2 versions)		1/32nd
GD F-16A	Revell		1/32nd
GD F-16A	ESCI		1/48th
GD F-16A	Monogram		1/48th
GD F-16A	Otaki		1/48th
GD F-16A	Revell		1/48th
GD F-16A	Tamiya		1/48th
GD F-16A	Airfix		1/72nd
GD F-16A	Hasegawa		1/72nd
GD F-16A/B	"MATCHBOX"		1/72nd
GD F-16A	Revell		1/72nd
GD F-16A	LS		1/144th
GD F-16A	Revell	*	1/144th
GD F-16A	Lindberg		?

Available models (flying)

GD F-16A	Byron	
(Ducted Fan)	(R/C-power)	47 in. span
GD F-16A	Pilot	
	(R/C-power)	36 in. span

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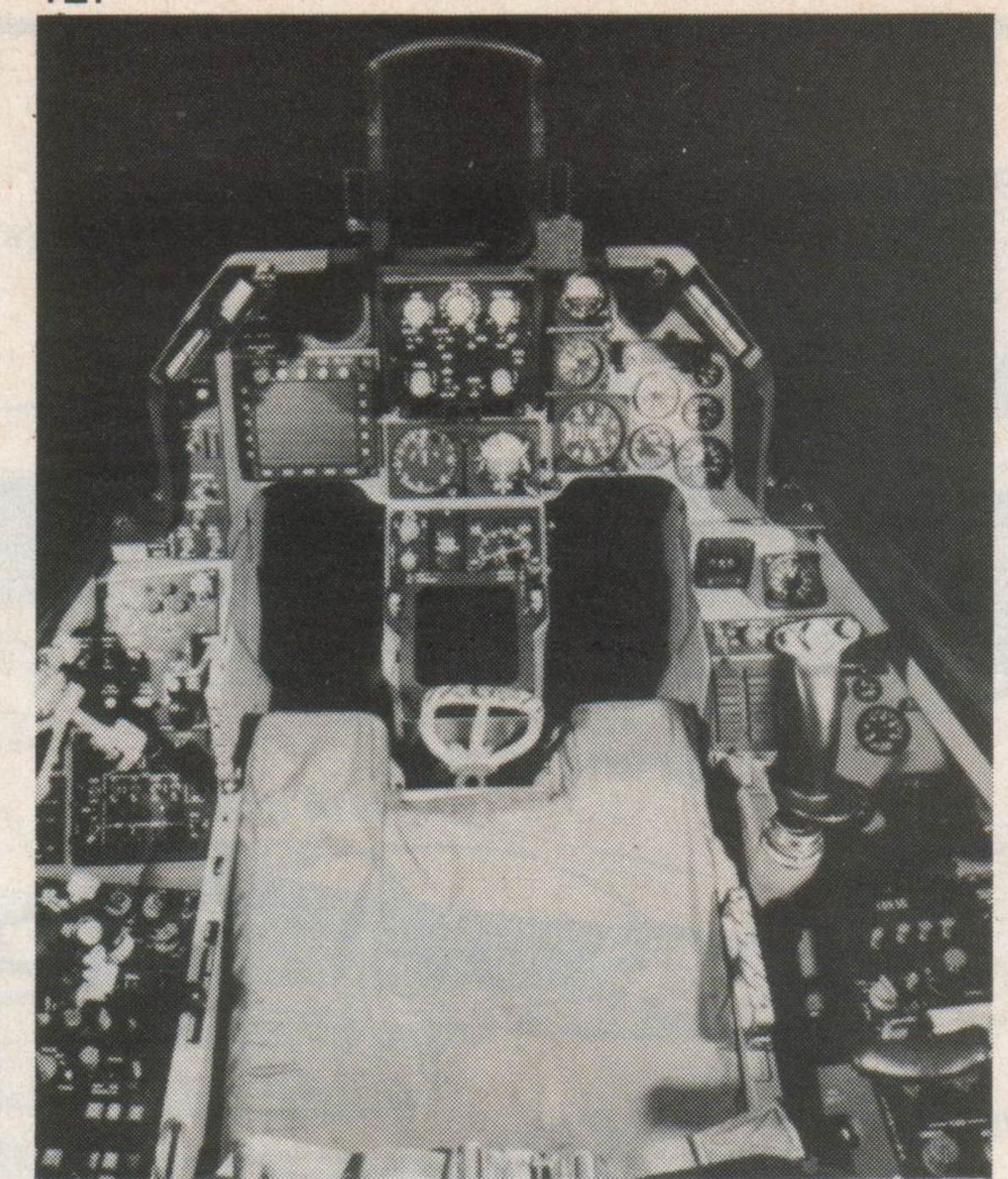
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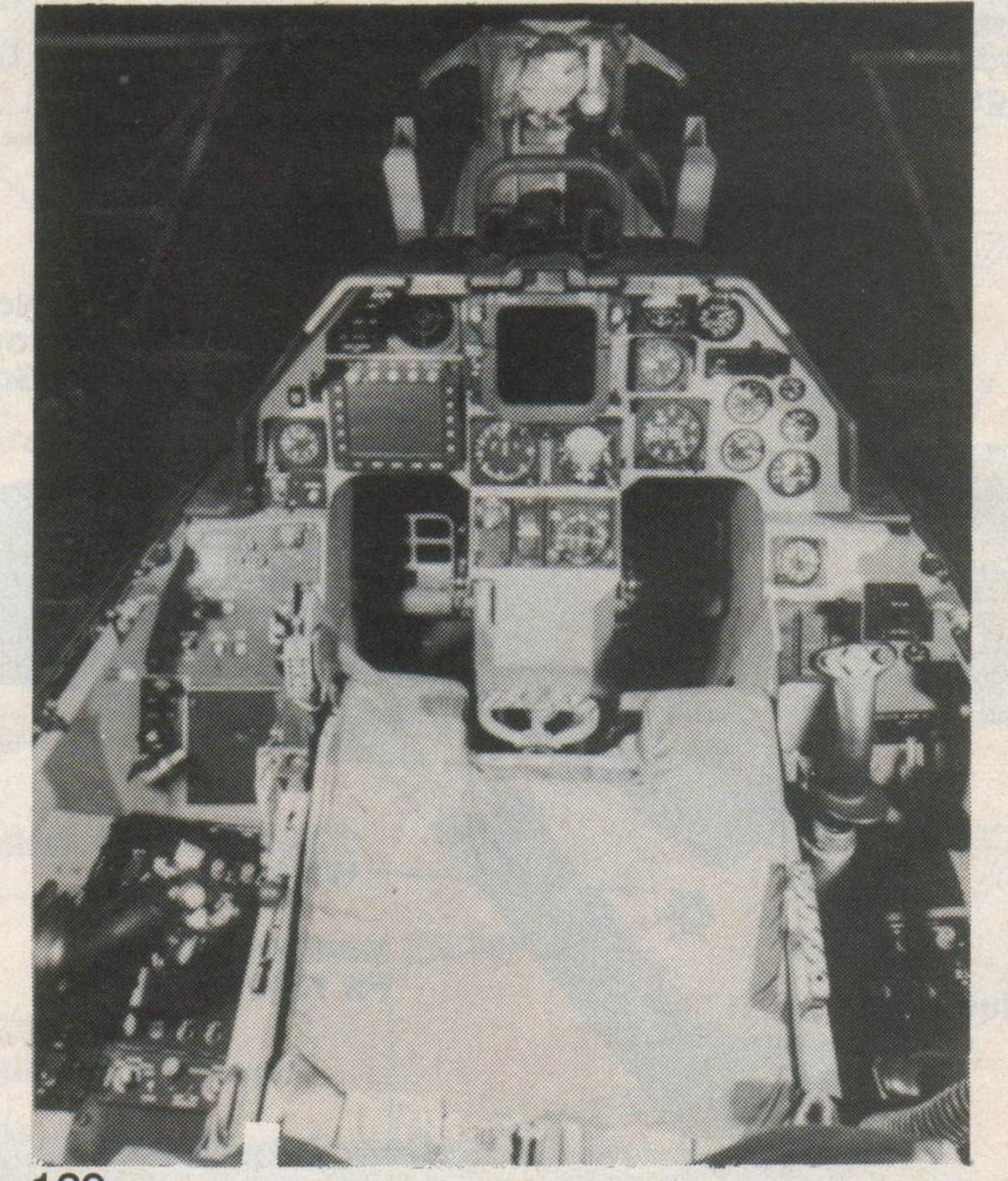
Born in Battle, No. 18.

Flaps, No. 189.

