NAVAIR 01-40AVF-1

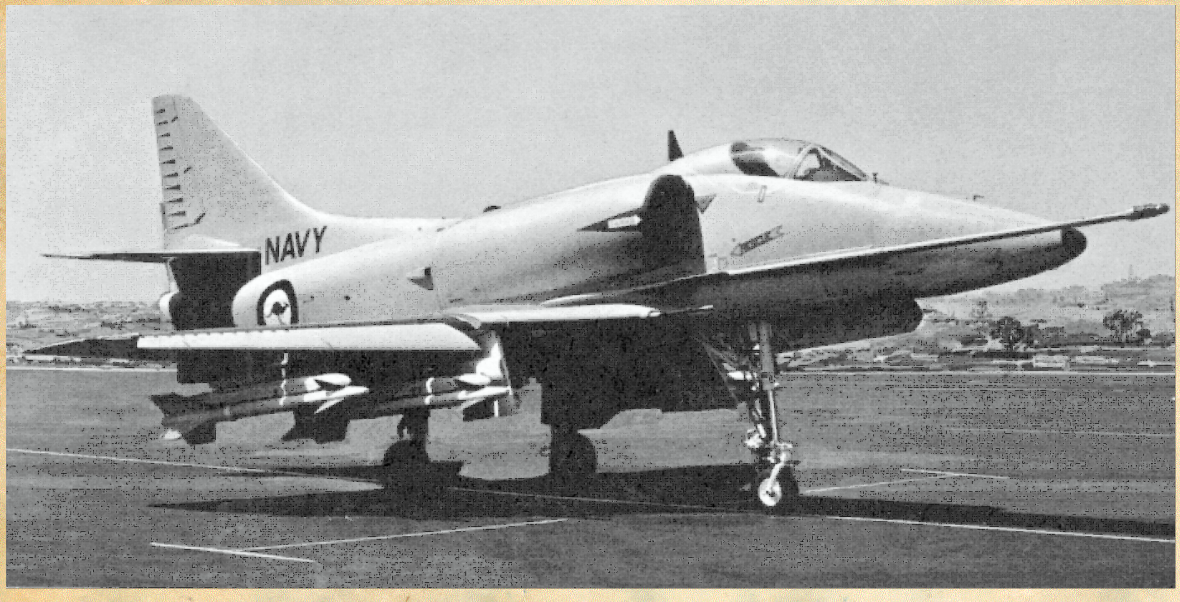
Supplement to NATOPS Flight Manual

NAVY MODEL

A-4E/F International Model A-4G AIRCRAFT

THIS PUBLICATION SUPPLEMENTS NAVAIR 01-40AVC-1
DATED 15 NOVEMBER 1968, CHANGED 15 NOVEMBER 1970,
AND SUPERSEDES NAVAIR 01-40AVF-1 DATED 1 MARCH 1968

THIS PUBLICATION IS INCOMPLETE WITHOUT
CONFIDENTIAL SUPPLEMENT NAVAIR 01-40AVF-1A, OR
A-4/TA-4 TACTICAL MANUAL NAVAIR 01-40AV-1T



ISSUED BY AUTHORITY OF THE CHIEF OF NAVAL OPERATIONS
AND UNDER THE DIRECTION OF THE COMMANDER,
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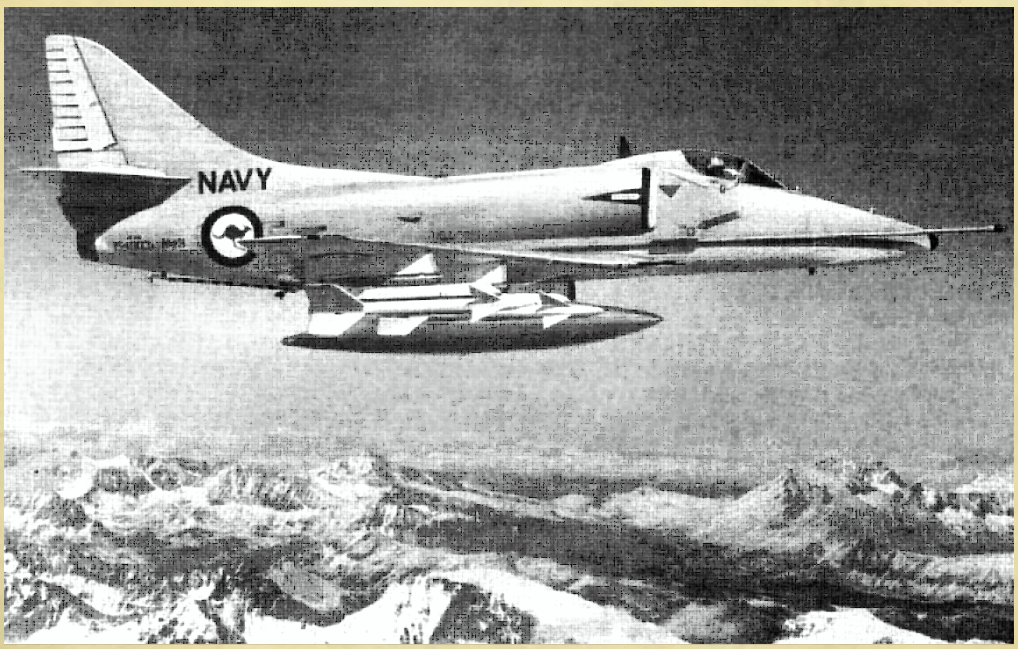
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NAVAIR 01-40AVC-1

NATOPS
Flight Manual
NAVY MODEL
A-4E/F
AIRCRAFT

THIS PUBLICATION CANCELS AND SUPERSEDES NAVAIR 01-40AVC-1 DATED 1 FEBRUARY 1964, CHANGED 1 FEBRUARY 1968 AND NAVAIR 01-40AVE-1 DATED 15 FEBRUARY 1967, CHANGED 1 FEBRUARY 1968.

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Supplement to NATOPS Flight Manual *NAVY MODEL* A-4E/F International Model A-4G AIRCRAFT

THIS PUBLICATION SUPPLEMENTS NAVAIR 01-40AVC-1
DATED 15 NOVEMBER 1968, CHANGED 15 NOVEMBER 1970,
AND SUPERSEDES NAVAIR 01-40AVF-1 DATED 1 MARCH 1968

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15 June 1971

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LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the current change is indicated by a vertical line in the outer margins of the page.

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 49, **CONSISTING OF THE FOLLOWING:**

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*vi	15 July 1969				
vii Blank	15 June 1971				
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1-1	15 June 1971				
1-2 Blank	15 June 1971				
1-3	15 June 1971				
*1-4	15 November 1968				
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*Asterisk indicates back-up pages added from basic NATOPS Flight Manual NAVAIR 01-40AVC-1



Figure 1-1. Model A-4G Aircraft

PART 1
GENERAL DESCRIPTION

DESCRIPTION

The Navy Model A-4G Skyhawk (figure 1-1) is a single-place monoplane with a modified delta-planform wing manufactured by the Douglas Aircraft Company, Aircraft Division, Long Beach, California. The aircraft is powered by a P&WA J52-P-8A gas turbine engine producing a sea level static thrust rating of 9300 pounds. Designed as a high performance, lightweight attack aircraft, it mounts two 20mm guns internally, carries a variety of external stores, and is capable of operating from either a carrier or a shore base. The total operating weight of the aircraft is 11, 350 pounds which includes a 180-pound pilot, oil, trapped fuel and oil, liquid oxygen, centerline pylon, gun installation (less ammunition), AWW-1 fusing system, inboard and outboard wing pylons, and two empty 300-gallon external fuel tanks.

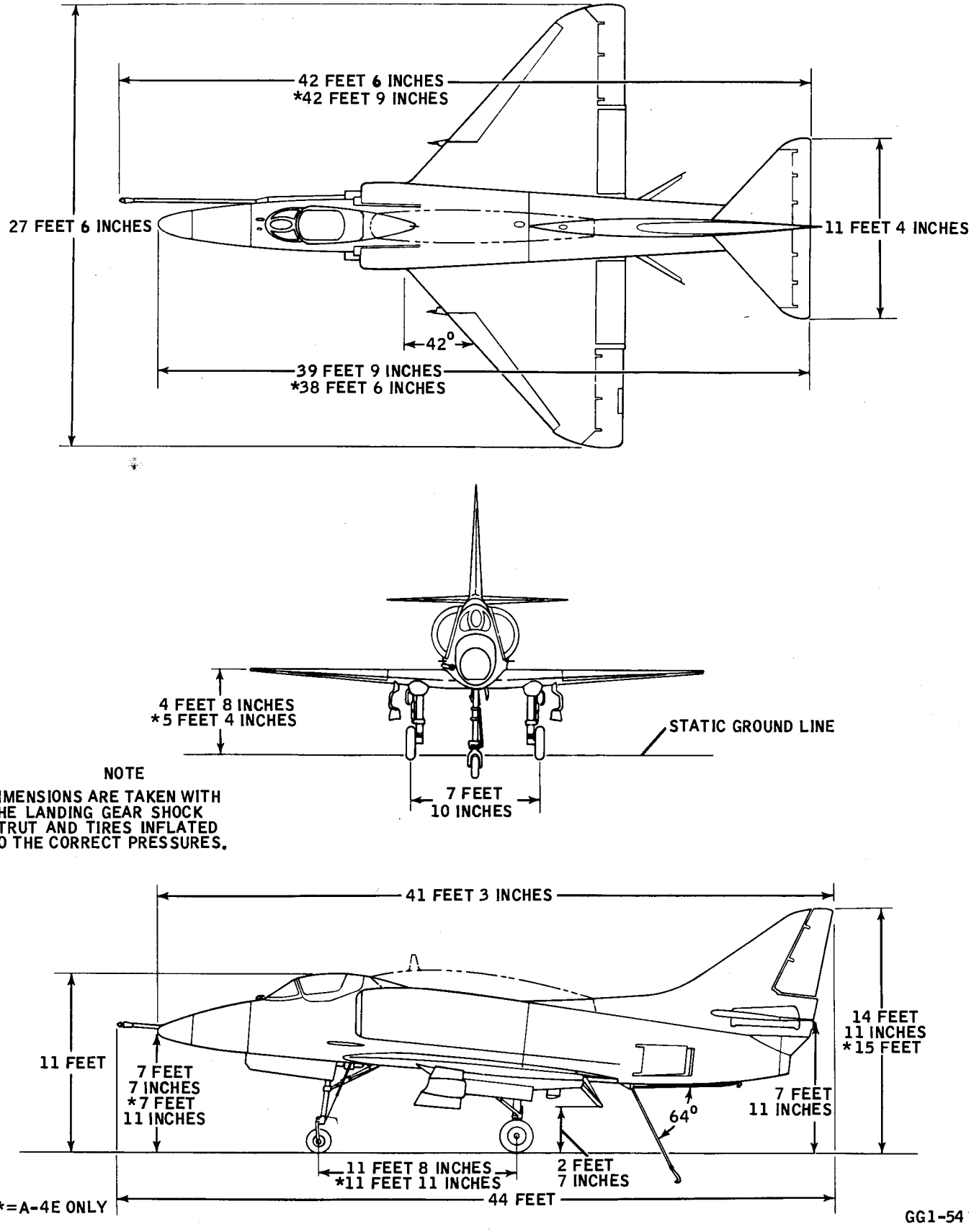


Figure 1-2. Principal Dimensions

Superintendent,
Aircraft Maintenance & Repair,
Sydney.
February, 1973.

Amendment List No.(RAN)5
to
AP(RAN)NA01-40AVC-1

INSTRUCTION SHEET

NATOPS

FLIGHT MANUAL

NAVY MODELS A-4E/F AIRCRAFT

INSERTION OF LEAVES

1. Remove and destroy existing List of Supplements and insert new List of Supplements to AL.5.

2. Insert RAN Supplement number 6 to face page 1-93 Sect.I Part 2.

3. Record incorporation of Amendmendment List in the AL Record Certificate and destroy this Instruction Sheet.

REF: (AS/720/73) 4803

ROYAL AUSTRALIAN NAVY

LIST OF SUPPLEMENTS

Sect/Page Affected	Supplement
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ROYAL AUSTRALIAN NAVY

SUPPLEMENT No. 6

TO

NA01-40AVC-1, SECTION 1, PART 2, PAGE 1-93

INTRODUCTION

1. This Supplement is promulgated to describe RAN Skyhawk banner towed target pilot operating procedures and flight limitations.

BRIEF DESCRIPTION OF EQUIPMENT

2. The standard 30' x 6' banner is used to provide a suitable air-to-air gunnery target for Skyhawk armament training. The banner is of polythene mesh, and is secured to a spreader bar, fitted with a counterweight on one end to keep the banner in a vertical position whilst airborne. The banner is towed from a specially-designed platform, secured in the same manner as a general store to the Aero 7A centreline rack-pylon. The banner may be electrically released from the platform, or the platform and two explosively jettisoned in an emergency, using the normal armament circuits and switches. The banner is towed behind the aircraft using a specially-manufactured, plastic-sheathed 1200 ft steel cable, and incorporates swivel fittings and a weak link shear pin. Three large nylon webs of 100ft length secure the cable to the banner spreader bar.

OPERATING PROCEDURES

Preflight

3. (a) Ensure towing platform has been fitted to aircraft, and armament pre-flight procedures have been signed for in the TA-100.

(b) During pre-flight exterior inspection, check security of platform on centreline rack, and platform members and J-hook release unit for obvious damage.

(c) Calculate takeoff distance as described in para.11 of this Supplement.

Pre-taxi

4. (a) Check all armament switches are safe and off, and select station "3" or or "ALL" on emergency select switch as appropriate for takeoff.

(b) Check centreline rack safety pin removed with other pins.

Pre-takeoff

5. (a) After banner handling party have streamed banner and towline, and ATC entry clearance received, taxi down centreline with nosewheel slightly to one side of towline to minimise wear on same. Aircraft will be marshalled over towline end. Keep brakes on and engine at idle while towline is connected to platform. Tension-up as directed by marshaller.

YES! — the RAN put the holes on the wrong side of these additional pages

Takeoff

6. (a) Takeoff should be made with takeoff flap set, and using takeoff speed for actual gross weight as listed in NATOPS takeoff charts.

(b) Use standard run-up and brake release procedures; correct any initial nose swing with nosewheel steering and/or differential braking; expect a slightly slower acceleration than with clean aircraft.

(c) Just before calculated takeoff speed, move stick back, and rotate aircraft to lift-off on speed. Immediately adopt a steep climbing attitude (approximately 12-13 deg. nose-up). When comfortably airborne, retract wheels and flaps in normal manner.

NOTE: Takeoff planning data is contained in para 11.

In-flight

7. (a) The aircraft must be operated within the limitations laid down in para 10.

(b) Flight planning and fuel requirements can be calculated using Natops Section XI performance data charts and data contained in para 12 of this Supplement.

(c) Aircraft handling qualities during banner towing operations are unchanged with respect to clean aircraft behaviour, provided the prescribed banner towing limitations are not exceeded. Apparent directional stability is increased. Mild longitudinal vibrations may occur during flight, this phenomena being more apparent during higher speed operations or flight through turbulence. Longitudinal trim data is contained in para 13 of this Supplement.

