Aermacchi MB.339

for Microsoft Flight Simulator

FLIGHT MANUAL
Version 1.00 — October 2020

Published by IndiaFoxtEcho Visual Simulations

CHANGE LOG

17-Oct-2020
INITIAL RELEASE

WELCOME

The Aermacchi MB-339 is a military jet trainer and light attack aircraft designed and manufactured by Italian aviation company Aermacchi.
The MB-339 was developed during the 1970s in response to an Italian Air Force requirement that sought a replacement for the service's existing fleet of Aermacchi MB-326. Its design was derived from that of the MB-326, rather than a new design, and thus the two aircraft share considerable similarities in terms of their design. Aermacchi had found that the MB-339 was capable of satisfying all of the specified requirements while being the most affordable option available. The maiden flight of the MB-339 took place on 12 August 1976; the first production aircraft were delivered two years later.
Roughly half of all MB-339s entered service with the Italian Air Force, while the remainder have been sold to various export customers. As well as being used for training, the type is also flown by the Frecce Tricolori aerobatic display team. The type has been used in combat by both the Eritrean Air Force during the Eritrean–Ethiopian War of 1998-2000 and the Argentine Naval Aviation during the Falklands War of 1982. In both conflicts, the MB-339 was typically flown as an attack aircraft.

MINIMUM HARDWARE REQUIREMENTS

Due to the high-detail model and textures, we suggest to use the MB-339 on systems that meet or exceed the following requirements:

CPU: 3.5GHz dual core processor or better
GPU: at least 4Gb dedicated memory, Nvidia 960 or better recommended
RAM: 4.0Gb minimum
Hard Disk: 1.8Gb required for installation

INSTALLATION

This package is distributed both on the Microsoft Marketplace and by external vendors.

If you have purchased the package though the Marketplace and you have followed the on-screen instructions, no further action is required from your end. The plane should be available in the aircraft selection menu as the other default planes.

If you have purchased the package from an external vendor and the product comes with an .exe installer (such as SimMarket) the installer will ask you to provide the location of the COMMUNITY folder. The exact location of the folder will depend on your selection when you have installed Microsoft Flight Simulator. Once you have indicated where your COMMUNITY folder is, just follow the on-screen instructions.
The aircraft will be available in the aircraft selection menu next time you start Flight Simulator. If Flight Simulator was running during the install process, you need to close it and restart it for the aicraft to appear.l

If the aircraft is provided as a .zip file without any installer, just unzip the content of the file into your COMMUNITY folder.

CREDITS

Frecce Tricolori Virtuali.....3d modeling, texturing, flight modeling and testing.
(FTV Development team: Giuseppe Didiano, Camillo Perniciolo, Nicolò Carraro, Fabio Grasso, Erik Dattilo, Roberto Scolari)

Dino Cattaneo …..conversion to Flight Simulator, 3D animation, system and avionics programming, project management and project lead.

We'd like to thank the Beta testing Team and everyone who supported this project and IndiaFoxtEcho.

For questions, support and contact please write an email to indiafoxtecho@gmail.com or contact us on Facebook https://www.facebook.com/Indiafoxtecho-594476197232512/

ABOUT THIS MANUAL

This manual is partially based on the real world flight manual for the MB-339 but it has been vastly cut and edited to reflect the Microsoft Flight Simulator rendition.
Sections *blue italics* apply only to the simulated version of the aicraft.

THIS MANUAL SHALL NOT BE CONSIDERED A SOURCE FOR REAL-WORLD INFOMATION OR OPERATION OF THE MB-339 AIRCRAFT!

UPDATES

We will try our best to keep the product updated and squash significant bugs as soon as possible. Our update policy is as follows:

- major updates, which either require a new installer or a major changes to a significant number of files, are typically deployed as new installers and will be available from your distributor.

- minor updates or quick-fixes will be typically deployed as patches for manual installation on our blog indiafoxtecho.blogspot.com

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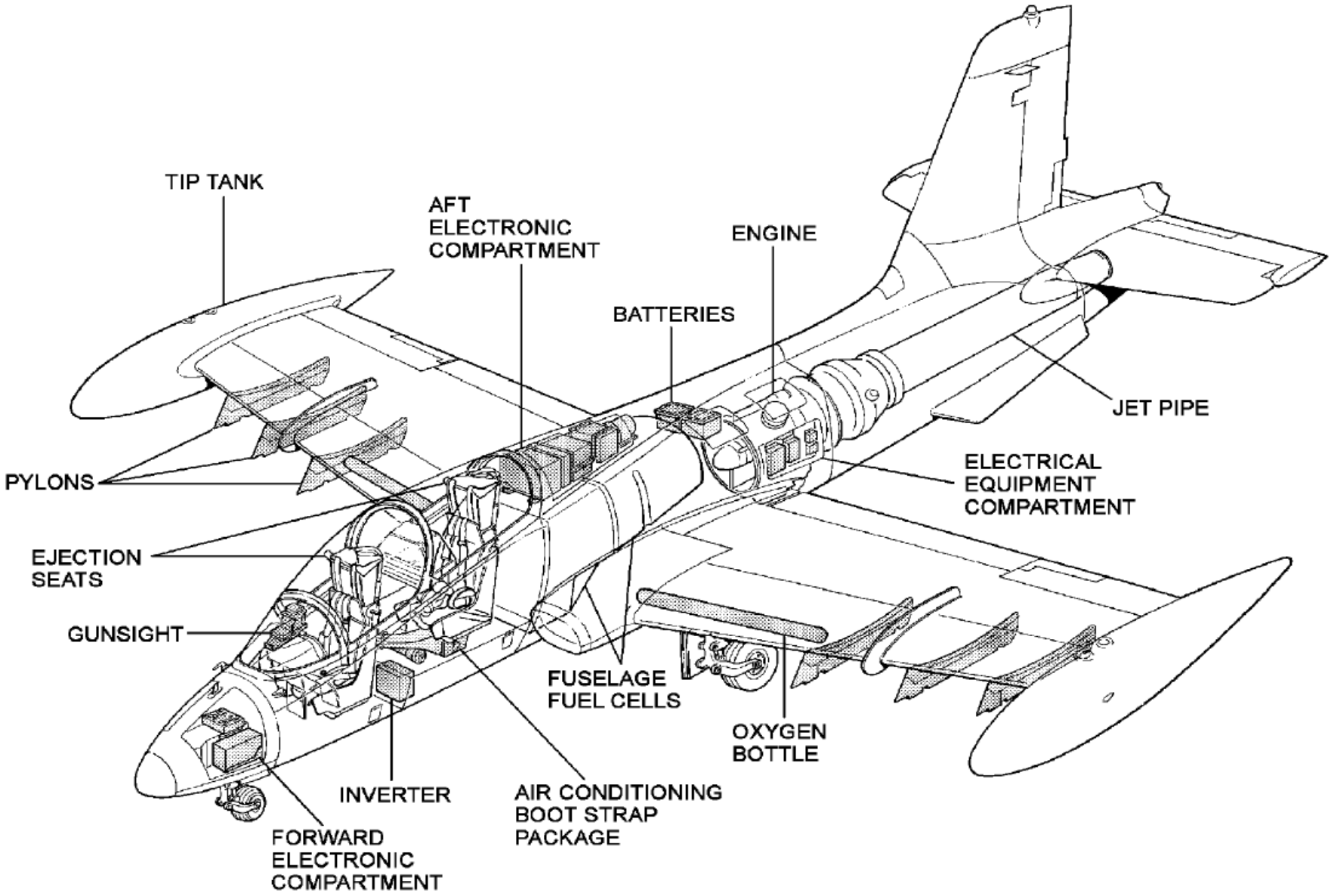
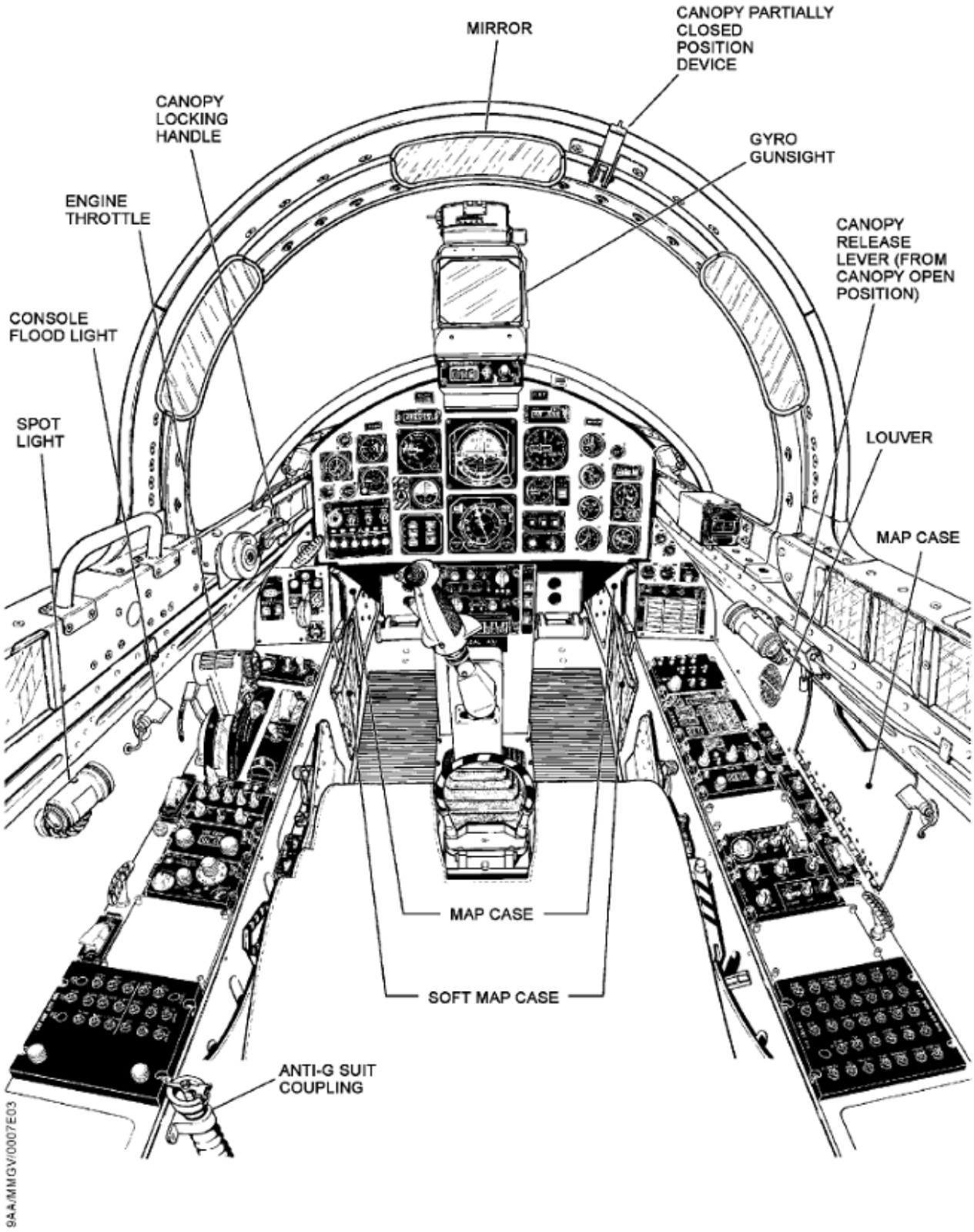
GENERAL ARRANGEMENT