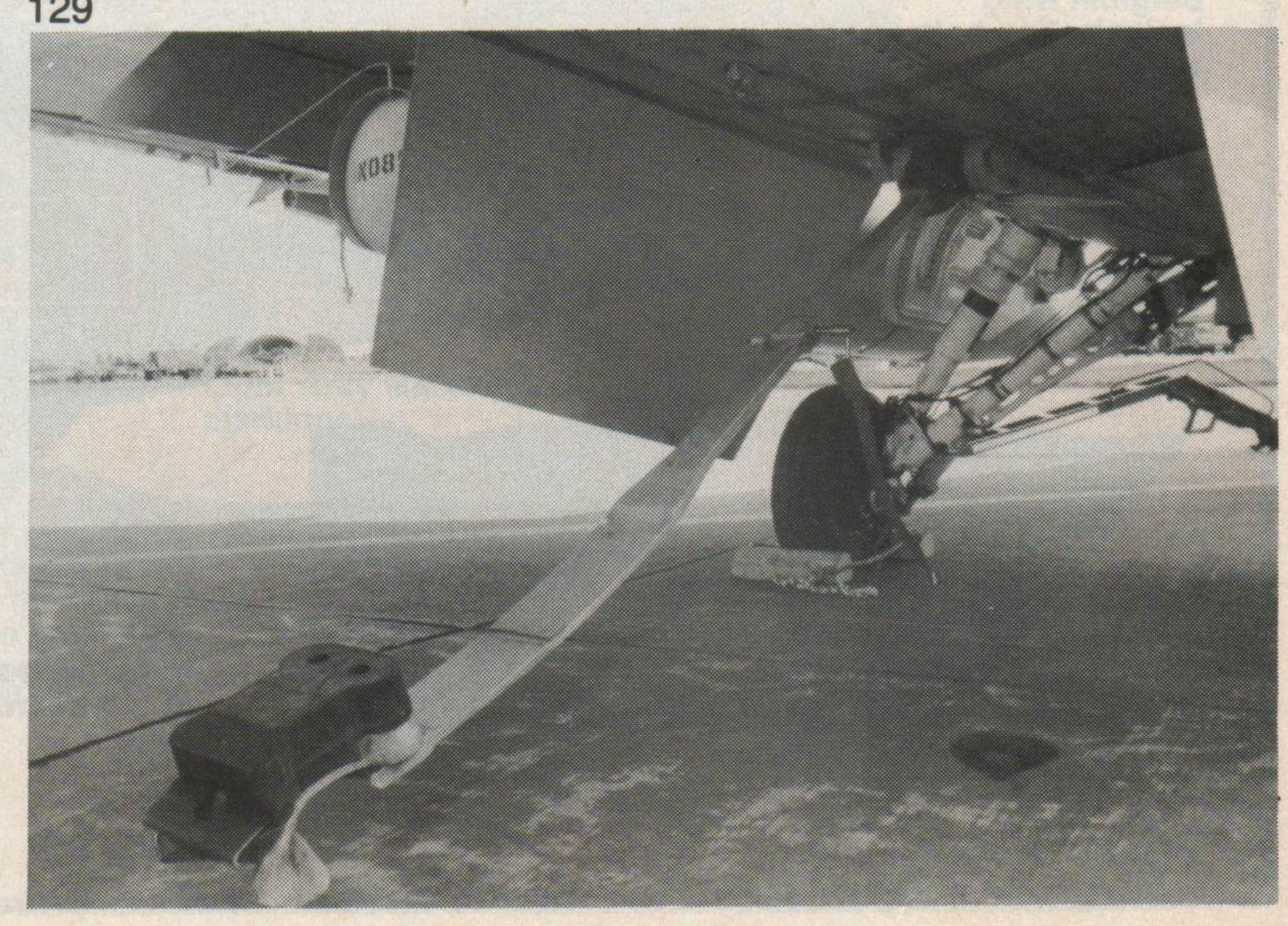




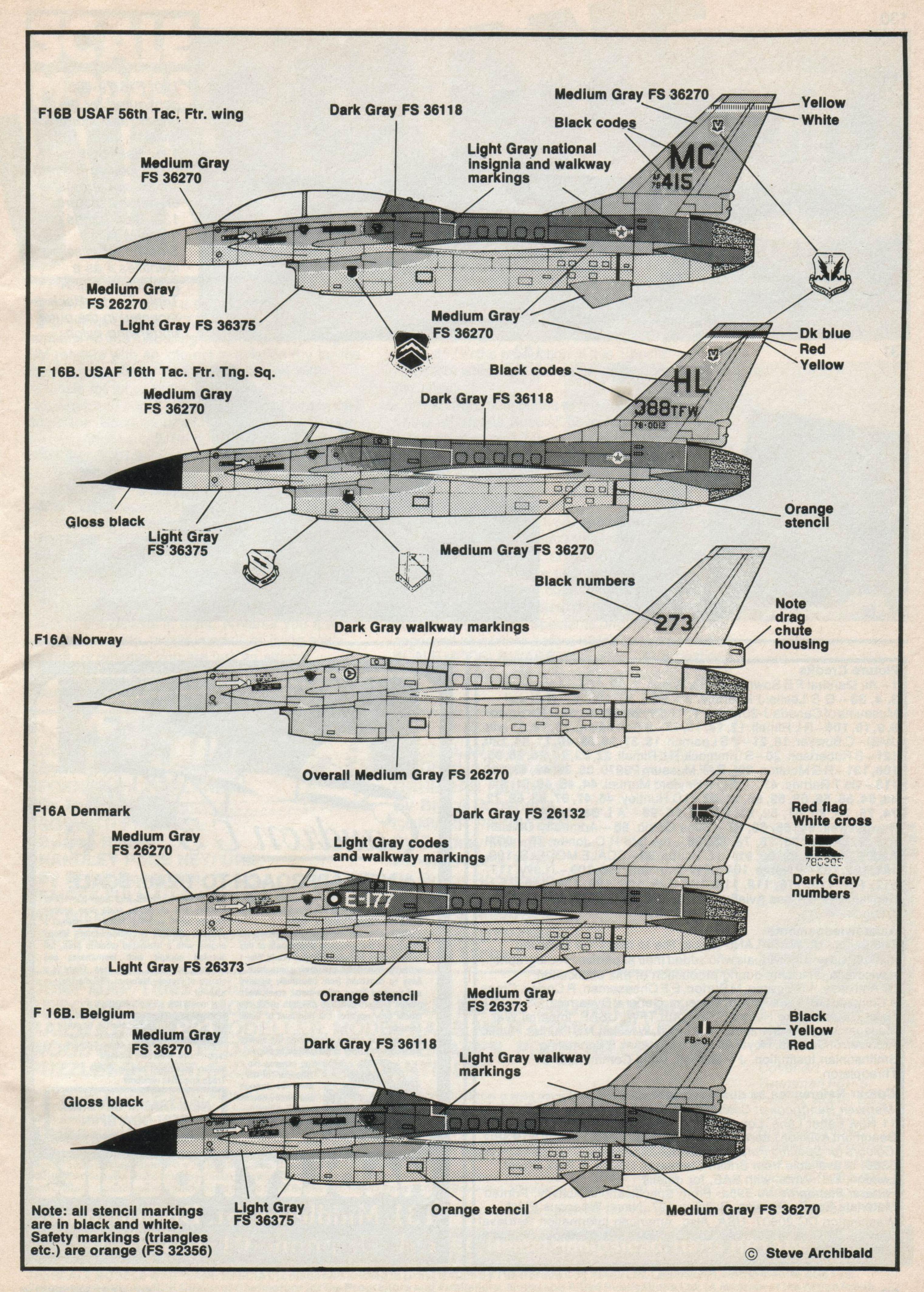
128



126. Starboard main undercarriage unit note landing lamp between struts. 127. Cockpit layout applicable to F16A and forward station of the F16B two seater. 128. F-16B aft seat and instrument display. 129. The arresting hook shown here in the down position. Normally when the aircraft is parked it is locked up.









130. F16 79-405 configured for the ground attack practice mission, April, 1981. 131. Rear port tail detail looking forward - note slot at root, an oft-missed feature. 132. Blue bands on this AIM-9L Sidewinder missile identifies it as a practice round. A Triple Ejector Rack is mounted in the outer underwing pylon.





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Colour References as quoted in text

Metnuen Handbook of Colour' published by Methuen and Co. Ltd., 11 New Fetter Lane, London, EC4. New edition just reprinted. Try Beaumont Aviation Literature, 656 Holloway Road, London N19 3PD. 'Colours for Specific Purposes'. British Standards 371C: 1964 (ADC 5366) is available from British Standards House, 2 Park Street, London, W1. Write, with SAE, for details.

Federal Standards No 595a. From Specifications Activity, Printed Materials Supply Division, Building 197, Naval Weapons Plant, Washington DC 20407, USA. Also, American Information Retrieval Service, 22 Roland Gardens, London, SW7 3PL. (Enclose SAE with enquiry letter.)