Normal release operations

8. (a) Obtain drop point and direction from ATC on return from exercise; plan a descending straight in approach, to be at 350 ft AGL and 160 KIAS at drop point. Release will normally be called by Airwatch, and should normally be made in the clean aircraft configuration.

(b) Prior to release, place armament switches in following configuration:-

(1) Function select switch to BOMBS & GM ARM.
(2) Station 3 switch to READY.
(3) Armament master switch to ON.

(c) For release, depress bomb release button.

Emergency release operations

9. (a) If banner fails to release (as indicated by longitudinal vibration and call by Airwatch), plan flight pattern for second release attempt, recycle armament switches as listed in para 8(b), recheck correct switch positions, and attempt further release.

(b) After second release attempt, position aircraft for further attempt and place switches listed in para 8(b) to safe. Place Emergency Selector Switch to No. "3" position.

9. (c) At release point, pull Emergency stores Release Handle. Banner and platform complete should be explosively jettisoned.

(d) If a second attempt at emergency jettison procedure is unsuccessful, fly the aircraft over a clear area out to sea, and increase speed to 450-500 KIAS. Release should be felt as a marked longitudinal vibration when the weak link shear pin fails within this airspeed range.

WARNING: (1) Release of the banner at airfields should only be carried out over ATC-approved and visually clear areas. Releases must be made in straight and level flight with allowance made for cross-winds during period of banner drop.

(2) Transits to and from the coast should be made at a maximum airspeed of 250 KIAS, and over uninhabited areas.

NOTE: Normal release cannot be made after failure of main generator, or during emergency generator operation.

Limitations

10. (a) Maximum speed - 280 KIAS/0.6 IMN

(b) Maximum speed (over land) - 250 KIAS/0.6 IMN

(c) Recommended maximum speed during firing practice - 250 KIAS

(d) Maximum speed for full power climb - 250 KIAS

(e) Maximum speed for speedbrake operations - 250 KIAS

(f) Maximum load factors - +2g/0g

(g) Maximum bank angles (flap up):-
(1) 0 to 10 units AOA - 60°
(2) 10 to 15 units AOA - 45°
(3) 15 to 20 units AOA - 30°

(h) Maximum bank angle (flap down) - 30°

(i) Maximum AOA (wings level) - 20 UNITS

(j) Turn reversals - may be made within roll limits for a given configuration using moderate roll rates.

(k) Maximum takeoff crosswind - 10 kt

(l) Maximum sideslip - 5 deg

(m) Hook use - not to be lowered whilst airborne, except in emergencies.

FLIGHT PLANNING DATA

Takeoff

11. (a) Using Section XI Chart 11-10 (A-4G) or 11-8 (TA-4G), calculate takeoff airspeed using actual aircraft gross weight.

11. (b) For aircraft ground roll distance, use given temperature, pressure altitude, headwind and runway gradient figures, but add 1850 lb to actual gross weight for given gross weight.

(c) To aircraft ground roll distance, add 1940 ft (to allow for streamed banner and additional banner ground roll) to obtain total required runway distance to banner liftoff.

NOTE: This assumes banner is streamed at edge of runway downwind threshold.

WARNING: (1) These figures refer to dry runway conditions. Extra drag caused by wet banner and water on runway would increase takeoff distance.

(2) It must be borne in mind that the last 850 ft of runway will be unavailable due to fouling of banner on upwind rigged arresting gear, at NAS Nowra.

Climb, Cruise and Descent

12. For all airborne flight planning data, add a drag index of 160 for banner and associated equipment, to the normal external drag index of the tow aircraft, and utilize performance data charts in Section XI of Natops.

Centre of Gravity

13. (a) Banner platform (39 lb) is fitted at an arm of 228 ins. giving a moment of 8.892 lb in/1000 (i.e. approximate C.G. change of 0.1% MAC forward).

(b) Apparent C.G. change trim effect due to offset banner drag line whilst airborne is as follows:-

@ 160 KIAS - 1 deg. extra noseup trim required.
@ 250 KIAS - ½ deg. extra noseup trim required.

Vertical drop of banner

14. @ 160 KIAS - 120 ft.
@ 250 KIAS - 80 ft.

REFERENCE: AHAFTU FLIGHT TEST REPORT F6/72

S.A.M.R.
SYDNEY.
February, 1973.

SURPLUS

1 EVT

724

NAVAIR 01-40AVF-1

Supplement to NATOPS Flight Manual

NAVY MODEL

A-4E/F International Model A-4G AIRCRAFT

THIS PUBLICATION SUPPLEMENTS NAVAIR 01-40AVC-1 DATED 15 NOVEMBER 1968, CHANGED 15 NOVEMBER 1970, AND SUPERSEDES NAVAIR 01-40AVF-1 DATED 1 MARCH 1968

THIS PUBLICATION IS INCOMPLETE WITHOUT CONFIDENTIAL SUPPLEMENT NAVAIR 01-40AVF-1A, OR A-4/TA-4 TACTICAL MANUAL NAVAIR 01-40AV-1T

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AL(RAN)2, Nov 69

AP(RAN)MA01-40AVC-1
15 Nov 68 Changed
15 August 1970

Royal Australian Navy

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Section 1, Pt. 4 Page 1-133 Fig. 1-57 Revised limit markings for oil pressure gauge.	2
Section 1, Pt.4, Page 1-131 Maximum permissable centre of gravity range for the clean aircraft	3
Section IV, Pt.2, Page 4-22 Dump Warning Light, Inflight Refuelling Control Console	4

AMENDMENT RECORD SHEET

To record the incorporation of an Amendment List in this publication, sign against the appropriate AL(RAN) No. and insert the date.

AL(RAN) No.	AMENDED BY	DATE	AL(RAN) No.	Amended By	Date
1			28		
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3			30		
4			31		
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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. -20350

1 March 1968

LETTER OF PROMULGATION

1. The Naval Air Training and Operating Procedures Standardization Program (NATOPS) is a positive approach towards improving combat readiness and achieving a substantial reduction in the aircraft accident rate. Standardization, based on professional knowledge and experience, provides the basis for development of an efficient and sound operational procedure. The standardization program is not planned to stifle individual initiative but rather, to aid the Commanding Officer in increasing his unit's combat potential without reducing his command prestige or responsibility.

2. This manual standardizes ground and flight procedures but does not include tactical doctrine. Compliance with the stipulated manual procedure is mandatory except as authorized herein. In order to remain effective, NATOPS must be dynamic and stimulate rather than suppress individual thinking. Since aviation is a continuing progressive profession, it is both desirable and necessary that new ideas and new techniques be expeditiously evaluated and incorporated if proven to be sound. To this end Type/Fleet/Air Group/Air Wing/Squadron Commanders and subordinates are obligated, authorized and directed to modify procedures contained herein, in accordance with OPNAV Instruction 3510.9 series and applicable directives, for the purpose of assessing new ideas, in a practical way, prior to initiating recommendations for permanent changes. This manual is prepared and kept current by the users in order to achieve maximum readiness and safety in the most efficient and economical manner. Should conflict exist between the training and operating procedures found in this manual and those found in other publications, this manual will govern.

3. Checklists and other pertinent extracts from this publication necessary to normal operations and training should be made and may be carried in Naval Aircraft for use therein. It is forbidden to make copies of this entire publication or major portions thereof without specific authority of the Chief of Naval Operations.

Thomas F. Connolly

THOMAS F. CONNOLLY
Vice Admiral, USN
Deputy Chief of Naval Operations (Air)

INTERIM CHANGE SUMMARY

The following Interim Changes have been canceled or previously incorporated in this manual:

INTERIM CHANGE NUMBER(S)	REMARKS/PURPOSE

The following Interim Changes have been incorporated in this Change/Revision:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE

Interim Changes Outstanding - To be maintained by the custodian of this manual:

INTERIM CHANGE NUMBER	ORIGINATOR/DATE (or DATE/TIME GROUP)	PAGES AFFECTED	REMARKS/PURPOSE

AIRCRAFT CHANGE SUMMARY

The A-4 aircraft have been modified by many field changes which affect operation of the aircraft and equipment. Throughout this manual, field changes are referred to by Aircraft Service Change (ASC) or Airframe Change (AFC) number, one or the other of which is assigned to the required modification. Following is a list of ASC'S/AFC'S that apply to this manual. The change is briefly described and, where applicable, information is given for visual determination of incorporation. Since all ASC'S/AFC'S referred to on this page may not be incorporated into a particular aircraft, the pilot must check with the maintenance department to determine which changes have been installed in the aircraft.

ASC or AFC No.	Description	Visual Identification

AFC No.	Description	Visual Identification
327	Eight-Day Clock	Inst Panel
331	Improved Air Bleed System for Air Turbine Transfer Pump	None
333-1	LAWS, Installation	Wiring Mod.
343-I, -II	Communications Equipment	RH Console
344	Emergency Bomb Release Selector Switch	Armament Panel
345	Warning Light Press-to-Test Circuit	Inst Panel
353	Gunsight Mount Rigidity and Light Dimming Circuit	Inst Panel
356	IFF MODE 4 Failure Light	RH Glareshield
359	Escapac I Zero-Zero Escape System	Cockpit
360-1	Upper Avionics Compartment	LH Glareshield
376	Full Shrike System Early A-4E	Armament Panel
382	Exhaust Smoke Abatement	LH Wedge Console
386	Shrike Improved Display System (SIDS)	Armament Panel
387	Radar Control Console	LH Console
394, -I, -II, -III, -VI	Supplement ECM	Wiring/Control Mod.
395	Improved Walleye Display	Inst Panel
400	J52-P-8A Engine Installation	Cockpit Placard
418-II	AN/ALE Chaff Dispenser	LH Glareshield
423	Disable LAWS Unreliability Tone with APR-27 Installed	Wiring Mod.
428	Instrument Panel Lighting Control	Wiring/Control Mod.
429	Nosewheel Steering	Throttle Quad.
430	Cockpit Landing Checklist Panel	LH Inst Panel
442	Wing Lift Spoilers	Throttle Quad.
451	Gunsight, Adjustment Knob Assembly	Center Glareshield
451-I	Interchange Angle-of-Attack Indexer and Accelerometer	Instrument Panel
456	Angle-of-Attack Indexer	Above Glareshield
464	AXC-666 Air Data Computer Wiring	Wiring Mod.
473	AN/APN-154(V) Radar Beacon	LH Console

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FOREWORD

SCOPE

The NATOPS Flight Manual is issued by the authority of the Chief of Naval Operations and under the direction of Commander, Naval Air Systems Command in conjunction with the Naval Air Training and Operating Procedures Standardization (NATOPS) Program. This manual contains information on all aircraft systems, performance data, and operating procedures required for safe and effective operations. However, it is not a substitute for sound judgement. Compound emergencies, available facilities, adverse weather or terrain, or considerations affecting the lives and property of others may require modification of the procedures contained herein. Read this manual from cover to cover. It's your responsibility to have a complete knowledge of its contents.

APPLICABLE PUBLICATIONS

The following applicable publications complement this manual:

NAVAIR 01-40AVC-1 (basic A-4E/F NATOPS flight manual)

NAVAIR 01-40AVF-1B (checklist)

NAVAIR 01-40AV-1T (tactical manual)

NAVAIR 01-40AV-1T(A) (supplement)

NAVAIR 01-40AV-1TB (tactical pocket guide)

NAVAIR 01-40AVC-1-6 (functional checklist)

HOW TO GET COPIES

Automatic Distribution

To receive future changes and revisions to this manual automatically, a unit must be established on the automatic distribution list maintained by the Naval Air Technical Services Facility (NATSF). To become established on the list or to change distribution requirements, a unit must submit NAVWEPS Form 5605/2 to NATSF, 700 Robbins Ave., Philadelphia, Pa. 19111, listing this manual and all other NAVAIR publications required. For additional instructions refer to BUWEPSINST 5605.4 series and NAVSUP Publication 2002.

Additional Copies

Additional copies of this manual and changes thereto may be procured by submitting Form DD 1348 to NPFC Philadelphia in accordance with NAVSUP Publication 2002, Section VIII, Part C.

UPDATING THE MANUAL

To ensure that the manual contains the latest procedures and information, NATOPS review conferences are held in accordance with OPNAVINST 3510.11 series.

CHANGE RECOMMENDATIONS

Recommended changes to this manual or other NATOPS publications may be submitted by anyone in accordance with OPNAVINST 3510.9 series.

Routine change recommendations are submitted directly to the Model Manager on OPNAV Form 3500-22 shown on the next page. The address of the Model Manager of this aircraft is:

Commanding Officer
VA-127
NAS Lemoore, California 93245
Attn: NATOPS Evaluator

Change recommendations of an URGENT nature (safety of flight, etc.,) should be submitted directly to the NATOPS Advisory Group Member in the chain of command by priority message.

YOUR RESPONSIBILITY

NATOPS Flight Manuals are kept current through an active manual change program. Any corrections,

additions, or constructive suggestions for improvement of its content should be submitted by routine or urgent change recommendation, as appropriate, at once.

NATOPS FLIGHT MANUAL INTERIM CHANGES

Flight Manual Interim Changes are changes or corrections to the NATOPS Flight Manuals promulgated by CNO or NAVAIRSYSCOM. Interim Changes are issued either as printed pages, or as a naval message. The Interim Change Summary page is provided as a record of all interim changes. Upon receipt of a change or revision, the custodian of the manual should check the updated Interim Change Summary to ascertain that all outstanding interim changes have been either incorporated or canceled; those not incorporated shall be recorded as outstanding in the section provided.

CHANGE SYMBOLS

NEW NEW

Revised text is indicated by a black vertical line in either margin of the page, adjacent to the affected text, like the one printed next to this paragraph. The change symbol identifies the addition of either new information, a changed procedure, the correction of an error, or a rephrasing of the previous material.

WARNINGS, CAUTIONS, AND NOTES

The following definitions apply to "WARNINGS," "CAUTIONS," and "NOTES" found through the manual.

WARNING

An operating procedure, practice, or condition, etc., which may result in injury or death, if not carefully observed or followed.

CAUTION

An operating procedure, practice, or condition, etc., which, if not strictly observed, may damage equipment.

NOTE

An operating procedure, practice, or condition, etc., which is essential to emphasize.

WORDING

The concept of word usage and intended meaning which has been adhered to in preparing this Manual is as follows:

"Shall" has been used only when application of a procedure is mandatory.

"Should" has been used only when application of a procedure is recommended.

"May" and "need not" have been used only when application of a procedure is optional.

"Will" has been used only to indicate futurity, never to indicate any degree of requirement for application of a procedure.