FRONT CREW STATION **TYPICAL**

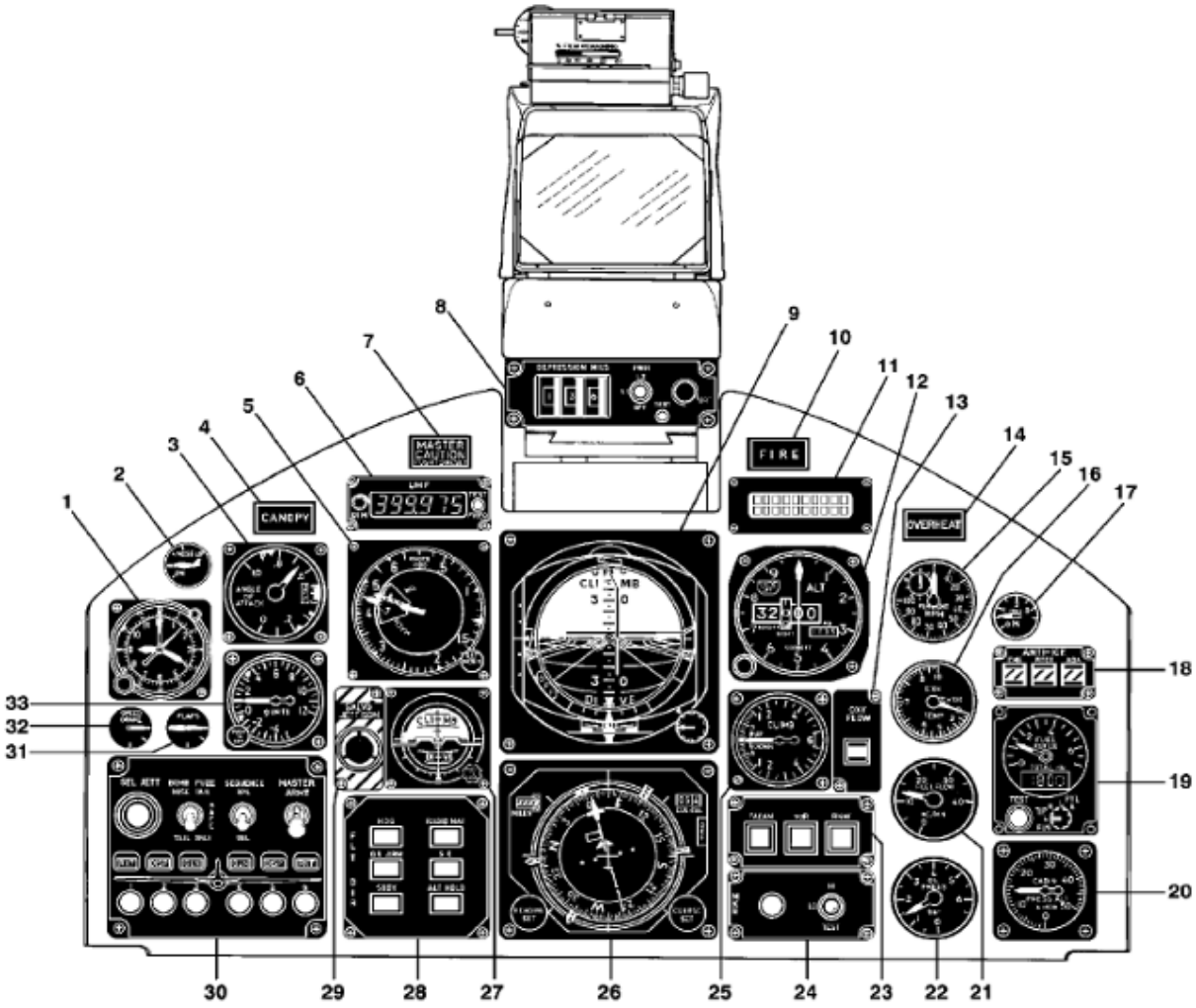


AIRCRAFT

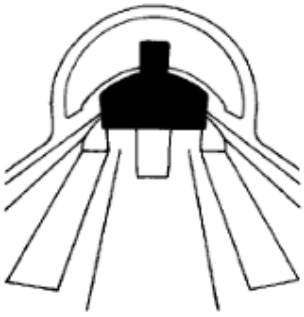
The MB-339A is a single-engine, two-seat subsonic aircraftmanufactured by Alenia Aermacchi S.p.A. in Venegono S. (Varese). The aircraft primary role is

FRONT INSTRUMENT PANEL

CENTRAL PANEL



1. CLOCK
2. LONGITUDINAL TRIM INDICATOR
3. ANGLE-OF-ATTACK INDICATOR
4. "CANOPY" WARNING LIGHT
5. MACH-AIRSPEED INDICATOR
6. UHF FREQUENCY INDICATOR
7. "MASTER CAUTION" LIGHT
8. GUNSIGHT CONTROL PANEL
9. ATTITUDE DIRECTOR INDICATOR (ADI)
10. "FIRE" WARNING LIGHT
11. REMOTE DISPLAY UNIT (RDU)
12. ENCODER ALTIMETER
13. OXYGEN FLOW INDICATOR
14. "OVERHEAT" CAUTION LIGHT
15. TACHOMETER
16. JET PIPE TEMPERATURE INDICATOR
17. OXYGEN PRESSURE GAUGE



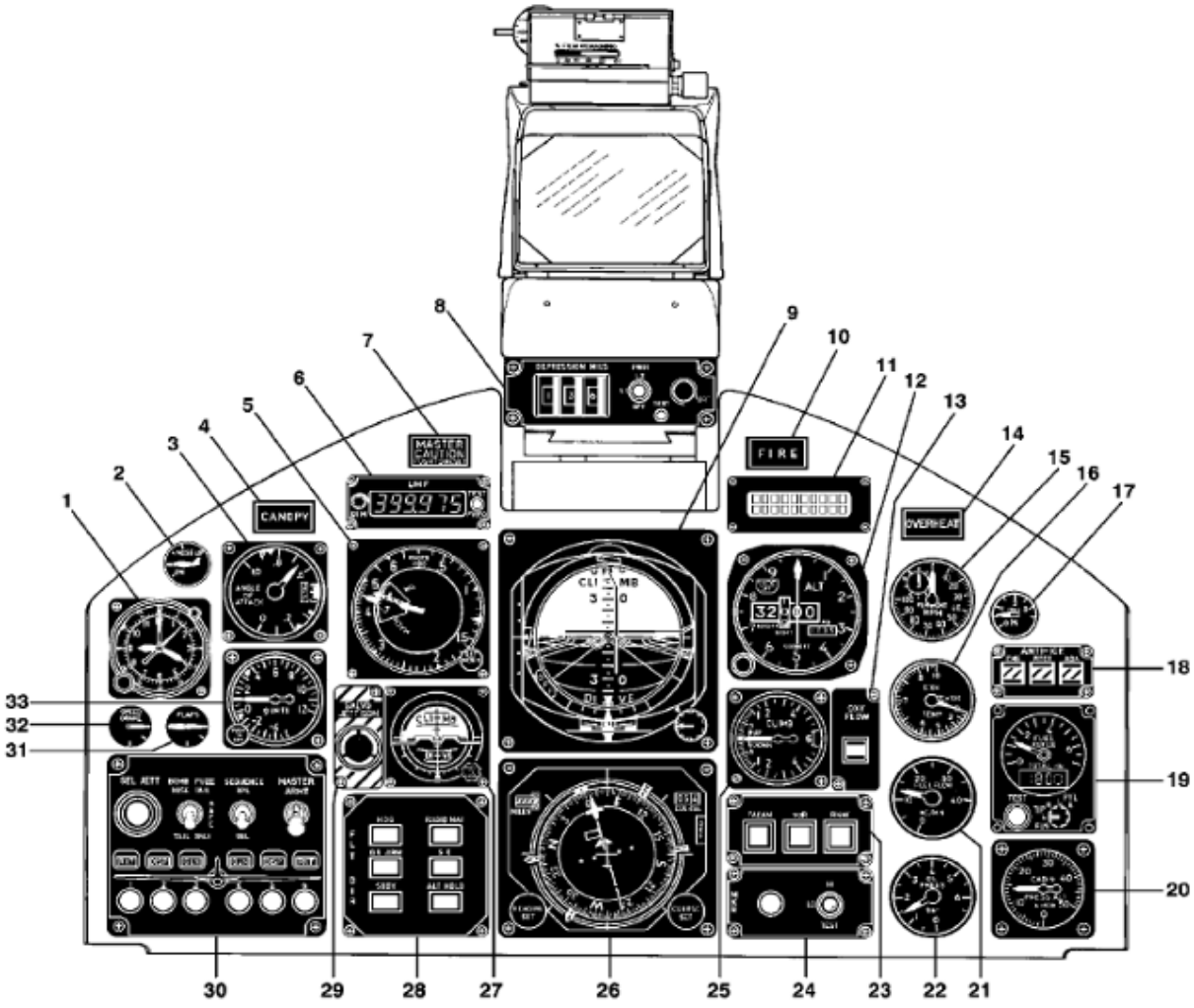
18. ANTI-ICE INDICATORS
19. FUEL QUANTITY INDICATOR
20. CABIN ALTIMETER
21. FLOWMETER
22. ENGINE OIL PRESSURE GAUGE
23. HSI CONTROL PANEL
24. MARKER BEACON CONTROL PANEL
25. VERTICAL VELOCITY INDICATOR
26. HORIZONTAL SITUATION INDICATOR (HSI)
27. STAND-BY ATTITUDE INDICATOR
28. "FLIGHT DIRECTOR" CONTROL PANEL
29. EXTERNAL STORES RELEASE PUSH-BUTTON
30. ARMAMENT CONTROL PANEL
31. FLAP POSITION INDICATOR
32. SPEED BRAKE POSITION INDICATOR
33. ACCELEROMETER

9AA/FM/2925_04

basic and advanced training. Its features, including external armament stores, allow it to fulfill the operational training and ground attack roles. The aircraft is powered by a 17.8 kN (4000 lbf) thrust Rolls-Royce Viper MK632-43 turbojetengine, andcan takeoff and land with amass up to 5900 kg (13000 lb).