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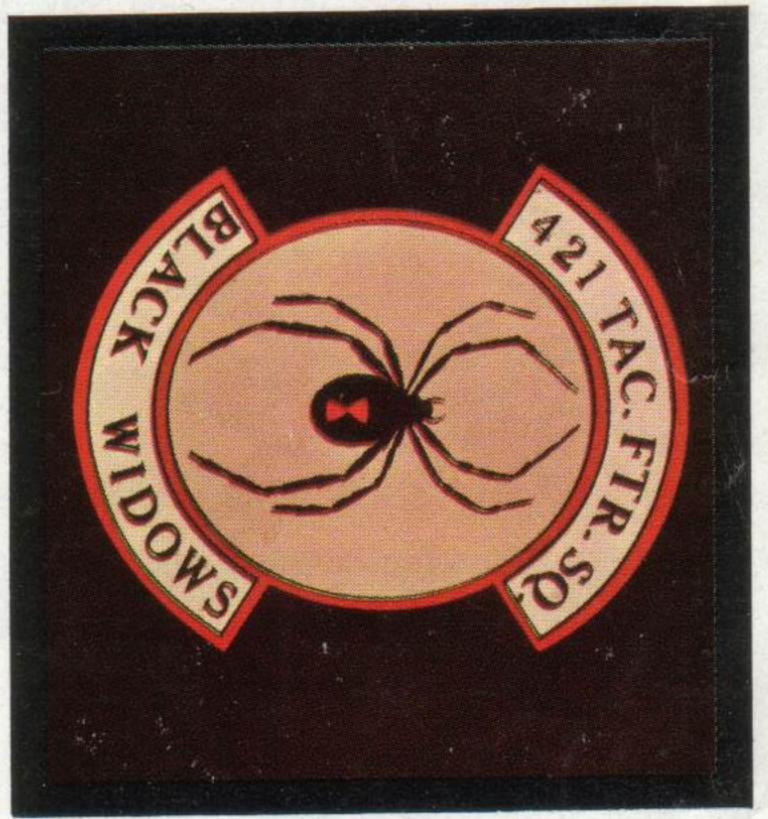
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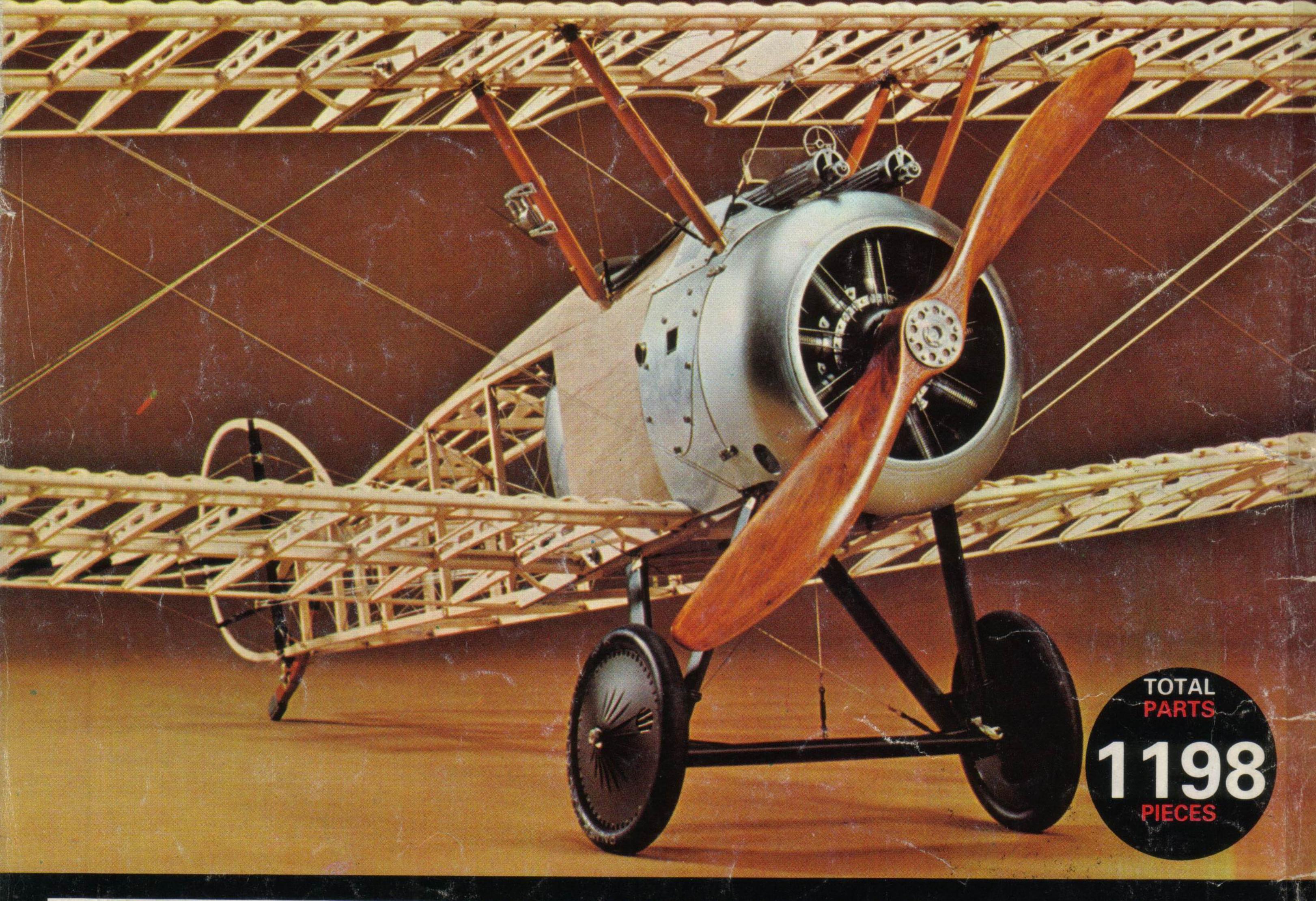