NATOPS/TACTICAL CHANGE RECOMMENDATION
OPNAV FORM 3500/22 (5-69) 0107-722-2002 DATE

TO BE FILLED IN BY ORIGINATOR AND FORWARDED TO MODEL MANAGER

FROM (originator)	Unit
TO (Model Manager)	Unit

Complete Name of Manual/Checklist	Revision Date	Change Date	Section/Chapter	Page	Paragraph

Recommendation (be specific)

Justification

SAMPLE

☐ CHECK IF CONTINUED ON BACK

Signature	Rank	Title

Address of Unit or Command

TO BE FILLED IN BY MODEL MANAGER *(Return to Originator)*

FROM	DATE

TO

REFERENCE
(a) Your Change Recommendation Dated _____

☐ Your change recommendation dated _____ is acknowledged. It will be held for action of the review conference planned for _____ to be held at _____

☐ Your change recommendation is reclassified URGENT and forwarded for approval to _____ by my DTG _____

/S/ _____ MODEL MANAGER. | _____ AIRCRAFT

ROYAL AUSTRALIAN NAVY

SUPPLEMENT No. 7

TO

AP(RAN)NA01-40AVC-1 SEC.1 PT.2

MINIPAN RECONNAISSANCE CAMERA

CAMERA DESCRIPTION

1. The Perkin Elmer Model 2-18 Minipan aerial reconnaissance camera is a compact, lightweight, 35 mm panoramic camera producing four frames of 6.12in. length each second. It can be used in the Skyhawk installation in either fore and aft (longitudinal) or spanwise (lateral) modes. High shutter speeds are made possible by use of continuously moving film with a rotating inclined mirror and lens system. The scanning slit located near the film plane is coupled to the rotating mirror and moves across the film plane in the opposite direction to film motion. The electrical drive motor is coupled mechanically to a capstan assembly and take-up assembly by mylar belts. The capstan assembly is coupled to the scanning assembly in the same manner; this method of transmission compensates for variations in speed due to slippage such that the photography is not degraded.

2. Leading particulars are:-

Lens	:	50 mm, F/2.3, 2in focal length
Scan Angle	:	34^{o} x 180^{o}
Frame Rate	:	4 frames per sec., fixed
Picture Size	:	6.12in. x 1.12in. with 0.25in. between frames
Resolution	:	Minimum 75 lines/mm on axis, using 1/1500 sec. at f.2.8 on 3400 Panatomic X film developed for 5 min. in D19 developer at 68^{o}F.
Shutter Speeds	:	1/500, 1/750, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000 sec. (Manual preset)
Aperture	:	F 2.3, 2.8, 4.0, 5.6, 8.0, 11.0, 16.0, 22.0 (Iris control, manual preset)
Film Capacity	:	100ft. standard base daylight film. 240ft. thin base daylight film. (Based on Kodak No.10 spool)
Size	:	8.5 x 8.84 x 7.81ins.
Weight	:	11lb. (Film and window fitted)
Power Requirement	:	28 Volt D.C. 30 Watts

CAMERA INSTALLATION

3. The camera is fitted to a modified aft engine bay access door, with the window and lower section protruding through the door cut-out. Electrical power for the camera is taken from the 28 v.d.c. JATO firing circuit.

CONTROLS AND INDICATORS

4. Control of the camera is via two switches and an associated indicator light.

5. A switch labelled MINIPAN MASTER is located on the JATO control box, outboard of the throttle quadrant. This switch applies 28 volt d.c. power to the camera circuit when selected to the 'on' position. Indication that power is supplied to the circuit is provided by an amber light, MINIPAN READY, mounted adjacent to the MINIPAN MASTER switch. The light illuminates when power is applied to the circuit.

6. The operating pushbutton is mounted on the throttle lever below the handgrip. This button is springloaded to the off position and the camera runs when the button is depressed.

7. Operating Procedures Refer to A4/TA4 TACTICAL MANUAL, NAVAIR 01-40AV-1T for camera operating procedures.

CAUTION

8. At temperatures above 90°F, film starts to deteriorate. If a possibility exists that the temperature in the engine bay will exceed 90°F for extended periods, the camera should be removed to a cooler environment.

9. It is possible for the camera window to be obscured by smears of oil and hydraulic fluid, and the camera may ingest these fluids causing damage to the camera and degradation of the film. Before operating aircraft fitted with Minipan, the aft engine compartment and underside of the fuselage ahead of the camera should be checked as having been thoroughly cleaned and that no excess fluid is present.

ROYAL AUSTRALIAN NAVY

SUPPLEMENT No. 5

To

NA01-40AVC-1, SECTION 1, PART 4, PAGE 1-129

INTRODUCTION

1. This supplement specifies the procedures to be adopted when catapult launching Skyhawk aircraft fitted with external fuel tanks.

REQUIREMENT

2. As it is possible that loss of control may result from catapult launching Skyhawk aircraft with partially filled external fuel tanks this method of varying aircraft launch weight is not to be used.

If external fuel tanks are carried they are either to be full and unpressurised or empty. If aircraft launch weight has to be varied when carrying external fuel, internal fuel tanks are to be partially filled.

NOTE

THIS SUPPLEMENT SUPERSEDES SKYHAWK S.F.I. 1/70

(N.O.L. 1362/1/72 5th MAY '72 refers)

.A.M.R.
YDNEY
GUST 1972

NA01-40AVC-1
15 November 1968
Changed 15 November 1970

ROYAL AUSTRALIAN NAVY

SUPPLEMENT No.8

TO

NA01-40AVC-1, SECTION 3, PAGE 3-22Q, PARA.V

INTRODUCTION

1. This supplement deletes the requirement for timing the engine run down.

REQUIREMENT

2. Para.V after landing, of Page 3-22Q, delete sub-paragraph A.4 in its entirety.

S.A.M.R.
SYDNEY.
July 1973

NA01-40AVC-1
15 November 1968
Changed 15 November 1970

ROYAL AUSTRALIAN NAVY

SUPPLEMENT No.9

TO

NA01-40AVC-1, SECTION 3, PAGE 3-19, ITEM 12

INTRODUCTION

1. This supplement deletes the requirement for timing the engine rundown.

REQUIREMENT

2. Item 12 of Page 3-19 delete "Time Engine Rundown".

S.A.M.R.
SYDNEY.
July, 1973.

SECTION I
THE AIRCRAFT

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KEY TO FIGURE 1-4

1. Air refueling probe
2. Radome
3. Pitot tube
4. Total temperature sensor
5. Brake fluid level window
6. Thermal radiation closure
7. AN/ARC-51A (UHF) radio antenna
8. ECM pod
9. Normal cockpit entry handle
10. External canopy-jettison handle
11. Approach lights
12. Catapult hook
13. External power receptacle and access door
14. Oil tank pressure fillercap
15. Taxi light
16. Angle-of-attack vane and transducer
17. TACAN (V) antenna
18. Static orifice
19. AN/ARA-50 (UHF-ADF) antenna cover
20. Nose compartment access door
21. Oil tank
22. Fuselage fuel tank filler cap
23. Cockpit canopy air bungee cylinder
24. Nose section electronic equipment compartment
25. AN/APG-53B radar transmitter and receiver group
26. Emergency generator
27. Fuselage fuel tank
28. Air refueling probe light
29. Catapult hook
30. Wing tank filler cap
31. Slat
32. Barricade engagement detent
33. Vortex generators
34. Integral wing fuel tank
35. Arresting hook
36. JATO igniter terminal
37. JATO mounting hooks
38. Speedbrake

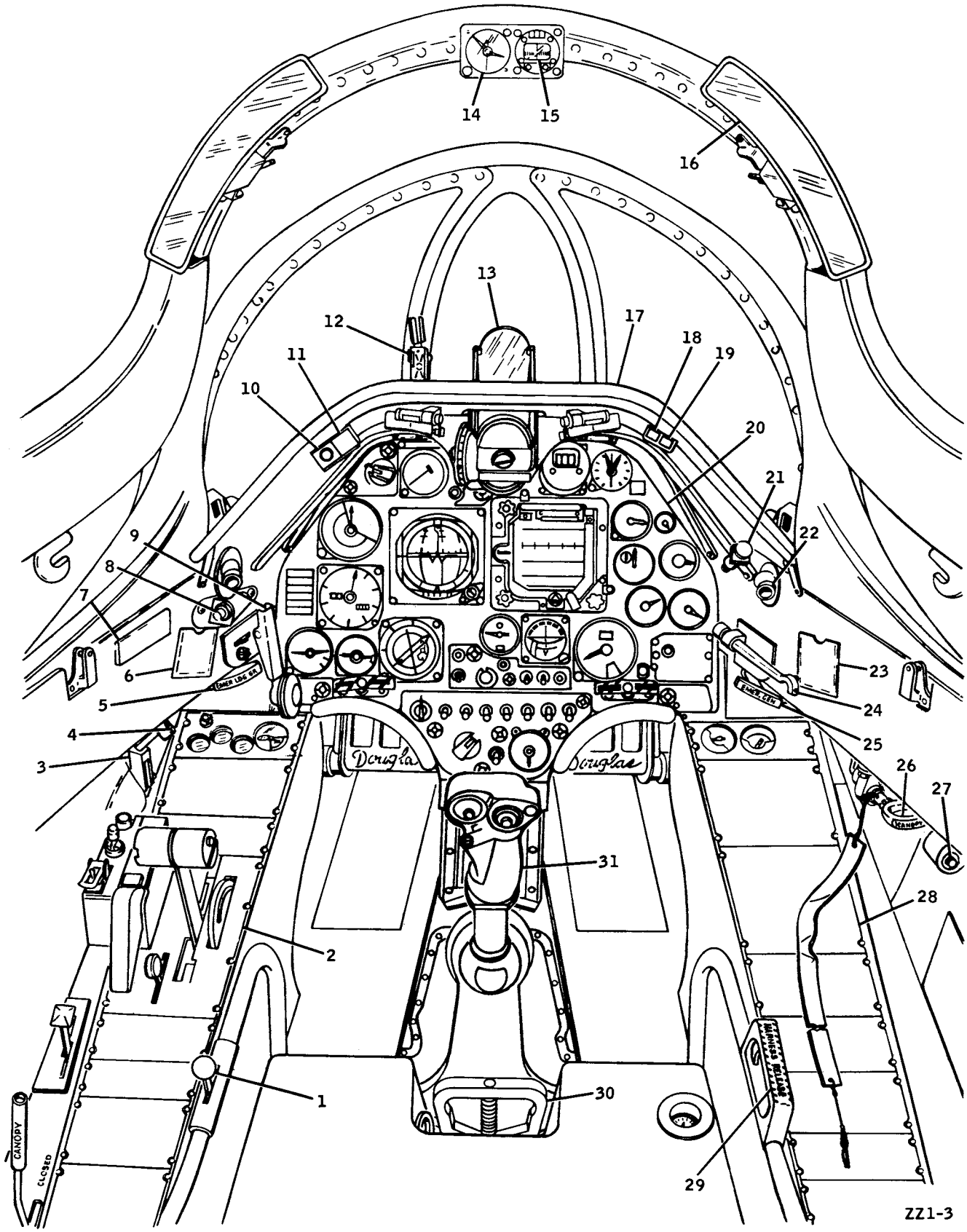
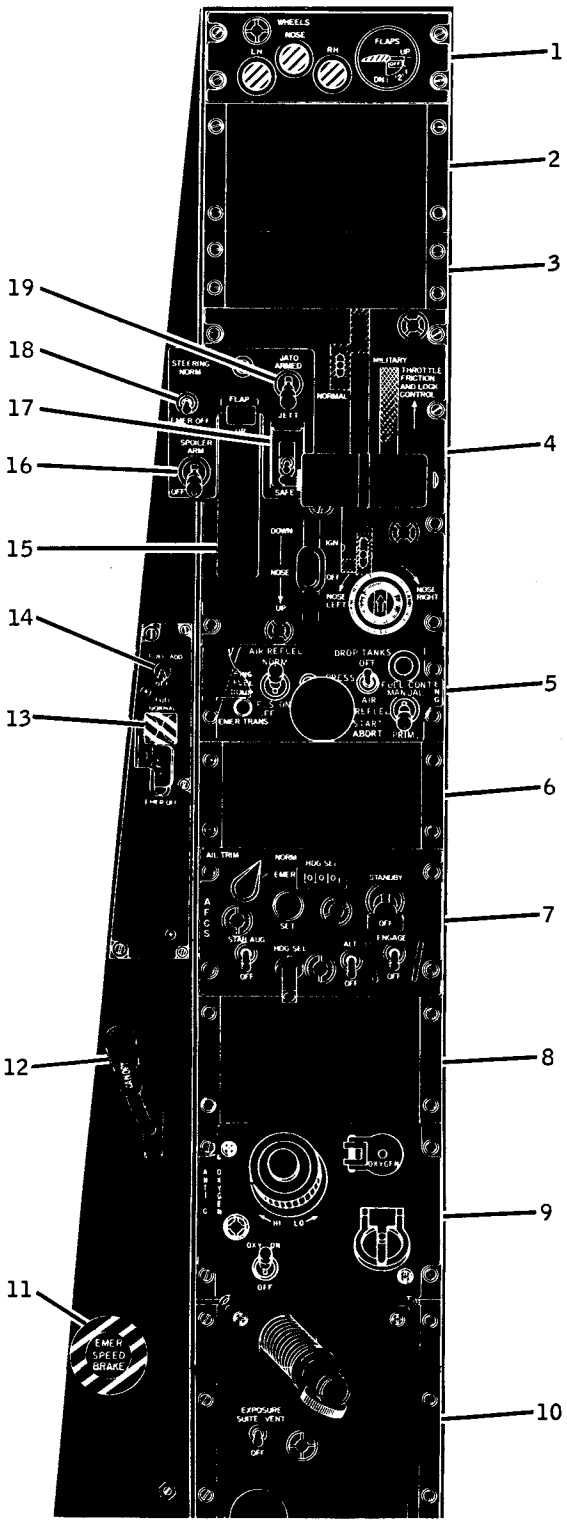
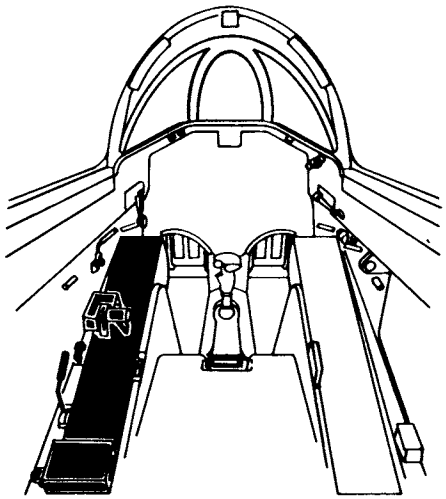


Figure 1-5. General Arrangement – Cockpit

KEY TO FIGURE 1-5

1. Shoulder harness control handle
2. Left console (figure 1-6)
3. Catapult handgrip
4. JATO firing button
5. Emergency landing gear release handle
6. Compass correction card
7. Compass deviation card
8. Rain repellent button
9. Landing gear handle
10. Low altitude warning system light (LAWS)
11. WHEELS warning light
12. Angle-of -attack indexer
13. Gunsight
14. Elapsed-time clock
15. Standby compass
16. Rear view mirror
17. Glareshield
18. FIRE warning light
19. OBST warning light
20. Instrument panel (figure 1-7)
21. Utility floodlight
22. Eyeball diffuser
23. Standby compass deviation card
24. Arresting hook handle
25. Emergency generator release handle
26. Canopy jettison handle
27. White floodlights control
28. Right console (figure 1-8)
29. Harness release handle
30. Alternate ejection handle
31. Control stick





1. WHEELS AND FLAPS POSITION INDICATOR PANEL
2. BLANK PANEL
3. BLANK PANEL
4. THROTTLE PANEL
5. ENGINE CONTROL PANEL
6. BLANK PANEL
7. AUTOPILOT CONTROL PANEL
8. BLANK PANEL
9. OXYGEN AND ANTI-G PANEL
10. ANTI-EXPOSURE SUIT CONTROL PANEL
11. EMERGENCY SPEEDBRAKE CONTROL
12. CANOPY CONTROL HANDLE
13. MANUAL FUEL SHUTOFF CONTROL LEVER
14. SMOKE ABATEMENT SWITCH
15. FLAP HANDLE
16. SPOILER ARM SWITCH
17. JATO JETTISON SWITCH
18. NOSEWHEEL STEERING SWITCH
19. JATO ARM SWITCH