FRONT INSTRUMENT PANEL

CENTRAL PANEL



1. CLOCK
2. LONGITUDINAL TRIM INDICATOR
3. ANGLE-OF-ATTACK INDICATOR
4. "CANOPY" WARNING LIGHT
5. MACH-AIRSPEED INDICATOR
6. UHF FREQUENCY INDICATOR
7. "MASTER CAUTION" LIGHT
8. GUNSIGHT CONTROL PANEL
9. ATTITUDE DIRECTOR INDICATOR (ADI)
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11. REMOTE DISPLAY UNIT (RDU)
12. ENCODER ALTIMETER
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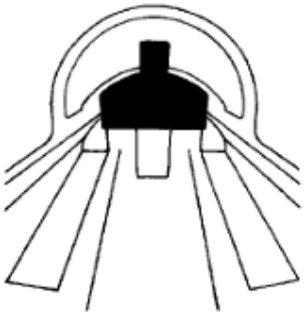
14. "OVERHEAT" CAUTION LIGHT
15. TACHOMETER
16. JET PIPE TEMPERATURE INDICATOR
17. OXYGEN PRESSURE GAUGE



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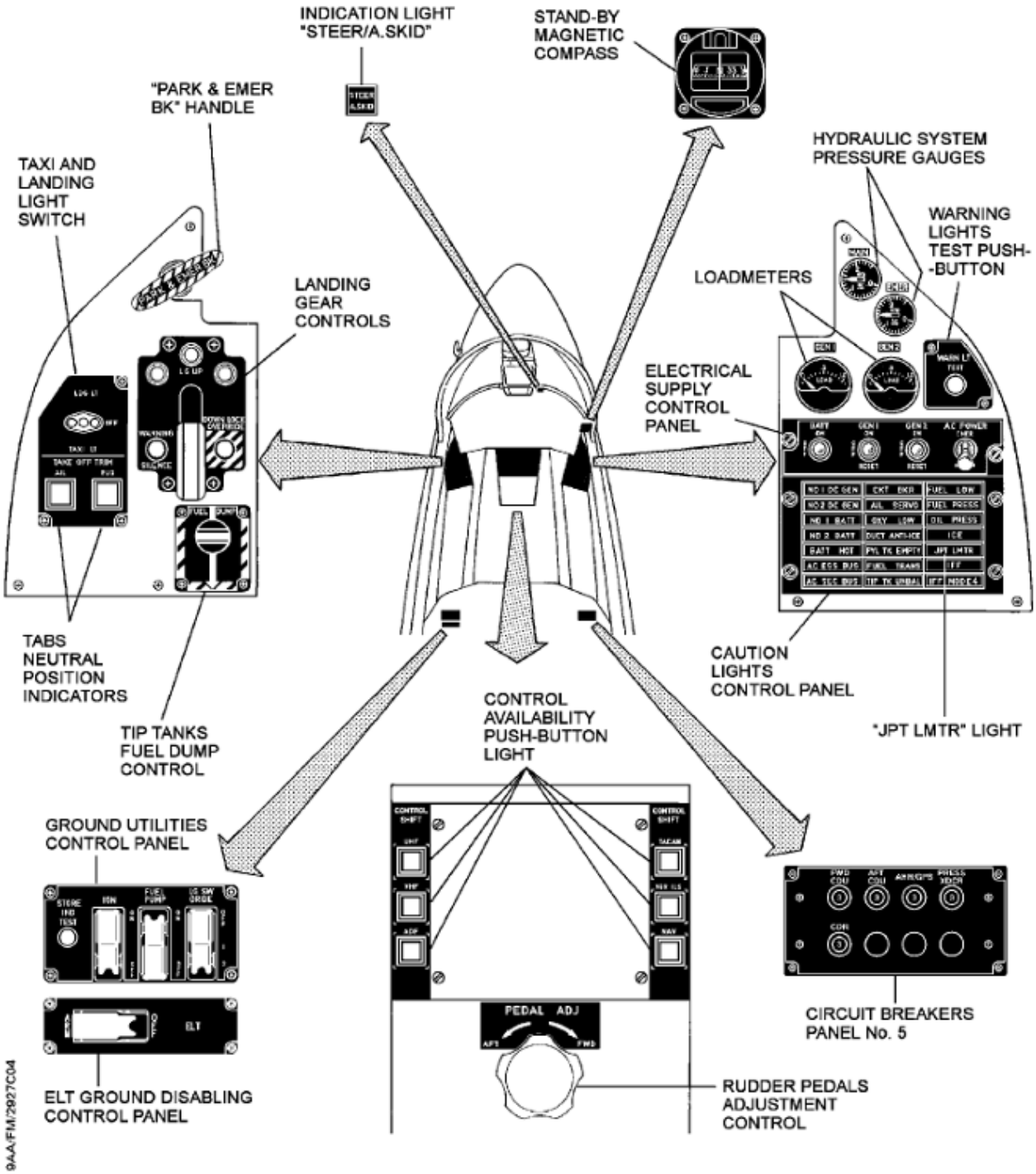
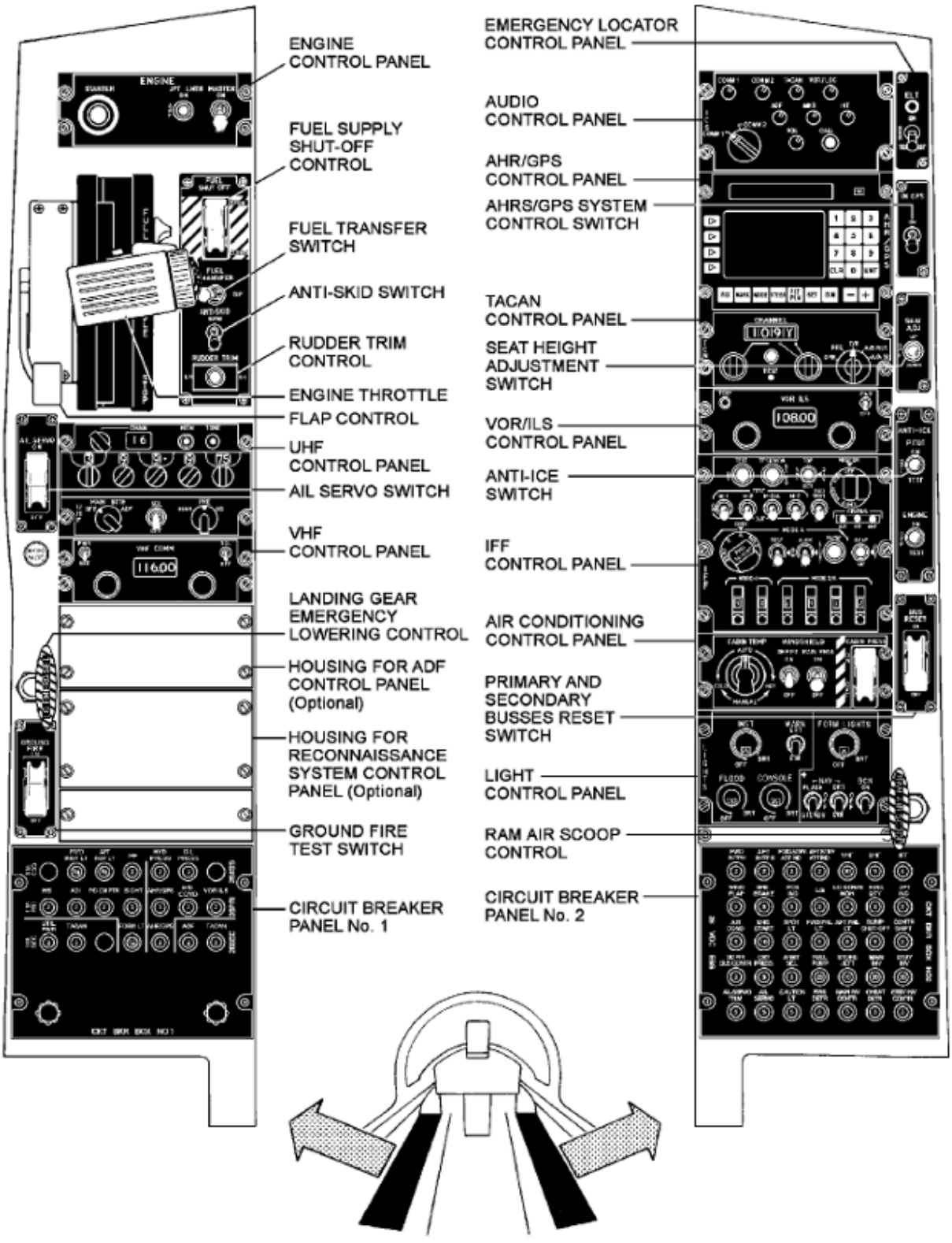
31. FLAP POSITION INDICATOR
32. SPEED BRAKE POSITION INDICATOR
33. ACCELEROMETER