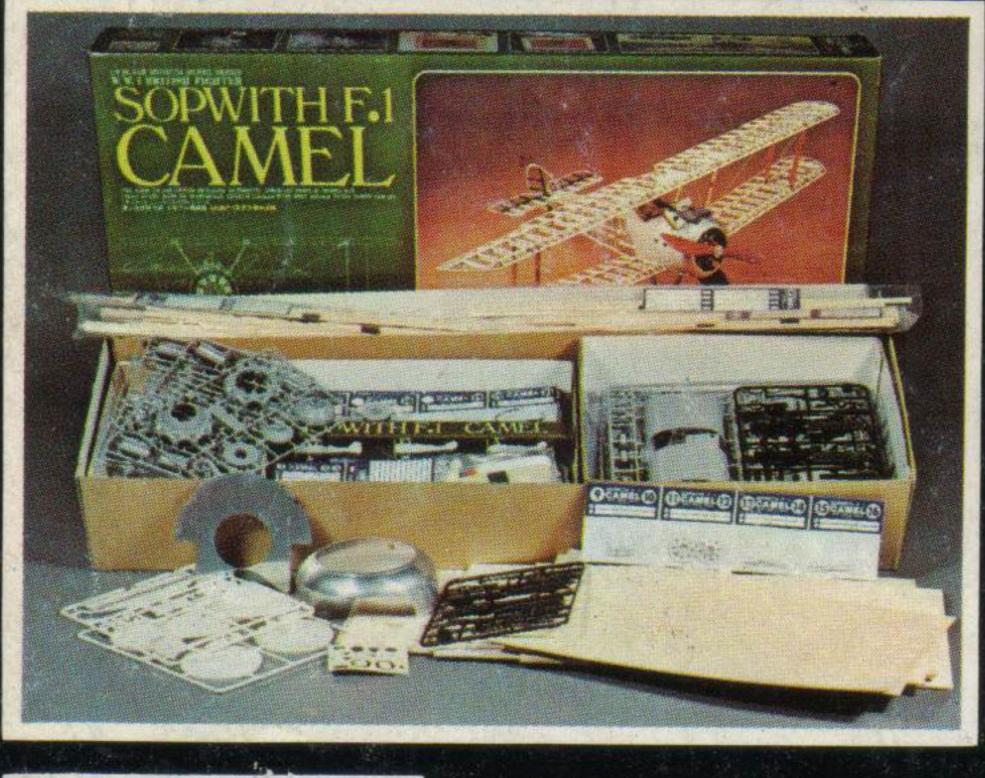


US unit emblems – from left to right: 388 TFW, 4 TFS, 34 TFS and 421 TFS. Below, 78-0010, one of the earliest F16s supplied to the 388 TFW, seen at Hill AFB, June 1979. Photos: USAF official via T Lynch.

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