HH1-9-A

Figure 1-6. Cockpit—Typical Left Console

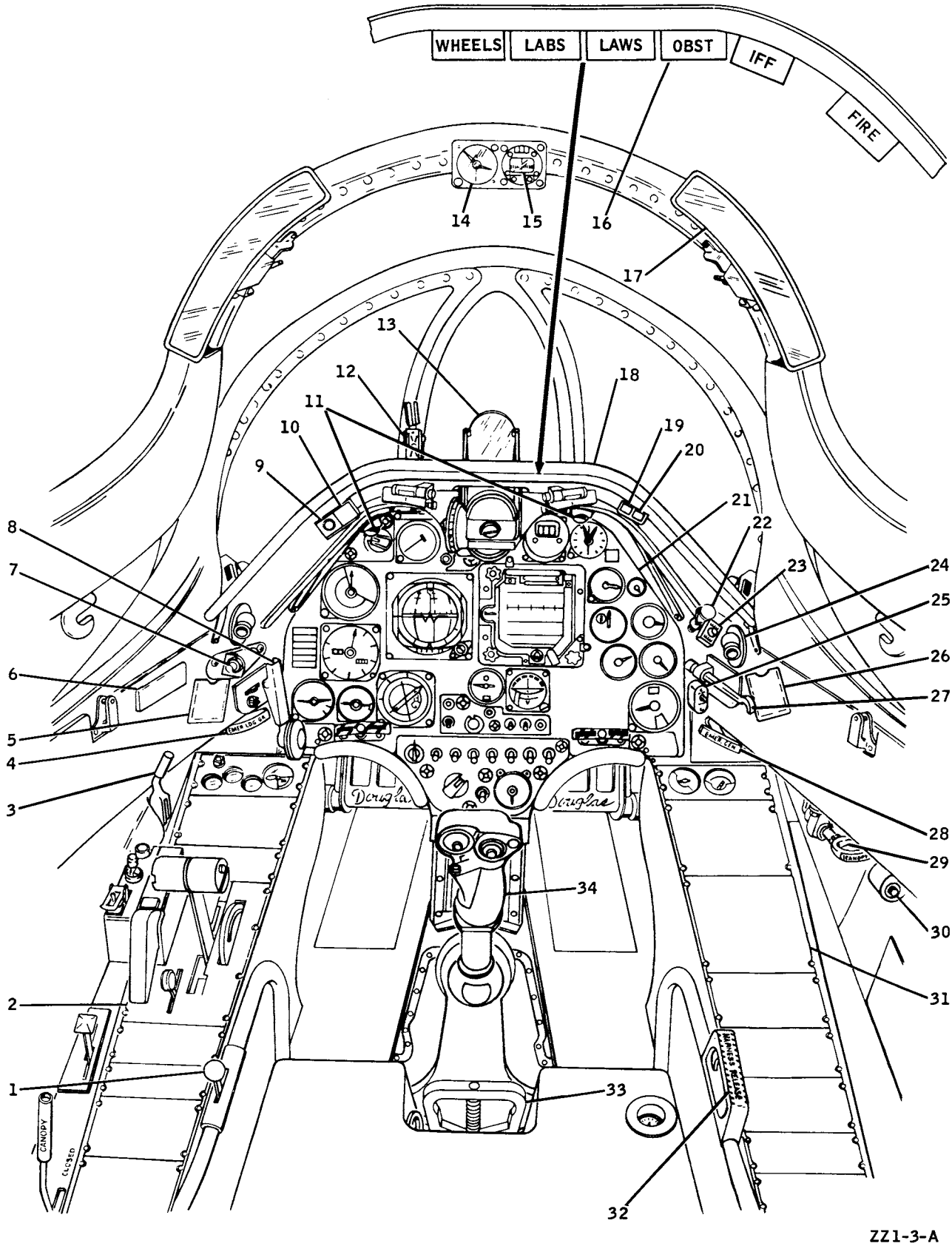


Figure 1-6. General Arrangement – Cockpit

KEY TO FIGURE 1-6

1. Shoulder harness control handle
2. Left console (figure FO-2)
3. Catapult handgrip
4. Emergency landing gear release handle
5. Compass correction card
6. Airspeed correction card
7. Rain repellent button
8. Landing gear handle
9. Low altitude warning system light (LAWS)
10. WHEELS warning light
11. Instrument panel floodlight
12. Angle-of-attack indexer
13. Gunsight
14. Elapsed-time clock
15. Standby compass
16. Glareshield warning lights: WHEELS, *LABS, LAWS, OBST, *IFF, and FIRE (BuNo. 155051, 155052, 155055, 155060-155063, and 155069)
17. Rear view mirror
18. Glareshield
19. FIRE warning light
20. OBST warning light
21. Instrument panel (figure FO-2)
22. Utility floodlight
23. NORMAL, COMBAT lighting control switch
24. Eyeball diffuser
25. AUDIO BYPASS switch
26. Standby compass deviation card
27. Arresting hook handle
28. Emergency generator release handle
29. Canopy jettison handle
30. White floodlights control
31. Right console (figure FO-2)
32. Harness release handle
33. Alternate ejection handle
34. Control stick

*Inoperative; press-to-test only.

	A-4E	A-4F	TA-4F	A-4G	TA-4G	TA-4J	A-4K	TA-4K
Engine	J52-P-6A J52-P-8A	J52-P-8A	J52-P-6A J52-P-8A	J52-P-8A	J52-P-8A	J52-P-6A	J52-P-8A	J52-P-8A
Thrust	8,500# 9,300#	9,300#	8,500# 9,300#	9,300#	9,300#	8,500#	9,300#	9,300#
Fuselage Fueling Probe Air Refueling Store Intake Ducts	 Yes Yes Separated	 Yes Yes Separated	 Yes Yes Separated	 Yes Yes Separated	 Yes Yes Separated	 Yes Yes Separated	 Yes Yes Separated	 Yes Yes Separated
Upper Avionics Compartment	Some	Yes	No	No	No	No	Yes	No
AFCS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Radar	AN/APG-53A AN/APG-53B	AN/APG-53A AN/APG-53B	AN/APG-53A AN/APG-53B	AN/APG-53A	AN/APG-53A	AN/APG-53A	AN/APG-53A	AN/APG-53A
Video IP-936/AXQ	Some	Some	Some	No	No	No	No	No
Navigation Computer	ASN-19A (Early A-4E) ASN-41	ASN-41	ASN-41	ASN-41	ASN-41	ASN-41	ASN-41	ASN-41
LABS	AN/AJB-3 AN/AJB-3A	AN/AJB-3A	AN/AJB-3A	No	No	No	No	No
CP-741/A	Yes	Yes	Yes	*Yes	No	No	No	No
Oxygen System	10 Liter	10 Liter	10 Liter	10 Liter	10 Liter	10 Liter	10 Liter	10 Liter
Fuel Gaging Fuselage Wing Drop Tanks	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes	 1 Probe 6 Probe Yes
Fuselage Fuel Cell Capacity	1600 Lb	1600 Lb	700 Lb	1600 Lb	700 Lb	700 Lb	1600 Lb	700 Lb
Elevator Powered	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Aileron Powered	Tandem	Tandem	Tandem	Tandem	Tandem	Tandem	Tandem	Tandem
Stabilizer Trim 12 1/4-Degrees Noseup 1-Degree Nosedown	 Yes	 Yes	 Yes	 Yes	 Yes	 Yes	 Yes	 Yes
Bomb Racks	5	5	5	5	5	5	5	5
Rocket Ejection Seat	Escapac 1 Stencel Mod	Escapac 1C-3	Escapac 1C-3	Escapac 1C-3	Escapac 1C-3	Escapac 1C-3	Escapac 1C-3	Escapac 1C-3
Nosewheel Steering	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Spoilers	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Drag Chute	No	No	No	No	No	No	Yes	Yes
Communications	AN/ARC-27A	AN/ARC-51A AN/ARR-69	AN/ARC-51A AN/ARR-69	AN/ARC-51A AN/ARR-69	AN/ARC-51A AN/ARR-69	AN/ARC-51A AN/ARR-69	AN/ARC-51A AN/ARC-115 (VHF) AN/ARR-69	AN/ARC-51A AN/ARC-115 (VHF) AN/ARR-69
Radar Identification (IFF)	APX-6B	APX-64(V)	APX-64(V)	APX-64(V)	APX-64(V)	APX-64(V)	APX-72(V)	APX-72(V)
APC ASN-54	Yes	Yes	Yes	No	No	Provisions Only	No	No
Doppler APN-153(V)	Some	Yes	Yes	*Yes	Yes	Yes	Yes	Yes
TACAN	ARN-21B (Early A-4E) ARN-52(V)	ARN-52(V)	ARN-52(V)	ARN-52(V)	ARN-52(V)	ARN-52(V)	ARN-52(V)	ARN-52(V)
ADF	ARA-25	ARA-50	ARA-50	ARA-50	ARA-50	ARA-50	ARA-50	ARA-50

*BuNo. 155051, 155052, 155055, 155060-155063, and 155069

Figure 1-7. Main Differences

altitude of 1000 feet. On the left of the center of the instrument is a window containing two rotating counters; the inner counter registers altitude in thousands of feet, while the outer registers in ten thousands of feet. When the altimeter pointer makes 12 revolutions, for instance, the outer counter will indicate 1, and the inner counter will indicate 2, thus showing that the aircraft is at an altitude of 12, 000 feet above sea level. Barometric pressure setting, in millibars, is displayed in a window on the right side of the altimeter face. The knob on the lower left corner of the instrument case is used to correct for variations in sea level barometric pressure.

Radar Altimeter

The AN/APN-141 radar altimeter (figure FO-2) employs the pulse radar technique to furnish accurate instantaneous altitude information to the pilot from 0 to 5000 feet terrain clearance. Aircraft height is determined by measuring the elapsed transit time of a radar pulse, which is converted directly to altitude in feet and displayed on the cockpit indicator. The indicator dial face is marked in 10-foot increments up to 200 feet, 50-foot increments from 200 to 600 feet, 100-foot increments from 600 to 2000 feet, and 500-foot increments from 2000 to 5000 feet. A control knob on the front of the indicator controls power to the indicator and is used for setting the low-limit indexer. The control knob also provides for preflight and in-flight test of the equipment with a push-to-test type control knob feature. Refer to LOW ALTITUDE WARNING SYSTEM (LAWS) for information regarding low limit indexer. An OFF flag on the indicator face appears when signal strength becomes inadequate to provide reliable altitude information, when power to the system is lost, or when the system is turned OFF.

CAUTION

Leave the AN/APN-141 radar altimeter in the OFF position until power is applied to the aircraft and return equipment to OFF before power is removed.

NOTE

At altitudes above 5000 feet terrain clearance, the OFF flag will appear and the pointer will move behind the masked portion of the indicator dial. The pointer will resume normal operation when the aircraft descends below 5000 feet.

The radar altimeter operates normally during 50-degree angles of climb or dive and 30-degree angles of bank, right or left. Beyond these points, the indications on the radar altimeter become unreliable but will resume normal operation when the aircraft returns to normal flight.

Low Altitude Warning System (LAWS)

The low altitude warning system is used to warn the pilot of impending danger due to low altitude. The warning system consists of two warning lights and an aural warning tone heard in the pilot's headset that operates in conjunction with the AN/APN-141 radar altimeter. One warning light is located under the glareshield (figure 1-6), and the other, which is the radar low limit warning light, is located adjacent to the radar altimeter (figure FO-2). When the AN/APN-141 radar altimeter indicator pointer drops below the preset low-limit indexer altitude setting, both warning lights come on and the aural warning tone is activated for 2 seconds. The warning tone is an alternating 700- to 1700-cps tone with a repetition rate of 2 cps. In addition, a reliability warning signal sounds for 2 seconds when the radar altimeter acquires or loses its lock-on. The reliability warning signal has the same frequency range but a repetition rate of 8 cps.

AN/AJB-3A All-Attitude Indicator

An all-attitude indicator for the AN/AJB-3A system is located on the instrument panel (figure FO-2). The indicator provides the pilot with a pictorial presentation of the aircraft's pitch, roll, heading, and turn-and-slip. Aircraft attitude reference signals are supplied to the indicator by electrical connection with the remote mounted master reference platform. Pitch, roll, and heading are shown by the orientation of the all-attitude sphere with the miniature reference aircraft attached to the instrument face. A bank inclinometer and an electrically powered rate-of-turn pointer located below the sphere complete the indicator presentation. The horizon is shown as a white line dividing the top and bottom halves of the sphere. The upper half, symbolizing sky, is indicated by a light grey area above the horizon line; the lower half, symbolizing earth, is indicated by a dull black area below the horizon line. The sphere is graduated every 5 degrees in azimuth on the horizon line and every 30 degrees in azimuth in the upper and lower portions of the sphere. The sphere is graduated every 10 degrees of climb and dive. The sphere is free to move a full 360 degrees in pitch, roll, or heading without obstruction. Roll indices are located on the top and bottom of the indicator.

A vertical displacement pointer, vertical and horizontal director pointers, vertical and horizontal director warning flags, and a vertical displacement warning flag are incorporated in the instrument but are not used. All flags and pointers are biased out

of sight at the end of the 60-second start period. The OFF flag disappears at the end of the 60-second start period and should not reappear until the system is turned off. Appearance of the OFF flag after the 60-second start period indicates a power failure in the system. A maximum of 90 seconds may be required for gyro erection and amplifier warmup.

WARNING

- Do not rely on indicator, including rate-of-turn pointer, if OFF flag is visible.
- It is possible to receive erroneous indications on gyro indicator without OFF flag showing.

The turn-and-slip indicators are located below the sphere and are an integral part of the all-attitude indicator. A one-needle width deflection of the turn indicator will result in a standard rate, 2-minute, 360-degree turn. Full deflection (two-needle widths) results in a 1-minute, 360-degree turn. The turn indicator is electrically driven and will operate on emergency generator.

A pitch trim knob, located on the lower right corner of the indicator, with an index mark at its 10 o'clock position, controls the sphere pitch setting in relation to the reference aircraft. Adjustment can be made from 10 degrees noseup to 5 degrees nosedown. The indicator is calibrated to display, at any pitch angle, the true aircraft attitude (Armament Datum Line) in relation to the surface of the earth, with pitch trim knob aligned to the index mark. It is recommended that the pitch trim knob always be aligned to the index mark before flight and be left in that position throughout the flight. This will enable the pilot to always know his true attitude in relation to the surface of the earth regardless of the maneuver performed.