FRONT INSTRUMENT PANEL

LATERAL PANEL AND CENTERSTAND



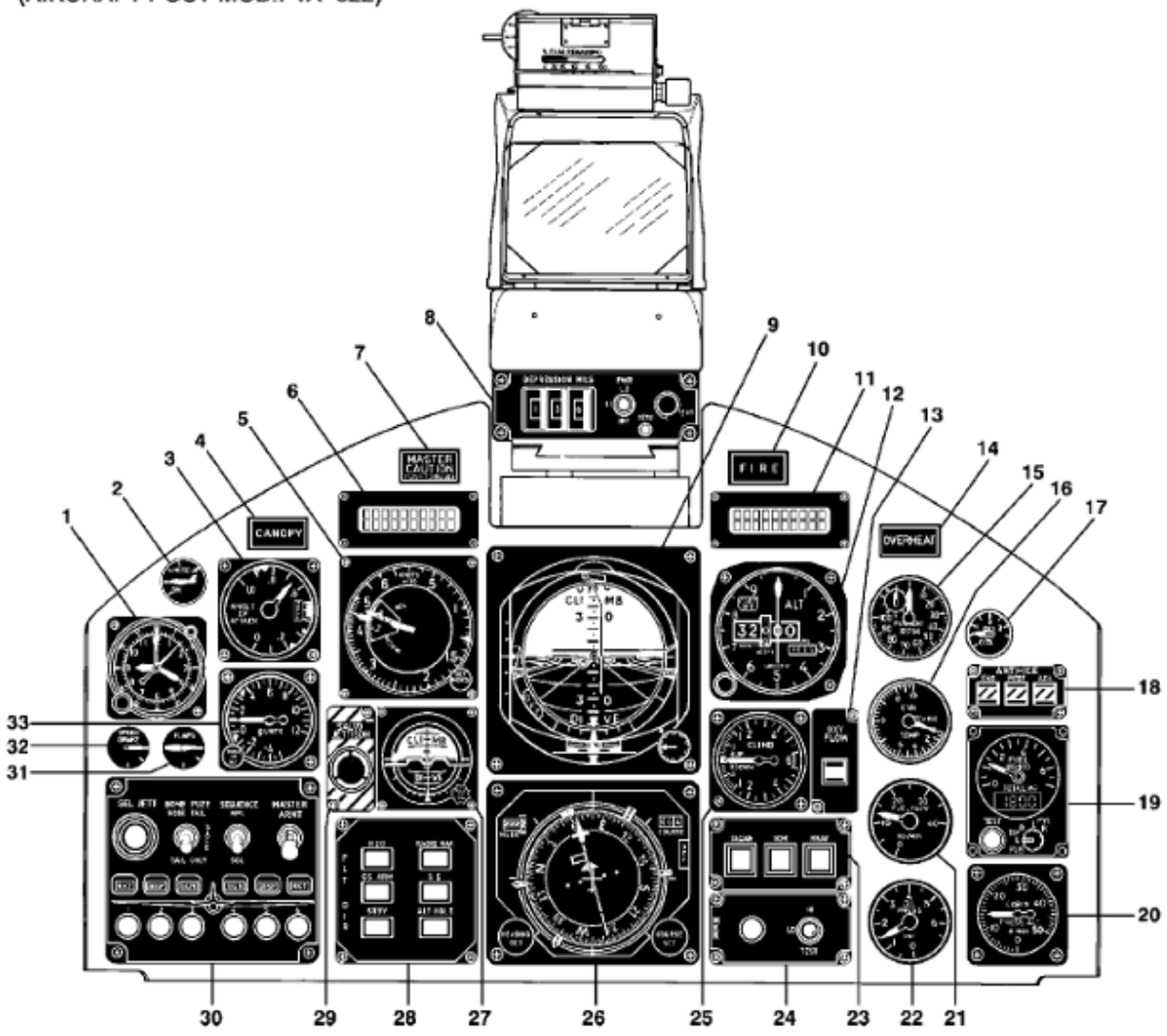
FRONT CONSOLES



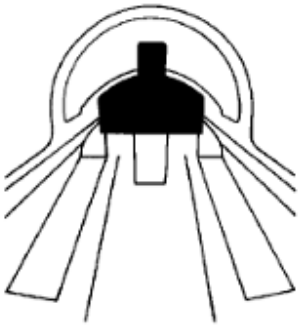
FRONT INSTRUMENT PANEL

CENTRAL PANEL

(AIRCRAFT POST-MOD.PTA -322)



1. CLOCK
2. LONGITUDINAL TRIM INDICATOR
3. ANGLE-OF-ATTACK INDICATOR
4. "CANOPY" WARNING LIGHT
5. MACH-AIRSPEED INDICATOR
6. RADIO FREQUENCY INDICATOR (COMM1 & COMM2)
7. "MASTER CAUTION" LIGHT
8. GUNSIGHT CONTROL PANEL
9. ATTITUDE DIRECTOR INDICATOR (ADI)
10. "FIRE" WARNING LIGHT
11. REMOTE DISPLAY UNIT (RDU)
12. ENCODER ALTIMETER
13. OXYGEN FLOW INDICATOR
14. "OVERHEAT" CAUTION LIGHT
15. TACHOMETER
16. JET PIPE TEMPERATURE INDICATOR
17. OXYGEN PRESSURE GAUGE



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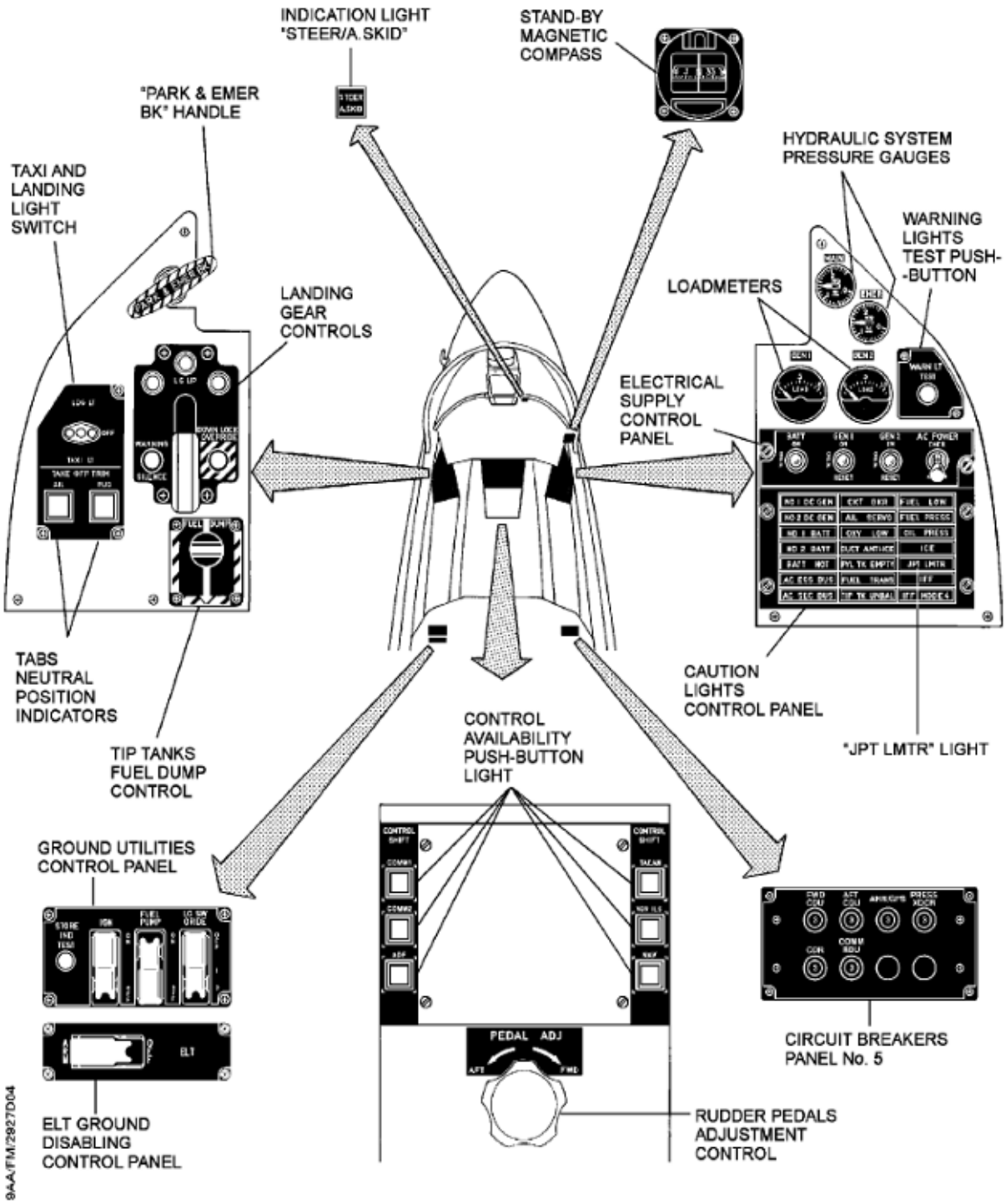
32. SPEED BRAKE POSITION INDICATOR
33. ACCELEROMETER

9AA/FM/292BA04

FRONT INSTRUMENT PANEL

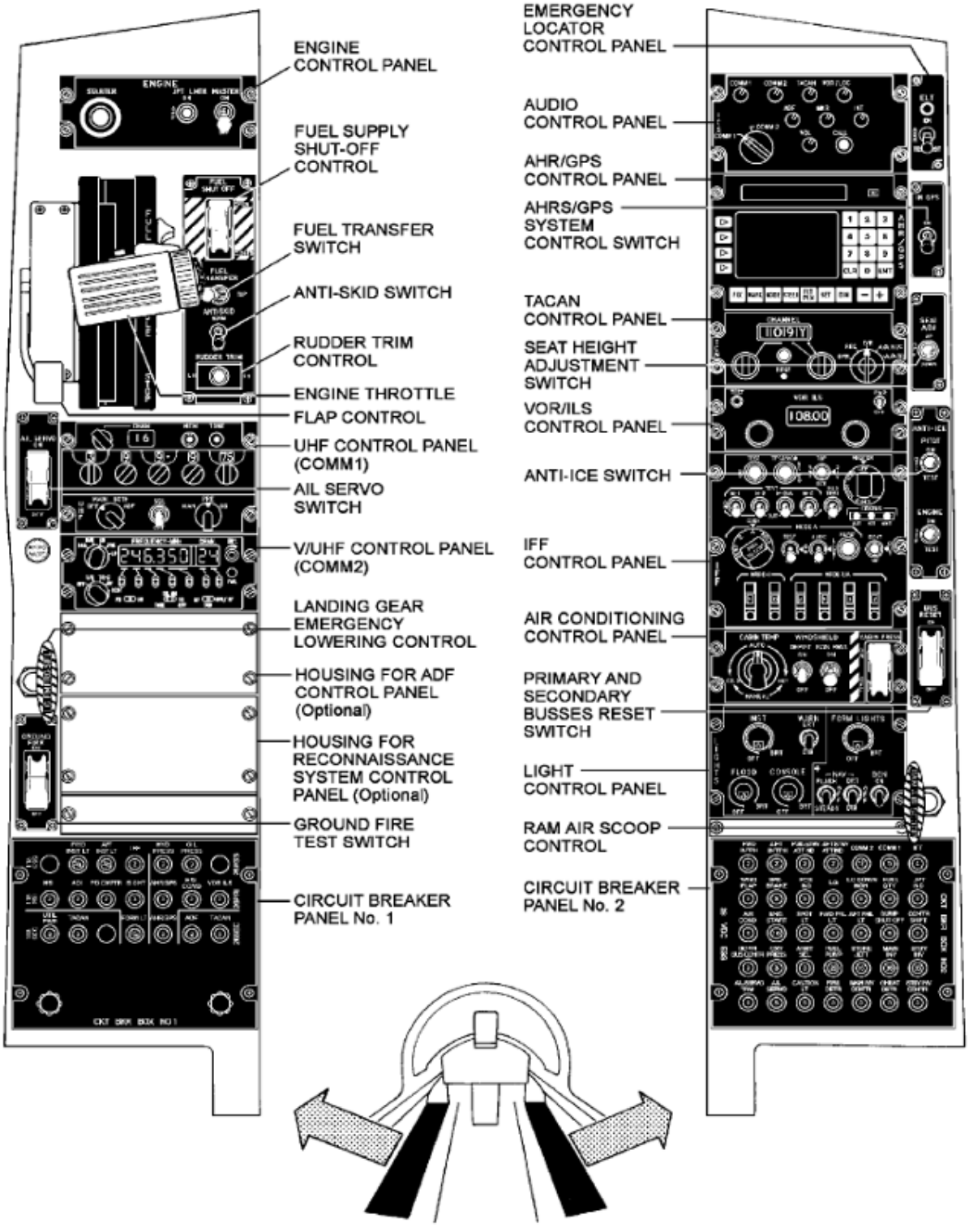
LATERAL PANEL AND CENTERSTAND

(AIRCRAFT POST-MOD. PTA -322)