LIQUID OXYGEN DURATION

10 LITER SYSTEM

DATA AS OF: 1 February 1962
DATA BASIS: Specification MIL-I-19326(Wep)

CABIN PRESSURE ALTITUDE -FEET-	HOURS REMAINING					
	GAGE READING (LITERS)					
	10	8	6	4	2	1
40,000 UP	60.6	48.5	36.4	24.2	12.0	4.8
35,000	37.0	29.6	22.2	14.8	7.4	3.6
30,000	27.2	21.8	16.4	10.8	5.4	2.8
25,000	20.4	16.4	12.4	8.2	4.0	2.0
20,000	16.0	12.8	9.6	6.4	3.2	1.6
15,000	12.8	10.2	7.6	5.2	2.6	1.2
10,000	10.0	8.0	6.0	4.0	2.0	1.0
5,000	8.4	6.6	5.0	3.2	1.6	0.8
SEA LEVEL	7.0	5.6	4.2	2.8	1.4	0.6

REMARKS:

(1) Based on 800 liters of gaseous oxygen per liter of liquid oxygen.

(2) Data assume the use of a properly fitted mask.

HH1-22

Figure 1-16. Liquid Oxygen Duration

DURING FLIGHT

Oxygen quantity should be checked periodically during flight.

NOTE

Separation of the oxygen hose couplings will be immediately apparent as oxygen flow and radio communication will cease.

FLIGHT INSTRUMENTS

The airspeed indicator, vertical speed indicator, and altimeter are connected to the pitot-static system. The attitude gyro, standby attitude gyro, bearing-distance-heading indicator (BDHI), angle-of-attack-system, and radar altimeter are electrically operated. The eight-day clock and accelerometer are independent of other systems in operation.

AIRSPEED INDICATOR

A combination airspeed indicator and Mach meter (figure 1-7) is located on the instrument panel. The airspeed portion of the dial is fixed in position, and is calibrated from 80 to 650 knots. The Mach meter scale is a rotating disc, marked from 0.50 to 2.9, turning beneath the airspeed dial. Only a portion of the disc can be seen through a cutout in the airspeed dial. Airspeed and corresponding Mach number are indicated simultaneously by a single needle pointer. On the Mach number disc is a movable index which is used to set a Mach reference by depressing and turning a set knob on the lower left corner of the instrument case. On the edge of the airspeed dial is an airspeed index pointer, which is adjustable through a range of 80 to 145 knots merely by turning the set knob.

VERTICAL SPEED INDICATOR

A vertical speed indicator (figure 1-7) is located on the instrument panel. The indicator shows the rate of ascent or descent of the aircraft. The upper half of the indicator face is graduated in 500-foot units from 0 to 6000 feet with 100-foot scale divisions from 0 to 1000 feet. The upper half of the instrument indicates rate of climb in thousands of feet per minute. The lower half of the indicator face is identical to the upper half except that it indicates rate of descent. The vertical speed indicator is connected to the static pressure system of the aircraft and measures the change in atmospheric pressure as the aircraft climbs or descends.

ALTIMETER

The pressure altimeter (figure 1-7) indicates the altitude of the aircraft above sea level to a height of

50,000 feet. The dial face is marked in increments of 11 feet; each complete revolution of the pointer indicates a change in altitude of 1000 feet. On the left of the center of the instrument is a window containing two rotating counters; the inner counter registers altitude in thousands of feet, while the outer registers in ten thousands of feet. When the altimeter pointer makes 12 revolutions, for instance, the outer counter will indicate 1, and the inner counter will indicate 2, thus showing that the aircraft is at an altitude of 12,000 feet above sea level. Barometric pressure setting, in millibars, is displayed in a window on the right side of the altimeter face. The knob on the lower left corner of the instrument case is used to correct for variations in sea level barometric pressure.

RADAR ALTIMETER

The AN/APN-141 radar altimeter (figure 1-7) employs the pulse radar technique to furnish accurate instantaneous altitude information to the pilot from 0 to 5000 feet terrain clearance. Aircraft height is determined by measuring the elapsed transit time of a radar pulse, which is converted directly to altitude in feet and displayed on the cockpit indicator. The indicator dial face is marked in 10-foot increments up to 200 feet, 50-foot increments from 200 to 600 feet, 100-foot increments from 600 to 2000 feet, and 500-foot increments from 2000 to 5000 feet. A control knob on the front of the indicator controls power to the indicator and is used for setting the low-limit indexer. The control knob also provides for preflight and in-flight test of the equipment with a push-to-test type control knob feature. Refer to LOW ALTITUDE WARNING SYSTEM (LAWS) for information regarding low limit indexer. An OFF flag on the indicator face appears when signal strength becomes inadequate to provide reliable altitude information, when power to the system is lost, or when the system is turned OFF.

CAUTION

Leave the AN/APN-141 radar altimeter in the OFF position until power is applied to the aircraft and return equipment to OFF before power is removed.

NOTE

At altitudes above 5000 feet terrain clearance, the OFF flag will appear and the pointer will move behind the masked portion of the indicator dial. The pointer will resume normal operation when the aircraft descends below 5000 feet.

The radar altimeter operates normally during 50-degree angles of climb or dive and 30-degree angles of bank, right or left. Beyond these points, the indications on the radar altimeter become unreliable but will resume normal operation when the aircraft returns to normal flight.

LOW ALTITUDE WARNING SYSTEM (LAWS)

The low altitude warning system is used to warn the pilot of impending danger due to low altitude. The warning system consists of two warning lights and an aural warning tone heard in the pilot's headset that operates in conjunction with the AN/APN-141 radar altimeter. One warning light is located under the left side of the glareshield (figure 1-5), and the other, which is the radar low limit warning light,is located adjacent to the radar altimeter (figure 1-7). When the AN/APN-141 radar altimeter indicator needle drops below the preset low-limit indexer altitude setting, both warning lights come on and the aural warning tone is activated for 2 seconds. The warning tone is an alternating 700- to 1700-cps tone with a repetition rate of 2 cps. In addition, a reliability warning signal sounds for 2 seconds when the radar altimeter acquires or loses its lock-on. The reliability warning signal has the same frequency range but a repetition rate of 8 cps.

AN/AJB-3A ALL-ATTITUDE INDICATOR

An all-attitude indicator for the AN/AJB-3A system is located on the instrument panel (figure 1-7). The indicator provides the pilot with a pictorial presentation of the aircraft's pitch, roll, heading, and turn-and-slip. Aircraft attitude reference signals are supplied to the indicator by electrical connection with the remote mounted master reference platform. Pitch, roll, and heading are shown by the orientation of the all-attitude sphere with the miniature reference aircraft attached to the instrument face. A bank inclinometer and an electrically powered rate-of-burn pointer located below the sphere complete the indicator presentation. The horizon is shown as a white line dividing the top and bottom halves of the sphere. The upper half, symbolizing sky, is indicated by a light grey area above the horizon line; the lower half, symbolizing earth, is indicated by a dull black area below the horizon line. The sphere is graduated every 5 degrees in azimuth on the horizon line and every 30 degrees in azimuth in the upper and lower

portions of the sphere. The sphere is graduated every 10 degrees of climb and dive. The sphere is free to move a full 360 degrees in pitch, roll, or heading without obstruction. Roll indices are located on the top and bottom of the indicator.

A vertical displacement pointer, vertical and horizontal director pointers, vertical and horizontal director warning flags, and a vertical displacement warning flag are incorporated in the instrument but are not used. All flags and pointers are biased out of sight at the end of the 60-second start period. The OFF flag disappears at the end of the 60-second start period and should not reappear until the system is turned off. Appearance of the OFF flag after the 60-second start period indicates a power failure in the system. A maximum of 90 seconds may be required for gyro erection and amplifier warmup.

WARNING

Do not rely on indicator, including rate-of-turn pointer, if OFF flag is visible.

It is possible to receive erroneous indications on gyro indicator without OFF flag showing.

The turn-and-slip indicators are located below the sphere and are an integral part of the all-attitude indicator. A one-needle width deflection of the turn

TO DISENGAGE AFCS

The pilot may disengage the AFCS by one of the following actions:

1. Pressing control stick AP button.

2. Placing the standby switch in OFF position.

3. Placing both the engage and the stability augmentation switches in their OFF positions.

4. Depressing the PUSH TO SYNC button on the compass controller.

5. Moving the SET HDG switch on the compass controller.

6. Placing the aileron trim NORM/EMER switch in EMER position. In the event the switchover from automatic trim to manual trim malfunctions, or upon disengagement, the EMER position gives an additional switchover and will disengage the AFCS.

7. Moving the horizontal stabilizer manual override lever on the left console will manually overcome malfunction of the automatic pitch trimmer.

NOTE

Up to 4 seconds of override lever actuation may be required before disengagement occurs.

8. Pulling the emergency generator release handle.

LIGHTING EQUIPMENT

Interior Lights

The interior lighting system includes all instrument lights, console lights, and cockpit floodlights. A light is mounted in each instrument lens (except the oil pressure gage) to provide equal illumination over the entire face of the instrument. Two floodlights are mounted on each side of the gunsight beneath the glareshield to provide auxiliary or emergency lighting of the instrument panel. A white kneeboard floodlight incorporating a red filter is mounted on the gunsight support on the right-hand side to provide lighting for the pilot's kneeboard. Six red floodlights are installed to provide auxiliary or emergency console lighting. Four white floodlights are provided for auxiliary cockpit lighting for use with the thermal radiation closure. Instrument and console lights and the red floodlights are operative on emergency generator.

Interior Lights Control Panel

An interior lights (INT LTS) control panel (figure 1-23) mounted on the right console, contains switches for the operation of all interior lights except the four high-intensity white floodlights. Two rotary switches, marked INST and CONSOLES are turned clockwise from OFF to turn on the instrument lights and console lights, respectively. Additional turning in a clockwise direction toward the BRIGHT position increases the intensity of the light.

Aircraft reworked per A-4 Interim AFC 428 have a two-position interior lighting interrupter switch installed. The switch (labeled NORMAL and COMBAT) is located on the right-hand gunsight support adjacent to the pilot's kneeboard light (figure 1-23).

When the NORMAL, COMBAT switch is in NORMAL position, instrument panel and console lights are controlled normally by the lights control switches on the interior lights control panel. When the instrument panel and console lights are on normally, placing the switch in COMBAT position will cut off all console and instrument panel lights except those for the all-attitude indicator, accelerometer, airspeed indicator, vertical velocity indicator, altimeter, BDHI, and eight-day clock.

NOTE

When the INST lights switch is in any position other than OFF, the ladder lights are dimmed for night operations and may not be visible in daylight.

A toggle switch labeled FLOOD, with three positions, BRIGHT, DIM, and MEDIUM, controls the intensity of the red floodlights after the CONSOLES switch is turned from the OFF position. The pilot's kneeboard floodlight has a separate intensity control on the case.

The four high-intensity white floodlights, two for the instrument panel and one for each console, have a common control installed above the right-hand console on the fuselage skin. Clockwise rotation from the OFF position turns the floodlights on dimly and further clockwise rotation increases the intensity.

Exterior Lights

The exterior lights system includes position lights, fuselage wing lights, air refueling probe light, an approach light, and a taxilight. A semiflush, white, high-intensity gas discharge and low-intensity filament fuselage wing light is located under the leading edge of each wing. The aircraft has two flashing red anticollision beacons, one mounted on the top of the fuselage and the other mounted on the left main landing gear strut fairing. The angle-of-attack approach lights are mounted in the leading edge of the left wing (figure 1-24). The taxilight is installed on the right-hand main landing gear door.

The air refueling probe light is located on the right-hand intake duct forward outboard lip (figure 1-24).

Wingtip, tail, and fuselage lights are actually double lights, as both filament and gas discharge types are

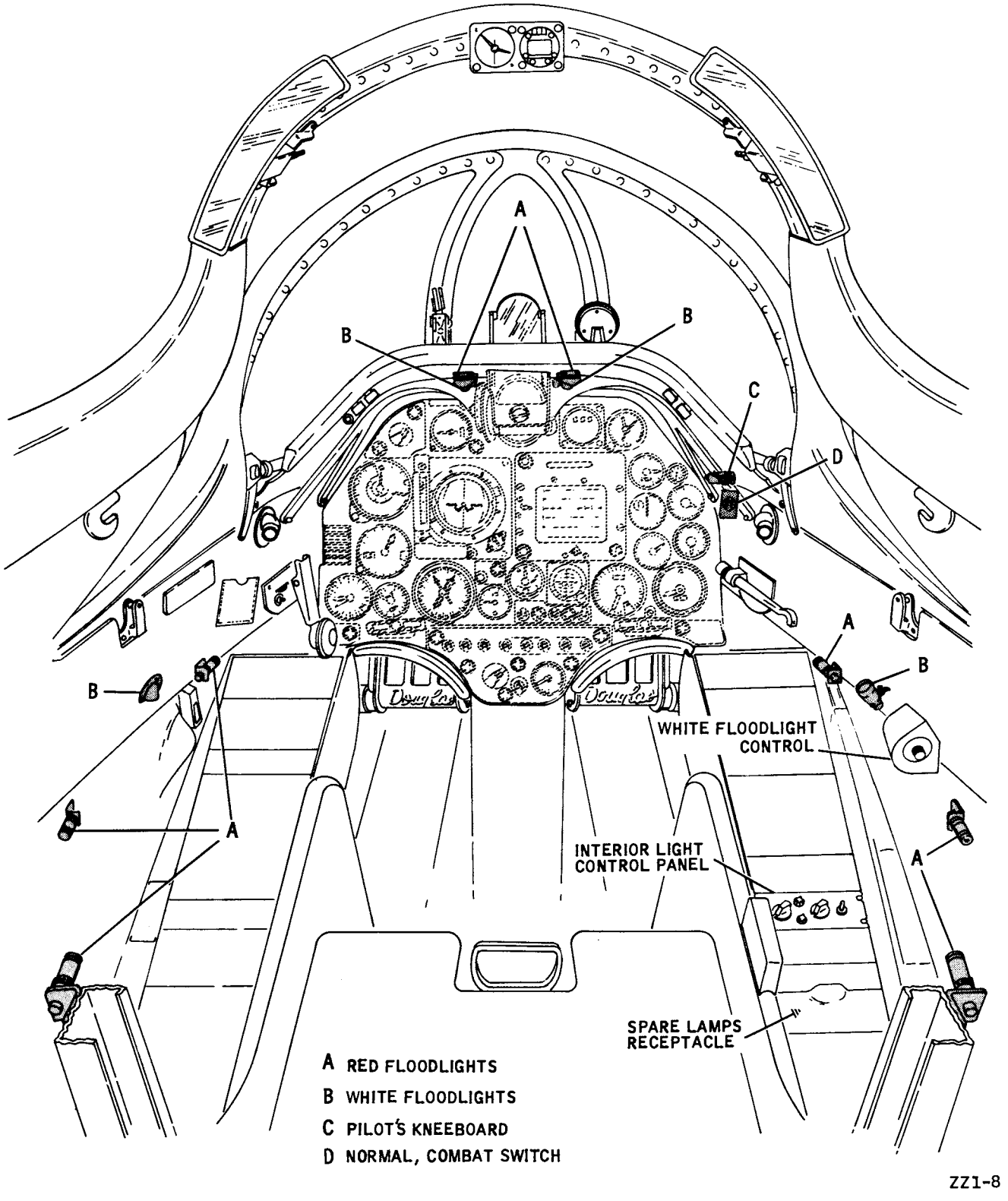


Figure 1-23. Interior Lights

JATO ARMING SWITCH

The JATO arming switch is a two-position lever-lock toggle switch labeled ARMED and OFF. To place the switch in the ARMED position, the spring-loaded toggle lever must be lifted. This arms the JATO firing circuit by energizing the JATO firing button on the catapult handgrip and the jettison circuit to the jettison switch.

JATO ARMED INDICATOR LIGHT

A JATO armed indicator light on the control panel comes on when the arming switch is energized. The press-to-test feature of this light tests the bulb.

JATO JETTISON SWITCH

The JATO jettison switch on the control panel is a guarded, momentary-control toggle switch, spring-loaded to the SAFE position. In the JATO JETT position the switch energizes a solenoid-controlled hydraulic selector valve which directs hydraulic pressure to the JATO mounting hook actuating cylinders. The mounting hooks are actuated to release both JATO bottles simultaneously.

CAUTION

When JATO bottles are installed, operation of the emergency speedbrake control will force the JATO bottles off the aircraft resulting in airframe damage.

NOTE

An interlock in the speedbrake electrical circuit prevents normal operation of speedbrakes with JATO bottles attached. Be sure the speedbrake switch on the throttle is in the CLOSED position prior to jettisioning the JATO bottles; otherwise, upon release of the JATO bottles the speedbrakes will open.

JATO FIRING BUTTON

The JATO firing button (figures 1-5 and 1-6), located at the end of the catapult handgrip energizes a relay which completes the circuit to the firing mechanism. Refer to section XI, Performance Data, for additional information on takeoff airspeeds with JATO and distances at which the JATO bottles are fired.

WARNING

To prevent possible JATO system accidents, the JATO arming switch in the cockpit shall be at OFF and a no-voltage test shall be made at the aircraft igniter terminals prior to attaching the JATO igniter leads to the bottles.

BANNER TOWING SYSTEM EQUIPMENT

Banner towing system equipment consists of a banner target, towline, banner towing platform assembly, and release unit assembly. The banner towing platform assembly suspends from the Aero 7A-1 ejector rack on the aircraft centerline station (figure 8-2).

Targets

Standard Navy or Air Force 7 1/2 x 40 feet or 6 x 30 feet banner targets may be utilized.

Towline

Recommended towline configuration is 1950 feet of 7/16-inch nylon towline attached to 50 feet of 7/32-inch armored cable leader. The armored cable leader is required at the tow plane end of the towline to prevent burn through which will occur if an all nylon towline is used.

Aircraft Towline Attachment

For detail on the banner towing system installation on the Aero 7A-1 centerline ejector rack refer to NAVAIR 01-40AVF-2.

Refer to section VIII of this supplement for towline/target release and banner towing platform assembly jettison procedures.

MISCELLANEOUS EQUIPMENT

Thermal Radiation Closure

A thermal radiation closure may be installed on the canopy structure for use on missions requiring pilot protection from the heat and light produced by nuclear explosions.

The closure consists of fixed fiberglass panels and a manually actuated segmented telescoping hood (buggy top) attached to the canopy. The glareshield installation includes light seals and an extension on the aft end. When the canopy is closed, the fixed panel on the canopy matches the glareshield in contour and

forms a glareshield extension. The buggy top pivots down and forms a light seal with the fixed panel completely sealing the pilot within a thermal protective covering. Attached to the forward segment of the buggy top are right and left handholds for opening and closing as required. The right handhold contains a latching mechanism for locking the buggy top in the open (stowed) position. Two detent ready positions hold the buggy top partially open for forward visibility. This affords the pilot partial protection in the event of a surprise burst and shortens the time required to go from the ready position to fully closed. Buggy top should stay in detented positions if subjected to turbulence or acceleration forces of 5 g or less.

OPERATION

To close the buggy top, reach back with either hand and pull forward on the right handhold to release the locking mechanism.

In cases when "hands on stick" flight is required the recommended procedure for unlatching the buggy top is to reach across the chest with the left arm while holding the stick with the right hand. Pull it forward to the ready position checking by feel to assure it centers in both detents simultaneously. To fully close the buggy top, firmly grasp the handholds with both hands and slam it shut to preclude the possibility of light leaks by seating the detents firmly on both sides. Pilots should gain proficiency in operation of the thermal radiation closure on short practice missions at safe altitudes. The closure may also be used as an instrument training hood.

To open, pull back on the handholds to override the detent pressure and telescope the closure back into its stowed and locked position.

WARNING

Ascertain that the closure locks in the stowed position to prevent its slamming shut inadvertently. This may be checked by pulling forward on the hood.

The pilot should familiarize himself with the operation of the thermal radiation closure prior to flight.

The following method is suggested:

1. Adjust seat to its lowest position.
2. Close and latch the canopy.
3. Check the accessibility of the face curtain handle.
4. Adjust seat upward exercising care not to strike enclosure.

NOTE

When the thermal radiation closure is installed, the alternate ejection handle is recommended for ejection.

5. Unlock buggy top and pull it forward to its detent ready position. Operation should be smooth and without binding. Even fingertip pressure on each handhold should assure buggy top is firmly held in both right- and left-detent positions. A pull of approximately 10 pounds is required to override the detent pressure.
6. Close buggy top by slamming firmly down using both handholds. Check for light leaks.

NOTE

In direct sunlight or equivalent there shall be no outside light directly visible to the pilot.

7. Check the accessibility of the face curtain handle.
8. Return buggy top to the open (stowed) position and check for positive latch.
9. Inspect all exposed surfaces of the thermal radiation closure for cleanliness.

EMERGENCY OPERATION

The thermal radiation closure will be jettisoned along with the canopy in emergencies. The extended aft portion of the glareshield is flexible and will deflect if contacted during ejection.

Antiexposure Suit Ventilation

An antiexposure suit ventilation control panel is installed on the left-hand console (figures FO-1 and FO-2) for use with the Mark 5 antiexposure suit.

6. Ejection seat catapult safety pin and two canopy jettison pins . . . . . REMOVED

7. Emergency oxygen lanyard . . . . . CONNECTED

8. DART system lanyard. . . . CONNECTED

9. Emergency oxygen bottle . . 1800 PSI

10. Harness release actuator pin. . . . . NOT VISIBLE

11. Face curtain and alternate handles . . . . . STOWED

12. Emergency harness release handle stowed and parachute arming cable secured . . . . . CHECK

13. Shoulder harness secured . . . . . LOCKING PIN VISIBLE

14. Lap belt secure . . . . . LOCKING PINS VISIBLE

15. NB-11 parachute . . . . . INSTALLED

ESCAPAC IC-3 EJECTION SEAT PREFLIGHT

1. Ejection seat control safety handle (headknocker). . . . DOWN

2. Canopy air bungee cylinder pressure gage . . . . . PER INSTRUCTION ON BUNGEE

3. External canopy jettison system initiator. . . . . SAFETY PIN REMOVED

4. Ejection seat catapult pin block assembly and one canopy jettison initiator pin . . . . . REMOVED

5. Emergency oxygen lanyard. . . . . CONNECTED

6. DART system lanyard. . . . CONNECTED

7. Emergency oxygen bottle . . 1800 PSI

8. Canopy seat interlock cable . . . . . CONNECTED

9. Face curtain and alternate handles . . . . . STOWED

10. Emergency harness release handle stowed and parachute arming cable secured . . . . . CHECK

11. Shoulder harness secure . . LOCKING PIN VISIBLE

12. Lap belt secure . . . . . LOCKING PINS VISIBLE

13. Zero-delay lanyard . . . . . CONNECTED

INTERIOR INSPECTION

Check the general appearance of the cockpit, and make sure that all gear is properly stowed and secure. Make proper harness, oxygen, radio, and antiblackout connections, and perform the following checks before starting the engine:

CAUTION

Upon entering the cockpit, make certain that the landing gear handle is DOWN and that the hose jettison switch (tanker only) is OFF (forward).

1. Expose suit blower. . . . . OFF

2. Emergency speedbrake knob . . . . . NORMAL

3. Antiblackout suit blower, and oxygen-radio hoses. . . . . CONNECT TO CONSOLE

4. Oxygen switch . . . . . ON, CHECK FLOW, THEN OFF

4a. Radar Beacon . . . . . OFF

5. AFCS standby switch. . . . . OFF

6. AFCS aileron trim switch . . . . . NORM

7. Emergency fuel transfer switch . . . . . OFF

8. Air refueling fuselage only switch (A-4F) . . . . . NORM

9. Drop tanks switch. . . . . OFF

10. Radar selector switch (Reworked per A-4 AFC 387) . . . OFF

11. Engine starter switch . . . . PULLED UP

12. Fuel control switch. . . . . PRIMARY

13. Manual fuel shutoff control lever. . . . . NORMAL (GUARD DOWN)

14. Smoke abatement switch . . OFF

15. JATO arming-switch . . . . . SAFE

16. Throttle . . . . . OFF

17. Speedbrake switch . . . . . CLOSE

18. Master exterior lights switch . . . . . OFF

19. Flap handle . . . . . UP

20. Spoiler switch . . . . . OFF

21. Nosewheel steering switch . . . . . NORM

22. Throttle friction wheel . . . . AS DESIRED

23. Horizontal trim disconnect switch . . . . . ON

24. Accelerometer . . . . . PUSH TO RESET

25. Airspeed indicator . . . . . 0, SET

26. Vertical velocity indicator 0

27. Gunsight . . . . . SET, LOCK

28. Radar altimeter . . . . . OFF

29. Emergency stores jettison select switch . . . . . AS DESIRED

30. All armament switches . . . . OFF

31. Audio bypass switch . . . . . NORM

32. Emergency handles . . . . . STOWED

33. Arresting hook handle . . . . UP

34. Navigation computer . . . . . SET

35. UHF function switch . . . . . OFF

36. TACAN . . . . . OFF

37. IFF master switch . . . . . OFF

38. IFF controls . . . . . SELECT CODE

39. Compass controller . . . . . SLAVED, LATITUDE SET

40. Interior lights control panel . . . . . ALL SWITCHES OFF

41. Emergency generator bypass switch . . . . . NORMAL

42. TACAN antenna switch . . . . AS DESIRED

43. Spare lamps container . . . . ADEQUATE SUPPLY

44. Rain removal switch . . . . . OFF

45. Engine anti-icing switch . . . OFF

46. Temperature knob . . . . . AS DESIRED

47. Cabin pressurization switch . . . . . NORMAL

48. Windshield defrost switch . . . . . HOLD

49. Exterior lights control panel . . . . . ALL SWITCHES OFF

WARNING

Make certain the ejection seat safety handle is stowed and locked in the full UP position before flight.

Before Starting the Engine

Ascertain that the areas forward and aft of the aircraft are clear of personnel and loose objects. See figure 1-54 for danger areas. Make certain that fire fighting equipment is available and manned.

Starting the Engine

An electrical power supply of 115 vac for ignition and a source of starter air is required for ground starting the engine. The two methods of starting the engine are pilot-controlled and ground-controlled starts.

PILOT-CONTROLLED STARTS

Pilot-controlled starts should be made whenever possible, to avoid starter motor overspeed. The time delay inherent in initiating or shutting off the starter air, when using hand signals, makes the ground-controlled start less desirable.

SECTION VIII
ARMAMENT SYSTEMS

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Armament Equipment 8-1

ARMAMENT EQUIPMENT

General

This section describes the minimum armament equipment required to release external stores carried in a tactical environment and a basic description of the gunsight.

Weapon systems incorporated in the aircraft include the SIDEWINDER missile system, AWW-1 fuze function control system, CP-741/A weapon release system, and the AWE-1 weapon release system in addition to the normal ordnance delivery system.

A complete description of the aircraft weapon systems, check procedures, flight procedures, and stations loadings are contained in Confidential Supplement, NAVAIR 01-40AVF-1A or A-4/TA-4 Tactical Manual, NAVAIR 01-40AV-1T. This flight manual is incomplete without the confidential supplement and the tactical manual.

The aircraft is capable of carrying a wide variety of ordnance. All stores are carried externally on five racks. A four-hook ejector bomb rack is installed on the centerline (fuselage) station, and a two-hook bomb ejector rack is installed on each of the four wing stations. The centerline rack (AERO 7A-1) can be used to carry stores requiring either 30- or 14-inch suspension. Wing racks (AERO 20A-1) are provided with 14-inch suspension only.

Armament Controls

The cockpit includes an armament panel, control stick armament switches, emergency stores release handle, gunsight, and a gunsight reticle light control panel. Controls used with specific weapon systems are covered in A-4/TA-4 Tactical Manual (NAVAIR 01-40AV-1T).

ARMAMENT PANEL

The armament panel (figure 8-1) is located below the instrument panel. Armament panel controls consist of the MASTER armament switch, STATIONS select switches, function selector switch, bomb ARM switch, GUNS switch, and EMER SEL switch.

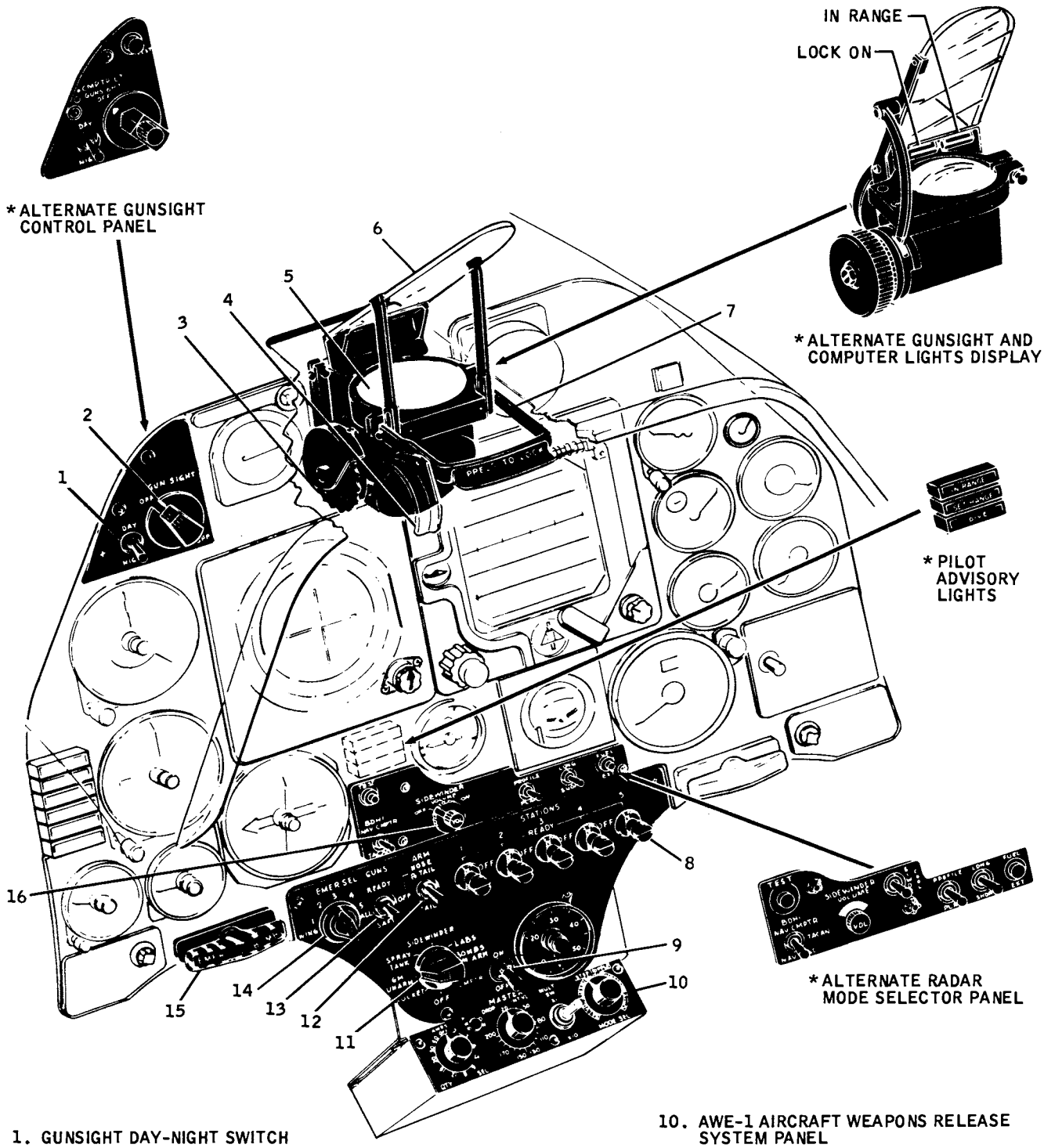
MASTER ARMAMENT SWITCH. All armament circuits are controlled by the MASTER armament switch (figure 8-1) with the exception of gun charging and emergency jettisoning of external stores. The MASTER armament switch must be in the ON position to energize armament circuits.