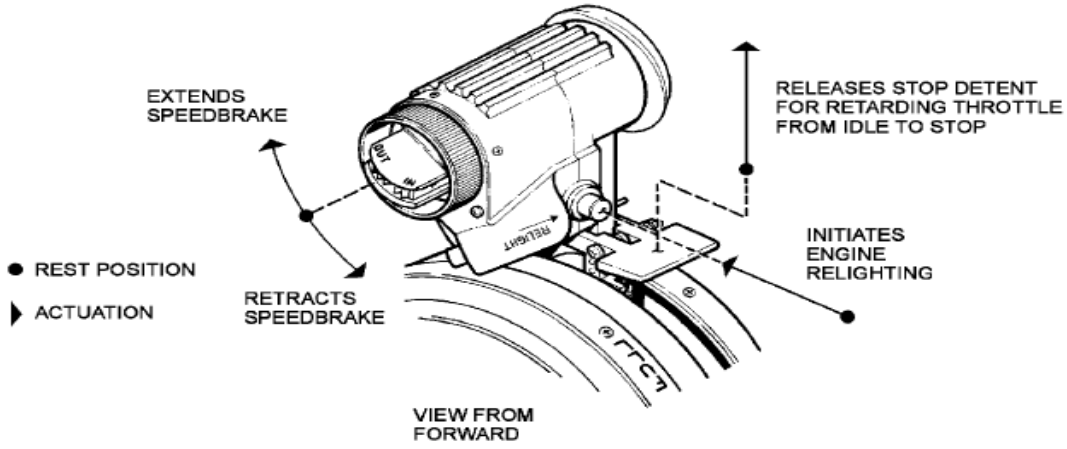


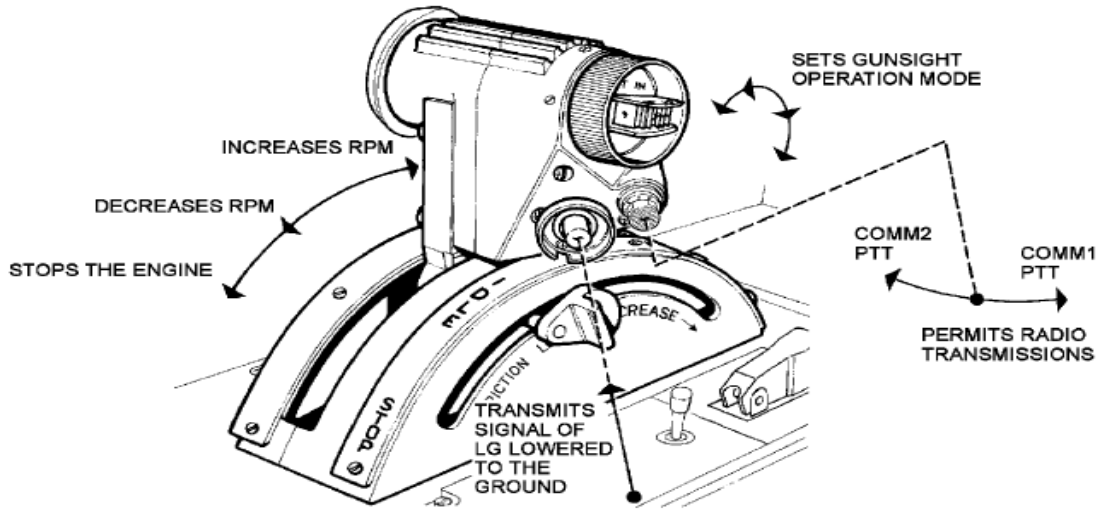
FRONT CONSOLES

(AIRCRAFT POST-MOD.PTA -322)

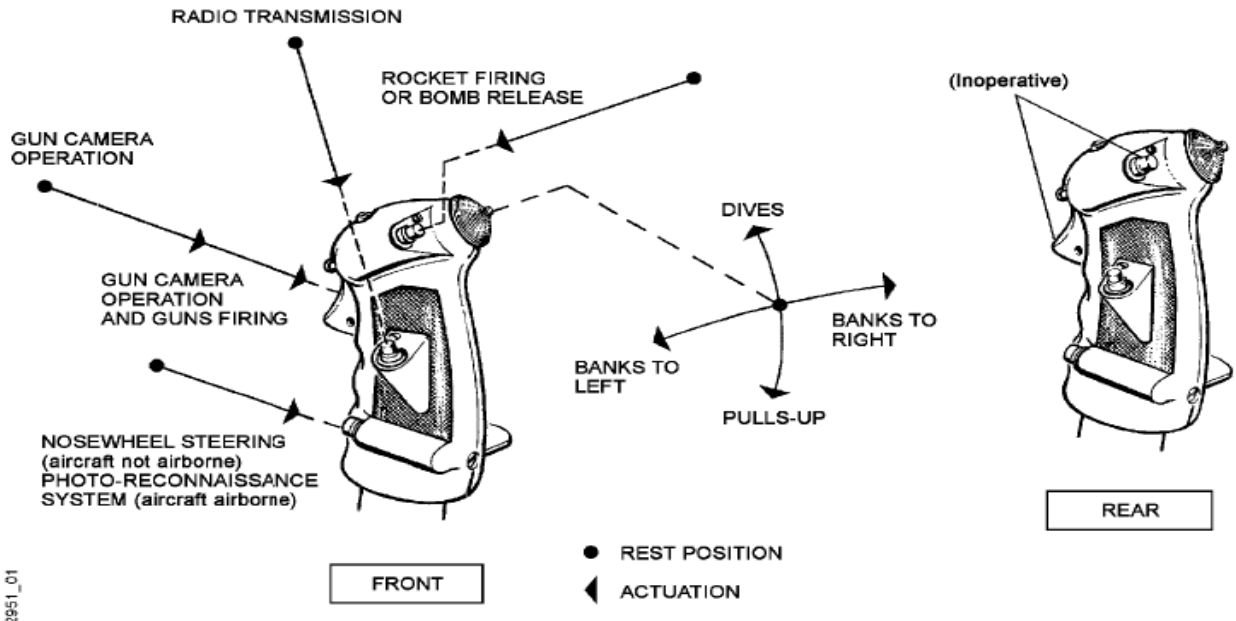


ENGINE THROTTLE





CONTROL STICKS



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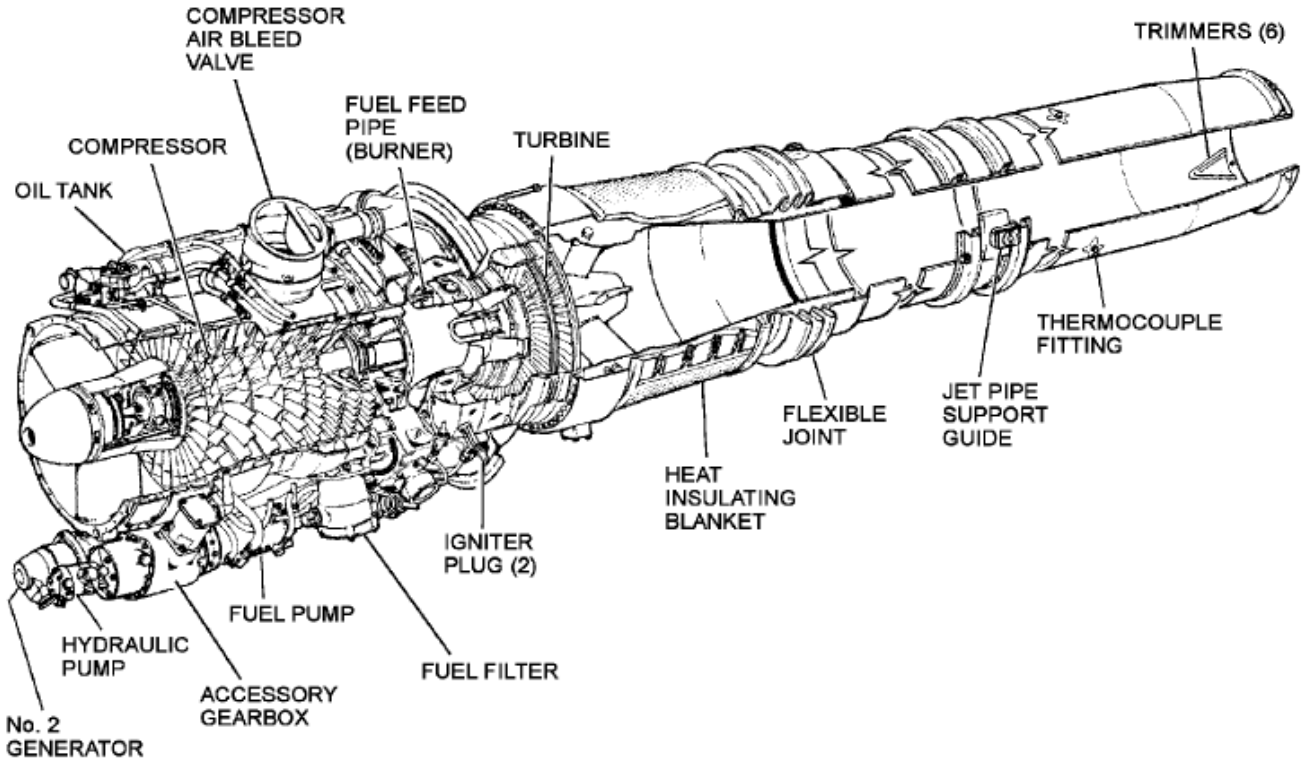
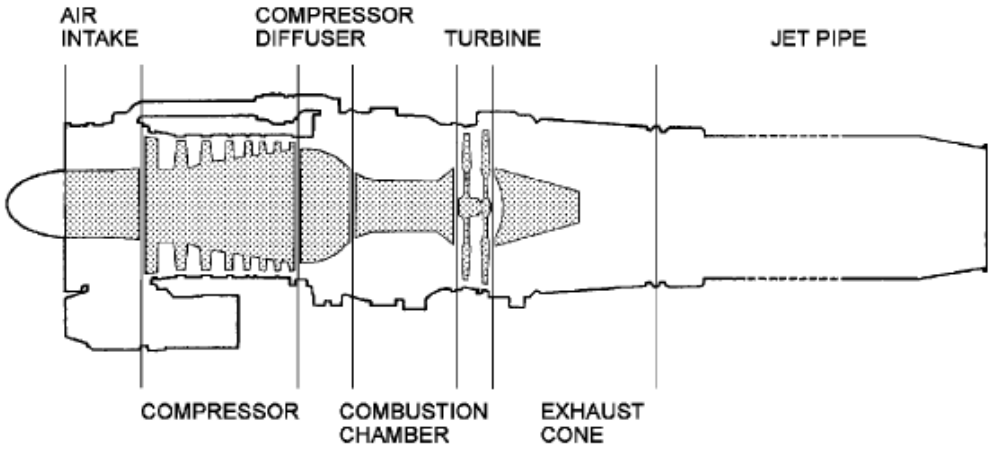
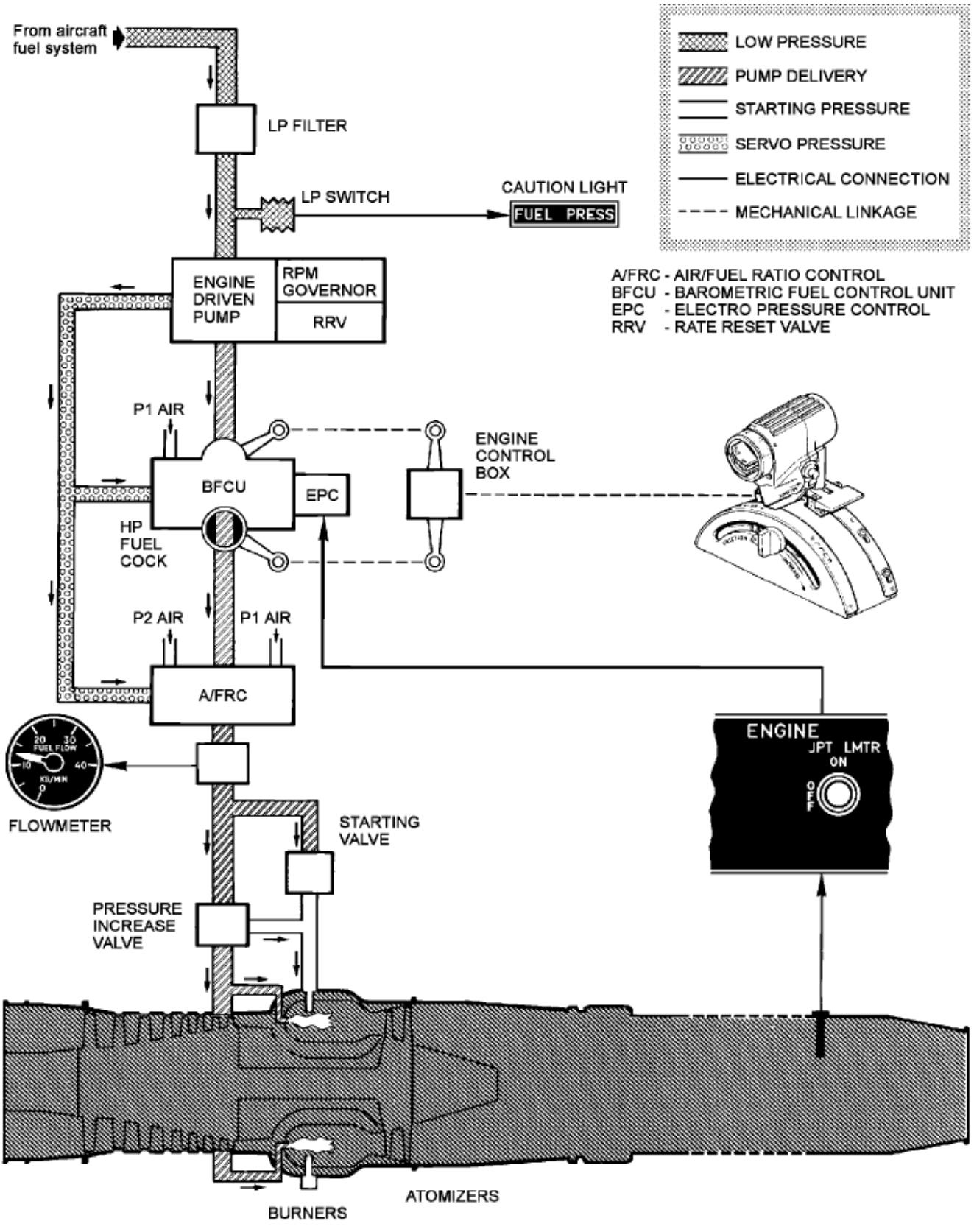
VIPER MK 632-43 ENGINE





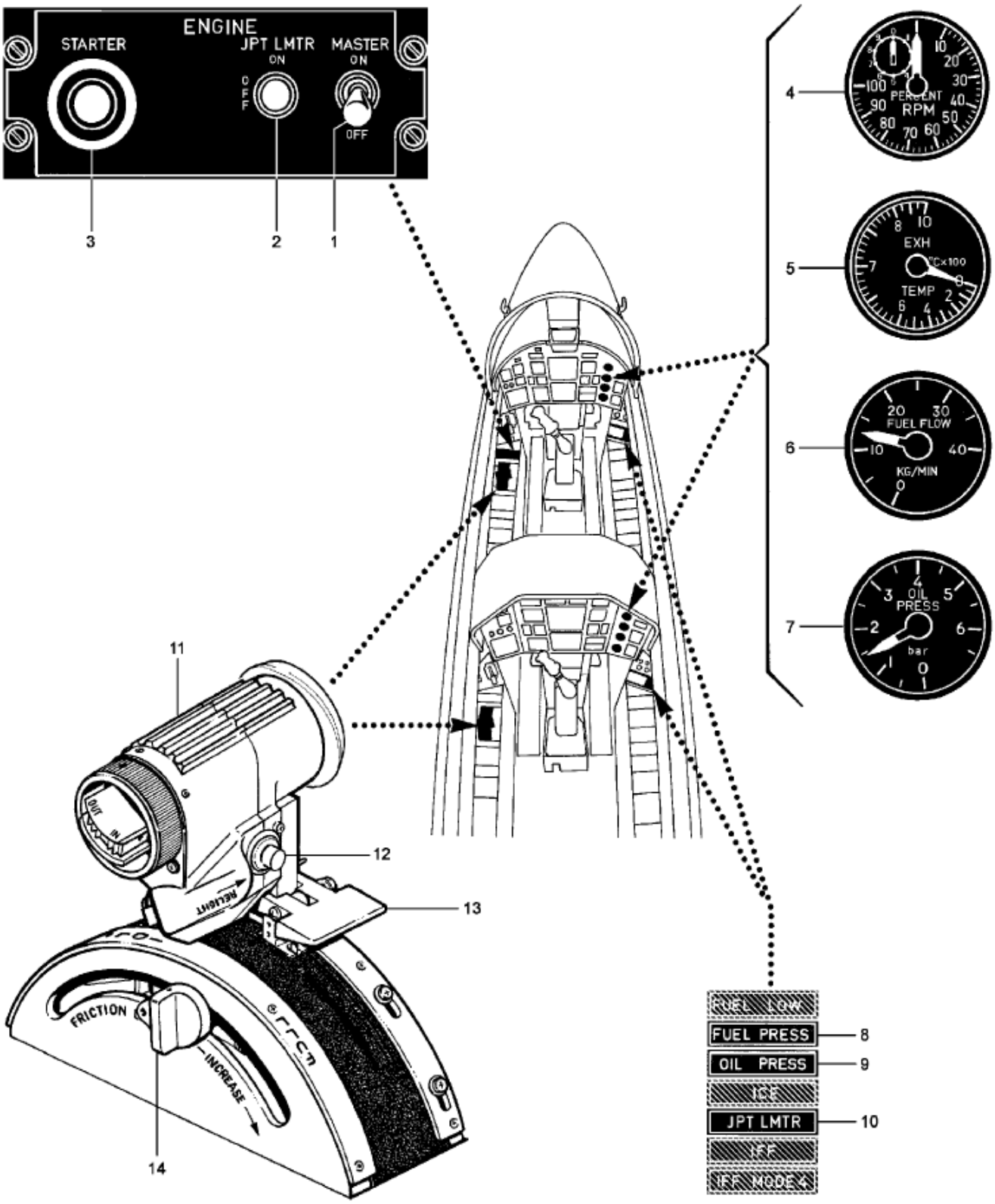
9CD/FM/0064_03

ENGINE FUEL SYSTEM

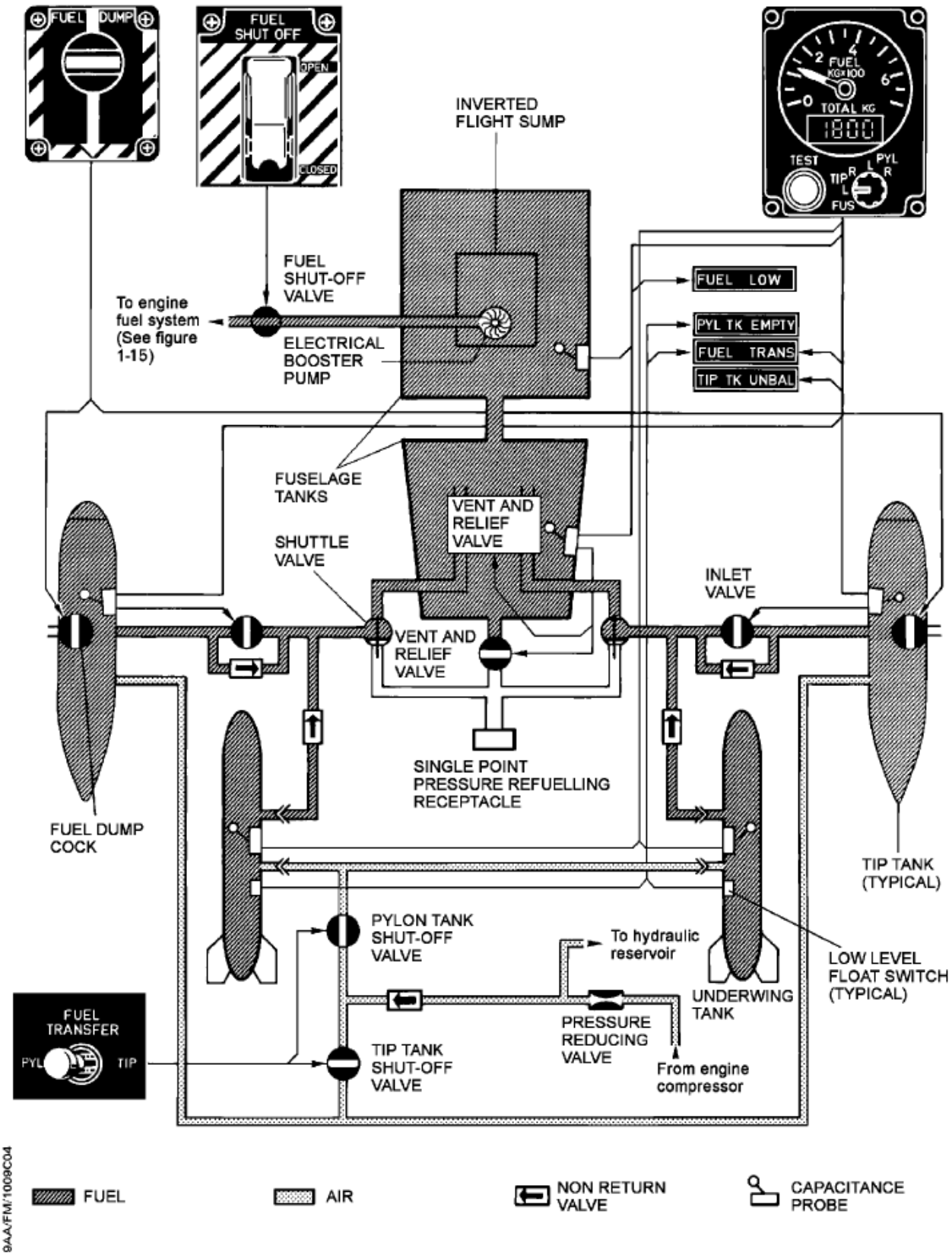


9AA/MMGV/1976_02

ENGINE CONTROLS AND INDICATORS



AIRCRAFT FUEL SYSTEM



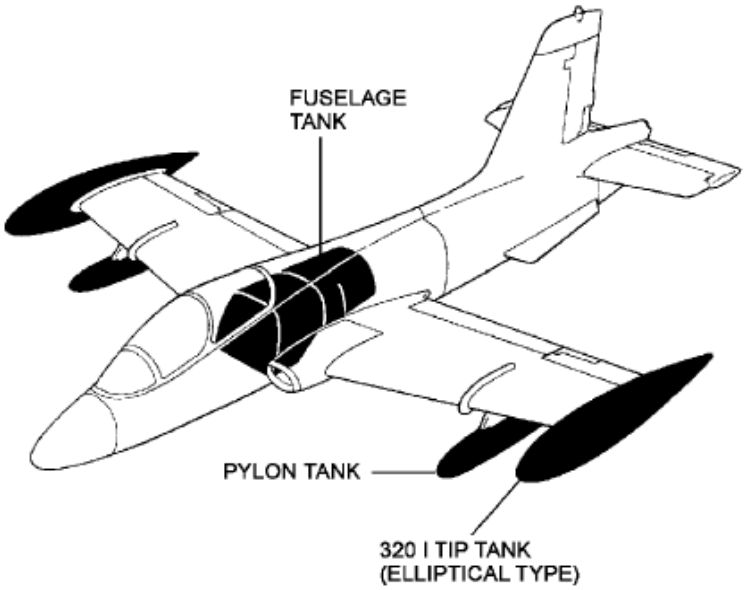
9AA/FM/1009C04

FUEL TANKS LOCATION AND USABLE FUEL

AIRCRAFT FITTED WITH 320 l TIP TANKS

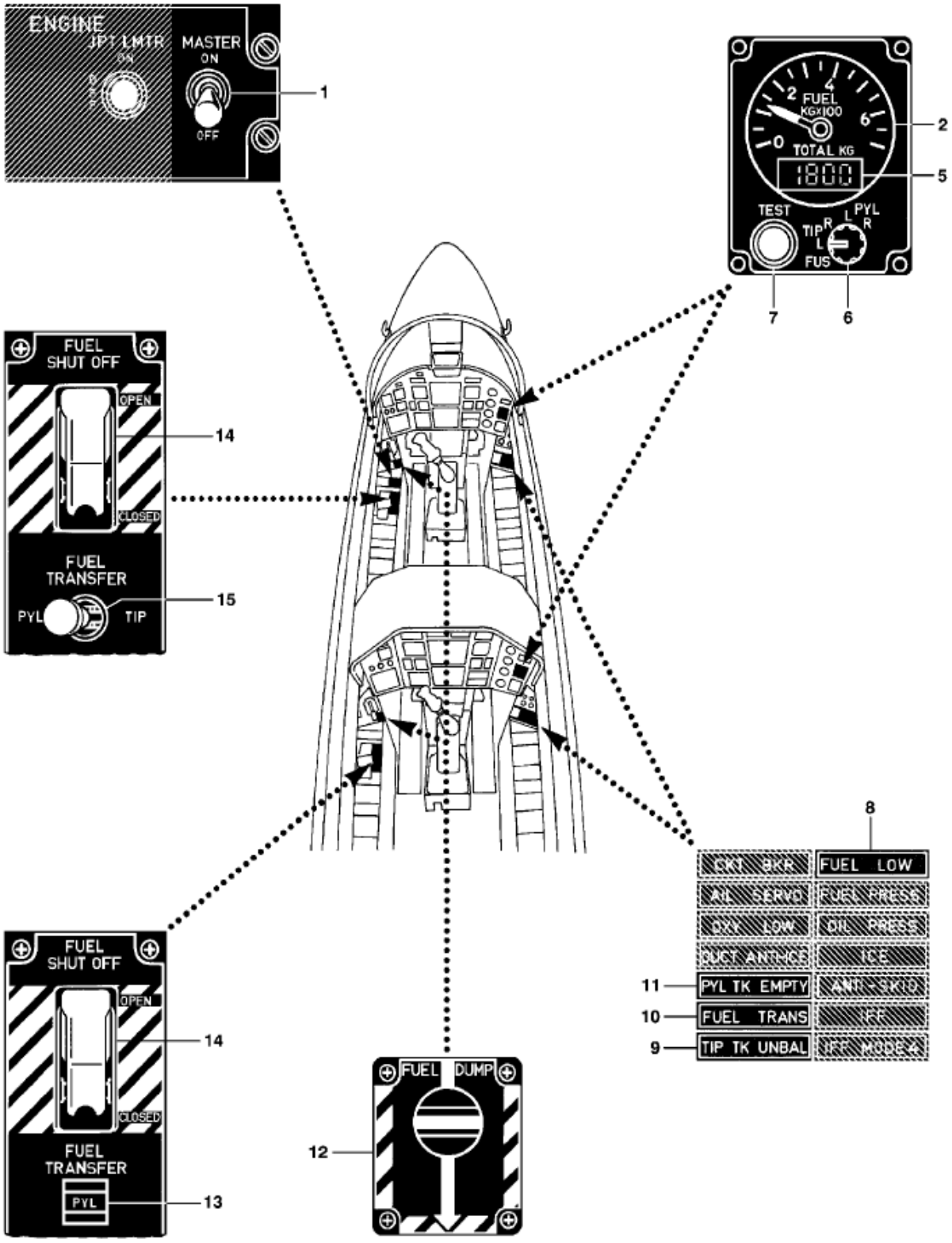
NOTE

- Figures are estimates only. The mass of the fuel is based on a fuel density of 0.803 Kg/dm³ (nominal density).