NOTE

- When the landing gear handle is in the DOWN position, an armament safety switch interrupts the power supply circuit to the MASTER armament switch and the gun charging circuit.

- When the aircraft is on the ground, an armament safety circuit disabling switch may be used to energize an alternate circuit for checking the armament system. This circuit is energized by momentarily closing the disabling switch located in the right-hand wheel well. Raising the landing gear or moving the MASTER armament switch to OFF will restore the armament safety circuit to normal operation.

STATIONS SELECT SWITCHES. Five STATIONS select switches (figure 8-1) are provided for armament release. Each switch has READY and OFF positions. The switches provide selection of any station or combination of stations for firing or release of external stores (except for emergency release). A number above each switch identifies the switch with the external stores station it controls.



1. GUNSIGHT DAY-NIGHT SWITCH
2. GUNSIGHT LIGHT CONTROL
3. GUNSIGHT ELEVATION CONTROL
4. ELEVATION CONTROL GUARD
5. GUNSIGHT
6. GUNSIGHT REFLECTION PLATE
7. ELEVATION CONTROL LOCKING YOKE
8. STATIONS SELECT SWITCHES
9. MASTER ARMAMENT SWITCH
10. AWE-1 AIRCRAFT WEAPONS RELEASE SYSTEM PANEL
11. FUNCTION SELECTOR SWITCH (*CMPTR POSITION)
12. BOMB ARMING SWITCH
13. GUNS SWITCH
14. EMERGENCY SELECTOR SWITCH
15. EMERGENCY STORES RELEASE HANDLE
16. SIDEWINDER COOLANT OFF-ON AND VOLUME CONTROL SWITCH

ZZ1-5-A

*BuNo. 155051, 155052, 155055, 155060-155063, and 155069.

Figure 8-1. Armament Controls

FUNCTION SELECTOR SWITCH. A rotary function selector switch (figure 8-1) selects the type of armament to be released. On A-4G aircraft BuNo. 154903 - 154910, the switch may be set in any of eight separate detent positions. Seven of the positions (labeled OFF, ROCKETS, GM UNARM, SPRAY TANK, SIDEWINDER, LABS, and BOMBS & GM ARM) are operational. The eighth detent position is not used or identified. The switch must be rotated counterclockwise to be returned to the OFF position, since a stop prevents clockwise rotation beyond the eighth detent.

A-4G aircraft BuNo. 155051, 155052, 155055, 155060 - 155063, and 155069 are equipped with the CP-741/A weapon release computer system. In these aircraft, the eighth detent position of the function selector switch (labeled CMPTR) is used for weapon computer releases.

BOMB ARM SWITCH. The bomb ARM switch (figure 8-1) is a three-position toggle switch with positions labeled NOSE & TAIL, OFF, and TAIL. Placing the switch in the NOSE & TAIL position energizes the nose and tail mechanical bomb arming units on each ejector rack. When in the TAIL position, only the tail arming unit on the ejector rack is energized. A mechanical bomb arming unit, when energized, locks onto the upper end of the arming wire, causing the arming pin to be withdrawn as the bomb falls from the aircraft. When the arming switch is in the OFF position, the mechanical arming units are not energized permitting the arming wires to fall with the bomb, and the bomb falls unarmed.

GUNS SWITCH. The GUNS switch (figure 8-1) is a two-position toggle switch with positions identified SAFE and READY. When the switch is in the SAFE position, the breechblock of each gun is in an out-of-battery position and the guns are inoperative. When in the READY position, the gun charging and firing circuits are completed, making the guns ready for firing.

EMERGENCY SELECTOR SWITCH. The rotary emergency selector switch, identified EMER SEL (figure 8-1), selects the external stores to be jettisoned when the emergency stores (EMER BOMB) release handle is pulled. The switch may be set in any of seven separate detent positions (labeled WING, 1, 2, 3, 4, 5, and ALL). With the switch placed in WING position, external stores on wing stations 1, 2, 4, and 5 will jettison when the emergency stores release handle is pulled. With the switch placed in ALL position, external stores on all stations (1 through 5) will jettison. Placing the switch in any of the numerical positions and pulling the emergency stores release handle, will jettison only the external stores on the corresponding station. The emergency selector switch and emergency stores release will function on either the main or emergency generator.

CONTROL STICK ARMAMENT SWITCHES

BOMB RELEASE BUTTON. The bomb release button, often referred to as the "pickle" switch, is located on the left side of the control stick grip and is identified with the letter "B." The bomb release button functions only when operating on the main generator.

GUN-ROCKET TRIGGER. The gun-rocket trigger is located on the front of the control stick grip and is the initiator of gun and/or rocket firing when the proper conditions are established. When depressed, the gun-rocket trigger fires guns and/or rockets in any one of three arrangements: (1) With the function select switch set in OFF and the GUNS switch in READY, the guns are fired. (2) With the function select switch set in ROCKETS and the GUNS switch in SAFE, the rockets will be fired from all stations that have the STATIONS select switches set in READY. (3) With the function select switch set in ROCKETS and the GUNS switch in READY, the guns will fire and all rockets will fire from stations that have the STATIONS select switches set in READY. The gun-rocket trigger functions only when operating on the main generator.

EMERGENCY STORES RELEASE HANDLE. An emergency stores release handle, identified EMER BOMB (figure 8-1), is located on the lower left side of the instrument panel. Pulling the handle closes a switch in the emergency release circuit, bypassing the normal release controls. Power to the emergency circuit is supplied by the primary bus which is energized by either the main or emergency generator. Stores selected by the EMER SEL switch may be released regardless of the position of the landing gear control or MASTER armament switch.

EXTERNAL STORES RELEASE. Release of external stores from the ejector-type racks is accomplished by electrical detonation of cartridges. When cartridges are fired by pressing the bomb release button, the initial force is an upward thrust which opens the hooks, followed by a downward ejector thrust of several inches which forces the store clear of the aircraft. An ejector foot is located aft of center on the bomb rack to counteract the twisting moment of the bomb caused by

drag forces in high-speed flight. Each ejector rack contains two cartridges; both are fired by either the normal or emergency release circuit.

NOTE

Normal release of external stores is possible only while operating on main generator. Emergency release may be accomplished while operating on the main or emergency generator.

Normal Dive Bomb Release

1. ARM switch . . . . . TAIL OR NOSE & TAIL
2. Function selector switch . . . . . BOMBS & GM ARM
3. STATIONS select switches (as desired) . . . . . READY
4. MASTER armament switch . . . ON
5. Bomb release button . . . . . DEPRESS

NOTE

For releasing stores in an inert condition, the bomb ARM switch (controlling mechanical arming circuits) may be in the OFF position and/or the function selector switch on the AN/AWW-1 fuze function control panel (controlling electrical arming circuits) must be in the SAFE position.

Emergency Release

1. Emergency select (EMER SEL) switch . . . . . AS REQUIRED
2. Emergency stores (EMER BOMB) release handle . . . . . PULL

WARNING

Do not jettison bombs below maximum fragmentation envelope whether in an armed or safe condition.

CAUTION

When the emergency stores release handle is used to jettison wing stores only (EMER SEL switch set in WING) ensure that the STATIONS select switch for the centerline station is in the OFF position to prevent electrical feedback through the normal bomb release circuit and inadvertent release of the center store.

Gunsight

A lighted gunsight (figure 8-1) is located directly above the instrument panel. Gunsight controls include an elevation control knob, an elevation control locking yoke, and a gunsight reticle light control.

Light is beamed through a condenser lens and a ladder-type (fixed) reticle upward through a collimating lens to a reflector plate where it is superimposed upon the target. When using the gunsight with guns or rockets, the proper ballistic drop of the projectile is set into the gunsight as down lead. The center of the reticle image is kept on the center of the target, provided it is a fixed target. If the target is moving, the required lead angle must be established by using the graduations on the reticle.

The gunsight elevation control knob is located on the left side of the gunsight and is used to adjust the angle of the glass reflector for increasing or decreasing lead angle. Prior to changing lead angle with the elevation control, the locking yoke must be lifted to an unlocked position. The gunsight elevation control knob on aircraft reworked per A-4 AFC 451 has improved braking action on sight elevation adjustment mechanism to prevent loss of boresight through flight vibration or landing shock.

CAUTION

Failure to completely unlock the yoke prior to rotating the elevation control knob may damage the mechanism and result in sight elevation errors.

After setting the elevation control knob to the desired lead angle, the locking yoke must be pressed firmly against the sight body in the locked position.

CAUTION

When moving the yoke into the locked position, do not press on the guard attached to the locking yoke.

GUNSIGHT RETICLE LIGHT CONTROL

The gunsight reticle light control (figure 8-1) is located on the upper left corner of the instrument panel. By rotating the control knob, either of two filaments may be selected for lighting. Light intensity can be adjusted between the OFF positions for either filament.

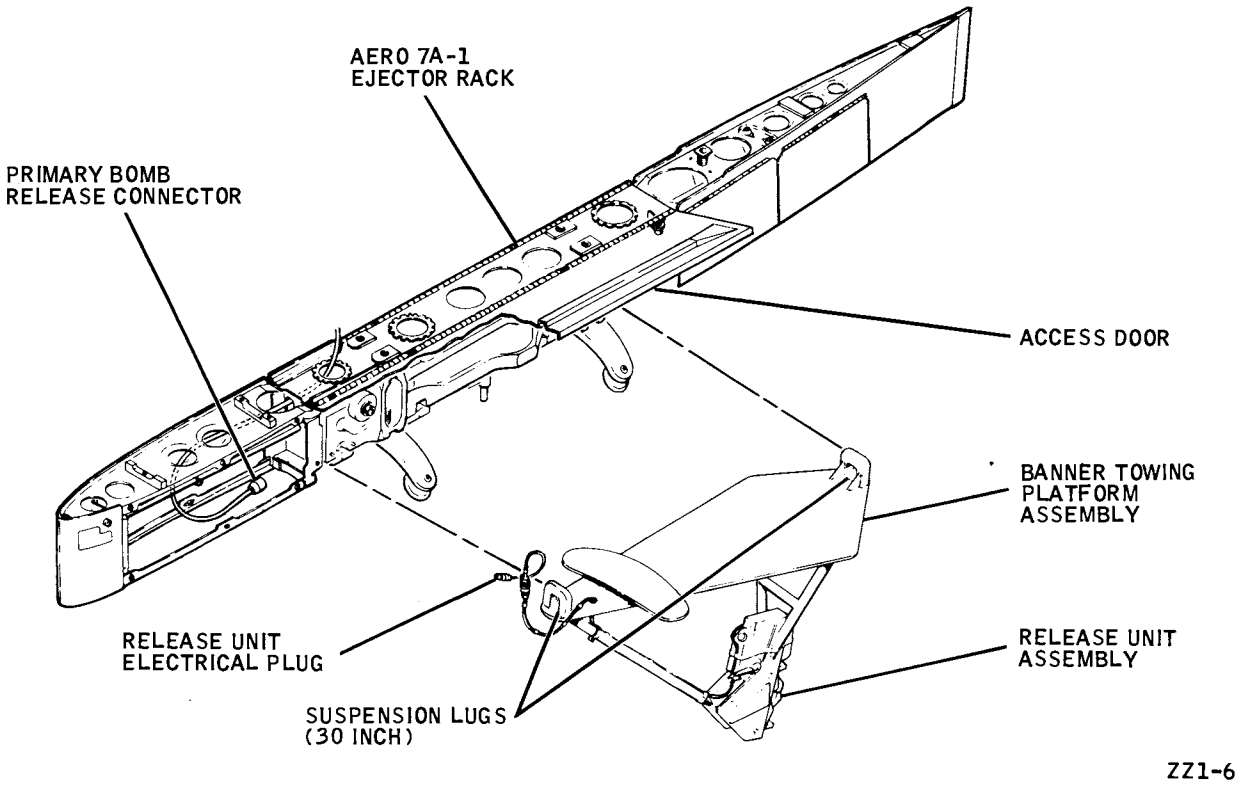


Figure 8-2. Banner Towing Platform and Release Assembly

On A-4 aircraft reworked per A-4 AFC 353-II, a two-position toggle switch labeled DAY-NIGHT is located adjacent to the gunsight reticle light control. When the switch is in the DAY position, a gunsight light resistor circuit (also added per A-4 AFC 353-II) is bypassed allowing maximum power to the gunsight reticle light control rheostat. With the switch in the NIGHT position, power is directed through the gunsight light resistor circuit, resulting in lower light intensity variance controlled by the reticle light control rheostat.

Aircraft reworked per A-4 AFC 388 have concentric light intensity control knobs on the gunsight lighting control panel. The inner knurled knob, within the gunsight light control knob, is labeled CMPTR LT and controls the intensity of the CP-741/A computer LOCK ON and IN RANGE display lights. The computer display lights are mounted on the upper gunsight assembly for pilot convenience. Although the CMPTR LT control knob does not have a direct function in gunsight light control, it enables the pilot to adjust the intensity of the display lights at the most comfortable level for gunsight vision.

Banner Towing System

The banner towing system utilizes the aircraft weapon normal release system and the Aero 7A-1 centerline ejector rack in conjunction with the banner towing platform assembly and the release unit assembly (figure 8-2).

The banner towing platform assembly is suspended from the Aero 7A-1 ejector rack. Release of the banner tow target is accomplished with the aircraft weapon normal release system as follows:

1. MASTER arm switch . . . . . ON
2. STATIONS select switch . . . . . 3 READY
3. Function selector switch . . . . . BOMBS & GM ARM
4. Bomb release button . . . . . DEPRESS

The banner towing platform assembly can be jettisoned by means of the aircraft emergency release system.