- Density of F-34 fuel can change from 0.775 to 0.840 Kg/dm³.
- See para "Correct interpretation of Fuel Quantity Indicator Readings".



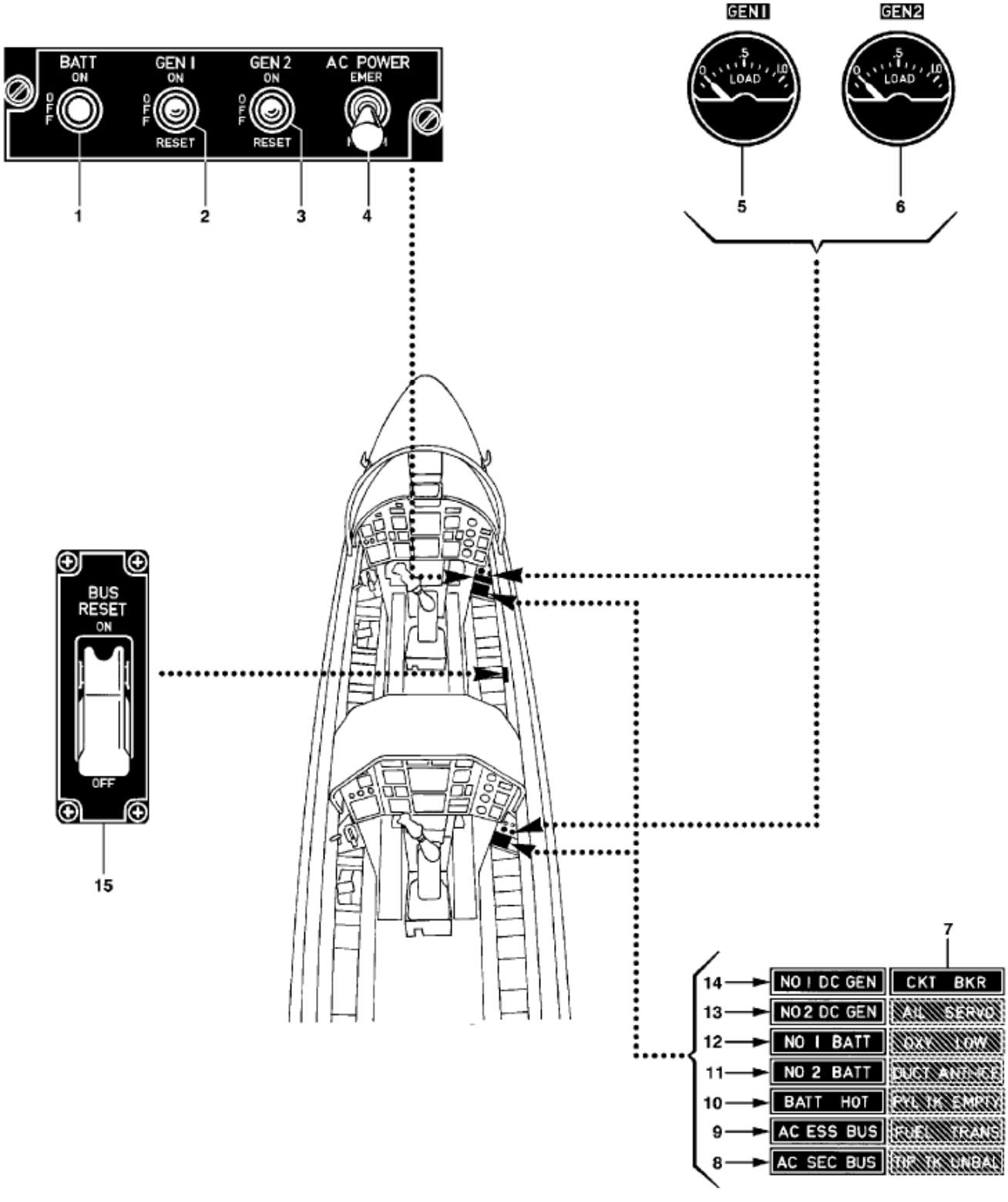
TANKS	USABLE FUEL	
	VOLUME	QUANTITY NATO F-34 (JP8) (0.803 kg/dm³)
	litres	kg
MAIN FUSELAGE TANK	**780**	**626**
TIP TANKS (2)	**640**	**514**
TOTAL	**1420**	**1140**
PYLON TANKS (2)	**660**	**530**
TOTAL	**2080**	**1670**