1. Emergency select (EMER SEL) switch . . . . . STATION 3
2. Emergency stores (EMER BOMB) release handle . . . . . PULL

TABLE 8-2. EJECTION VELOCITIES

Rack	Store Weight (lb)	Ejection Velocity (fps)	Recommended CP-741/A Eject Velocity (fps)
MER/TER-7	All	*	5
PMBR/MBR	All	0	0
Aero-7A-1 (1 MK 1 MOD 2 and MK 2 MOD 0 Cartridges)	250	35	35
	500	29.5	30
	750	25.5	25
	1000	22.7	20
	2000	16.5	15
Aero-20A-1	250	24	25
	500	19.5	20
	750	15.4	15
	1000	12.5	10

*The MER/TER-7 ejection velocity normal to fuselage reference plane varies with rack station and store weight. This variance is from 4.3 fps to 9.3 fps. By using an average 5 fps (switch module ejection velocities are set in 5-fps increments from 0 to 45 fps), setting the maximum system error due to the ejection velocity will be less than 5 mils.

be reset in flight. Parameters which are set into the weapon control panel for dive-toss bombing are:

1. ATTACK MODE switch to TOSS or STIK.

2. Ballistic selector switch to the module corresponding to the ordnance to be released.

3. BURST height appropriate to the ordnance/fuzing/target combination.

4. TARGET height above mean sea level.

5. D-VALUE as determined from worksheet.

Settings in steps 4 and 5 are used only in BARO mode toss bombing and perform no function during RADAR mode attacks. However, radar malfunction or failure to achieve lock-on is an ever-present possibility. If no radar ranging information is provided to the CP-741/A computer, the CP-741/A computer will automatically use the values set into the weapon control panel to compute a BARO solution. Therefore, pilots should set into these controls the best available information for an alternative BARO mode attack in case the radar does not function as planned.

The preflight procedure for preparing the AN/APG-53B radar to function in its air-to-ground mode is described in Section I.

Turn on the gunsight, set it at the desired brilliance, conduct optical boresight, check and ensure that the sight drum is set at 0 mils sight depression.

If multiple releases are planned, the AWE-1 cockpit intervalometer should be set up for stick bombing. (RIPPLE mode and interval.) The CP-741/A sends out the first release signal and the intervalometer sends out all additional releases. The release signal (aural tone) from the computer continues until the last bomb is released. In STEP mode, tone ceases when bomb button is released.

AFTER ENGINE START

Turn the Radar Mode Selector Switch to STANDBY. Allow at least 3 minutes for equipment warmup prior to selecting an operating mode of the radar.

THE DELIVERY

The armament switches are set up as follows:

1. AWE-1 QUANTITY, INTERVAL AND MODE. . SELECTED

2. NOSE/TAIL ARM or AWW-1. . . . . SELECTED

3. MIL Setting. . . . . ZERO

4. CP-741/A Weapon Control Panel . . . . . SET

5. Radar . . . . . A/G

6. Station Selector Switch . . . . . DESIRED STATIONS

7. Function Selector Switch . . . . . BOMBS & GM ARM

8. Master Armament Switch . . . . . ON

NOTE

If (INT) AAC 444 is not incorporated in AWE-1, position master arm switch to ON before turning AWE-1 on.

Maneuver the aircraft to be within the capability envelope of the computer bombing system at time of pullup (figures 8-11 and 8-12). Maximum slant range is 22,500 feet, or a maximum altitude of 15,000 feet in the BARO mode.

After ensuring that the IN RANGE light is illuminated, the pilot may initiate his release at any time he desires. To release the bombs, put the pipper on the target, depress the bomb release button, and establish a 2- to 6-g pullup. It is not necessary to fly a g schedule during the pullup. However, a higher g during pullup will provide a more rapid release and reduce the down range travel of the aircraft. These factors will tend to improve the accuracy of delivery. Therefore, fly the maneuver at the highest g load that is comfortable. The bomb release tone will come on when the bomb release button is depressed and go off when the last bomb selected is automatically released. If a step mode of the AWE-1 is used, the tone will go off at bomb button release.

When repeated passes are planned, a straight and level leg of at least 1 minute will permit precession of the AJB-3A Gyro to be corrected.

The CP-741/A bombing system does not provide corrections for the effects of the existing wind. Either of two approaches can be used to correct for these effects:

1. Offset the aim point into the wind a distance that will compensate for the effects of the wind at release altitude.

2. Track the target with the pipper. Crosswind effects will require the upwind wing low to keep the pipper on target in coordinated flight. Depress the bomb button while maintaining the pipper on target and pull up in the plane perpendicular to the plane of the wings at the time of pickle. This maneuver corrects for one-half of the effects of crosswind. To correct also for the effects of range wind, keep the pipper vertically aligned with the target but offset the aim point along the run-in track into the range wind component.

Large impact errors can be expected when making repeated runs in the BARO mode at low dive angles. Vertical gyro precession will result in slant range error input to the computer.

For best accuracy, a 2- to 4-second tracking time is recommended. The recommended tracking time is not mandatory but will improve accuracy. The two most important items are (1) "In-Range" light illumination and (2) steady pipper tracking.

Accuracy is seriously degraded if bomb release button is depressed while pipper is sweeping through the target.

CAUTION

Do not release bombs if the "In-Range" light is not illuminated. This light indicates the computer has a bombing solution. Release at slant ranges near 10,000 feet without an "In-Range" light can result in impact errors up to 3000 feet.

NOTE

The information in table 8-3 will allow additional use of the MK 76 series and the MK 76 weapon adapter modules until specific modules are available.

STATION LOADING

Refer to Confidential Supplement NAVAIR 01-40AVC-1A or A-4/TA-4 Tactical Manual, NAVAIR 01-40AV-1T.

MISSILE, AIR-TO-GROUND

Refer to Confidential Supplement NAVAIR 01-40AVC-1A, Confidential Supplement NAVAIR 01-40AVF-1A, or A-4/TA-4 Tactical Manual, NAVAIR 01-40AV-1T.

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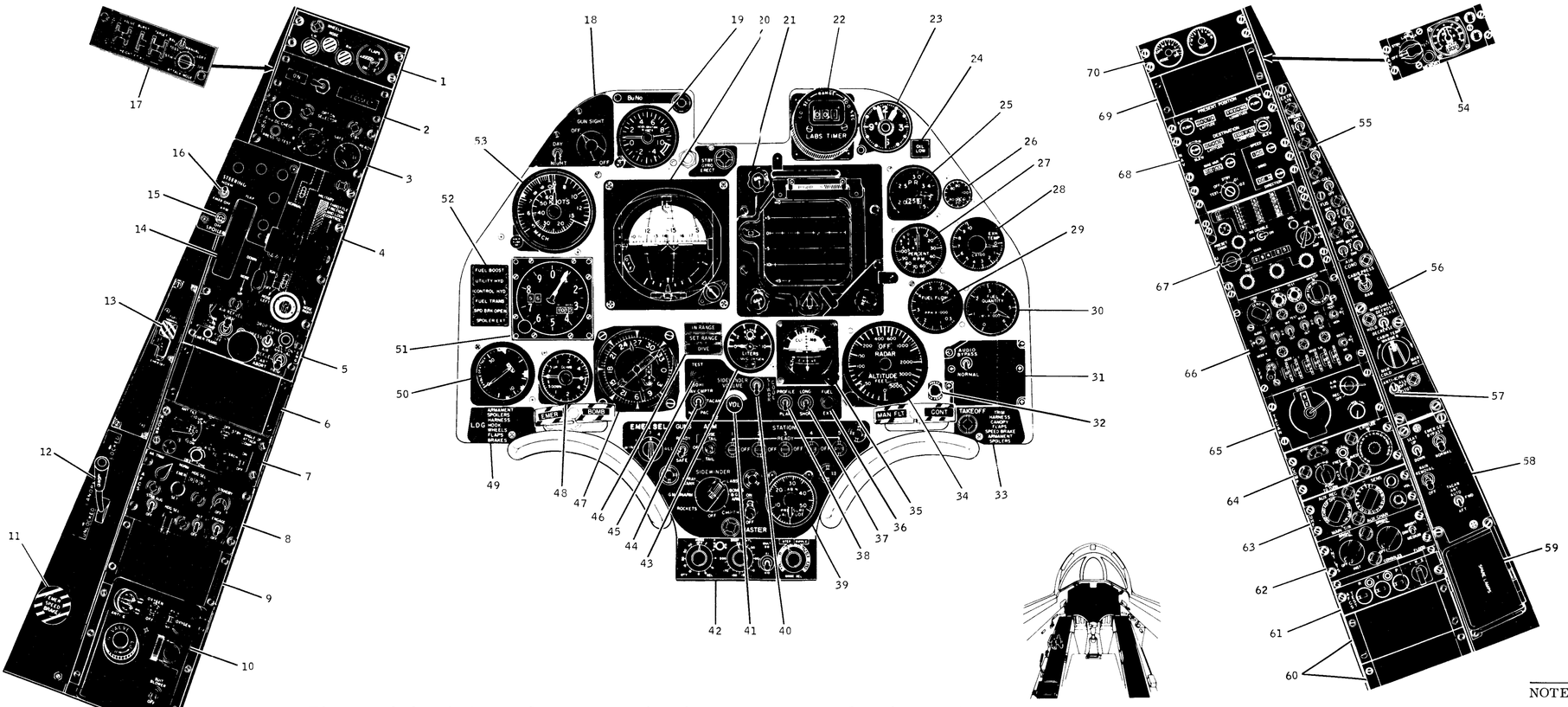
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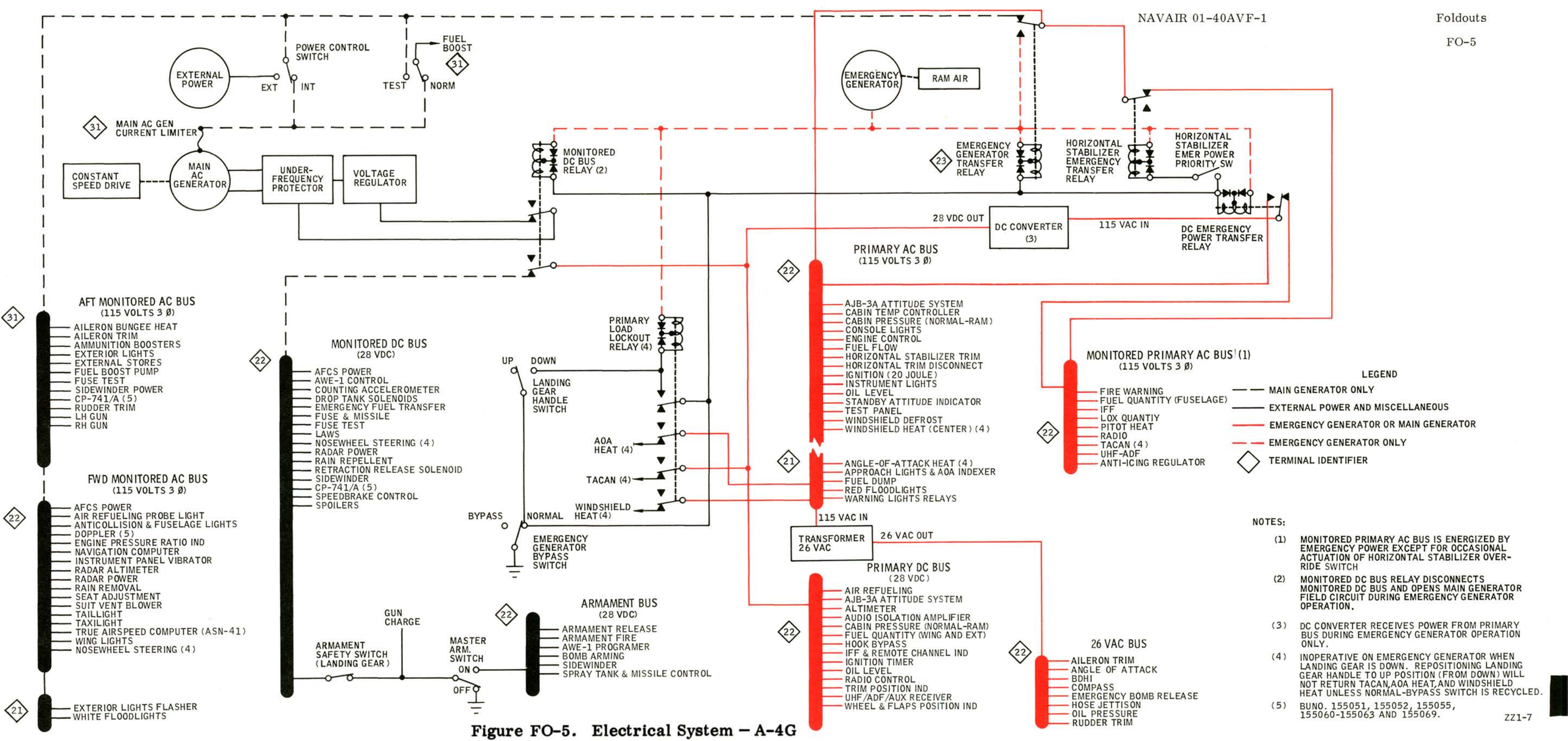


1. WHEELS AND FLAPS POSITION INDICATOR PANEL
2. HORIZONTAL TRIM DISCONNECT SWITCH
3. AWW-1 FUZE FUNCTION CONTROL PANEL
4. THROTTLE PANEL
5. ENGINE CONTROL PANEL
6. BLANK PANEL
7. RADAR CONTROL PANEL
8. AUTOPILOT CONTROL PANEL
9. BLANK PANEL
10. AIRCREW SERVICES PANEL
11. EMERGENCY SPEEDBRAKE CONTROL
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13. MANUAL FUEL SHUTOFF CONTROL LEVER
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19. ACCELEROMETER
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26. OIL PRESSURE INDICATOR
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60. BLANK PANEL
61. AFCS TEST PANEL
62. INTERIOR LIGHTS PANEL
63. AUXILIARY UHF CONTROL PANEL
64. COMPASS CONTROL PANEL
65. TACAN CONTROL PANEL
66. IFF CONTROL PANEL
67. UHF CONTROL PANEL
68. NAVIGATION COMPUTER CONTROL PANEL
69. BLANK PANEL (1)
70. TRIM POSITION INDICATOR PANEL

ZZ1-4-A

NOTES: (1) BuNo. 154903-154910
(2) BuNo. 155051, 155052, 155055, 155060-155063, and 155069

Figure FO-2. A-4G Cockpit — Typical Left, Instrument, and Right Panels



NOTES:

(1) MONITORED PRIMARY AC BUS IS ENERGIZED BY EMERGENCY POWER EXCEPT FOR OCCASIONAL ACTUATION OF HORIZONTAL STABILIZER OVER-RIDE SWITCH

(2) MONITORED DC BUS RELAY DISCONNECTS MONITORED DC BUS AND OPENS MAIN GENERATOR FIELD CIRCUIT DURING EMERGENCY GENERATOR OPERATION.

(3) DC CONVERTER RECEIVES POWER FROM PRIMARY BUS DURING EMERGENCY GENERATOR OPERATION ONLY.

(4) INOPERATIVE ON EMERGENCY GENERATOR WHEN LANDING GEAR IS DOWN. REPOSITIONING LANDING GEAR HANDLE TO UP POSITION (FROM DOWN) WILL NOT RETURN TACAN, AOA HEAT, AND WINDSHIELD HEAT UNLESS NORMAL-BYPASS SWITCH IS RECYCLED.

(5) BUNO. 155051, 155052, 155055, 155060-155063 AND 155069.

ZZ1-7

Figure FO-5. Electrical System – A-4G