FUEL SYSTEM CONTROLS AND INDICATORS

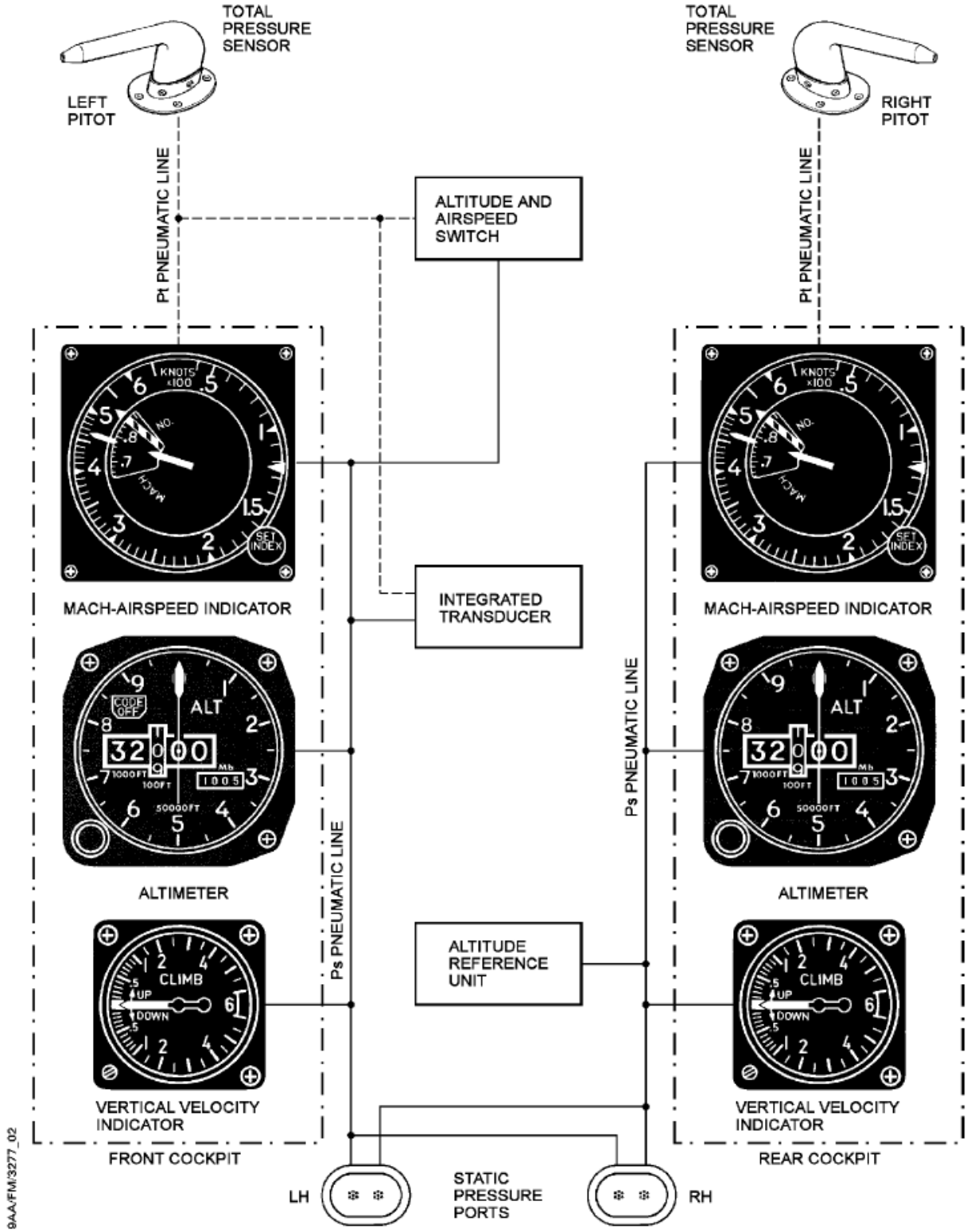


9AA/FM/1040D01

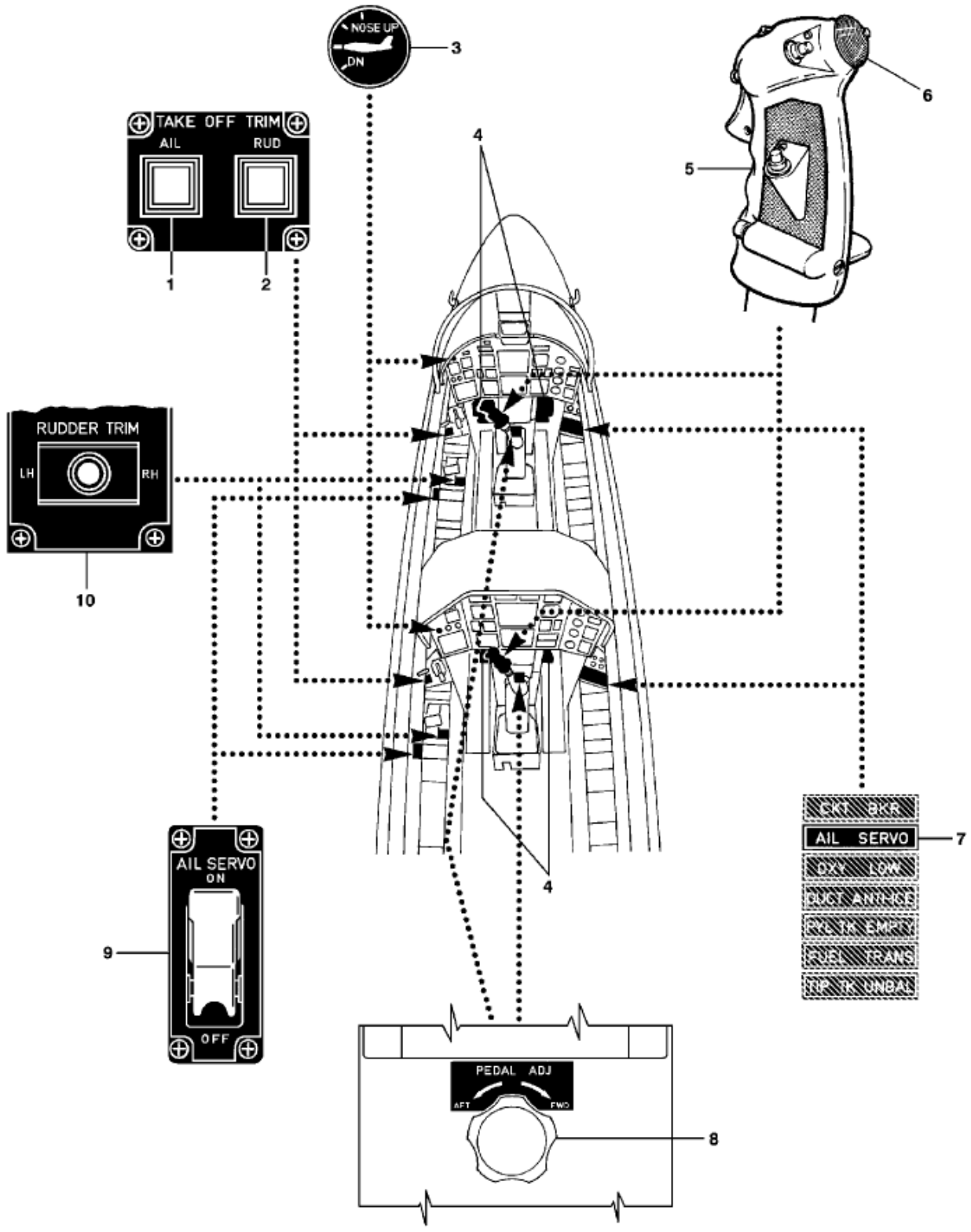
ELECTRICAL SYSTEM CONTROLS AND INDICATORS



PITOT-STATIC SYSTEM



PRIMARY AND SECONDARY FLIGHT CONTROLS AND INDICATORS



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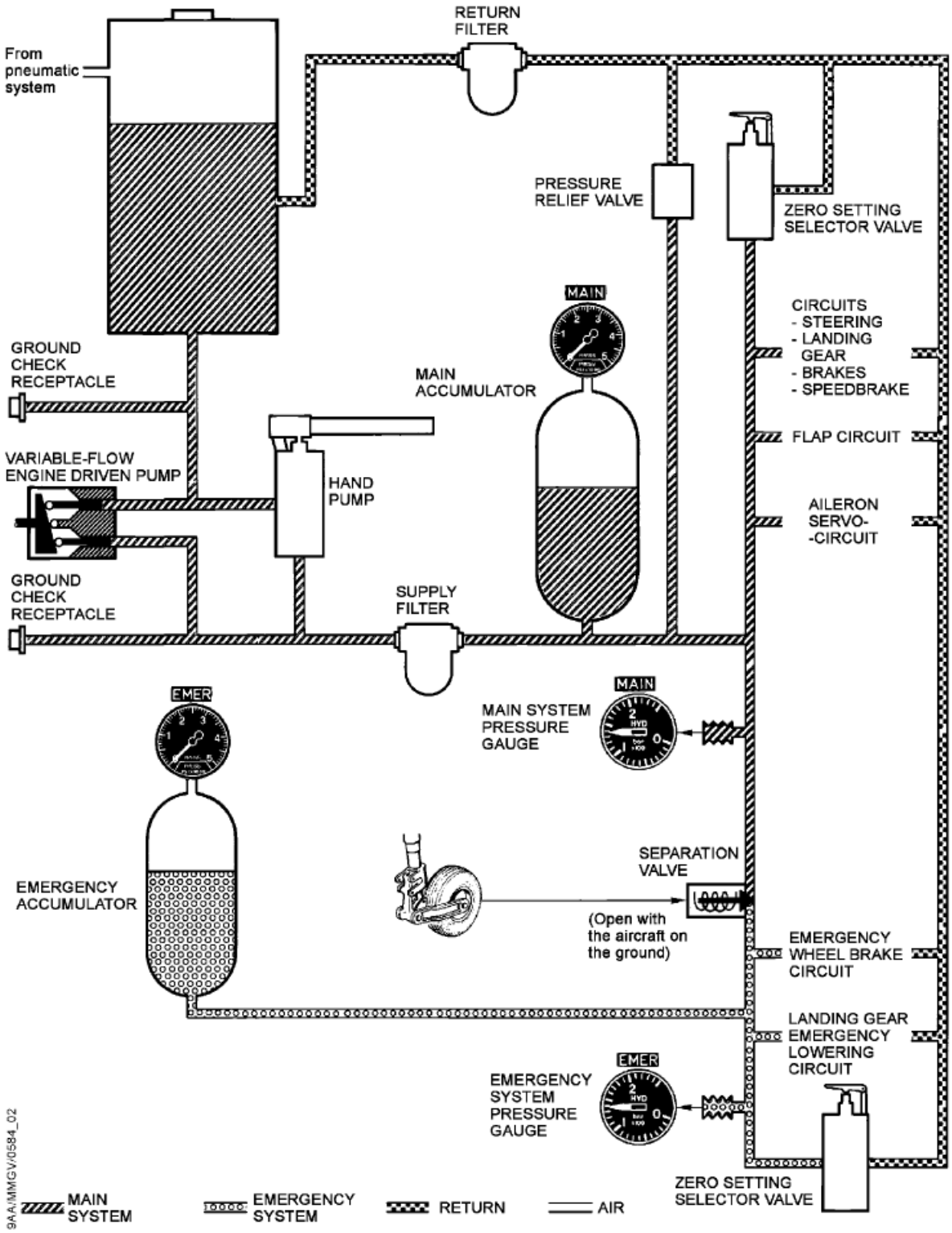
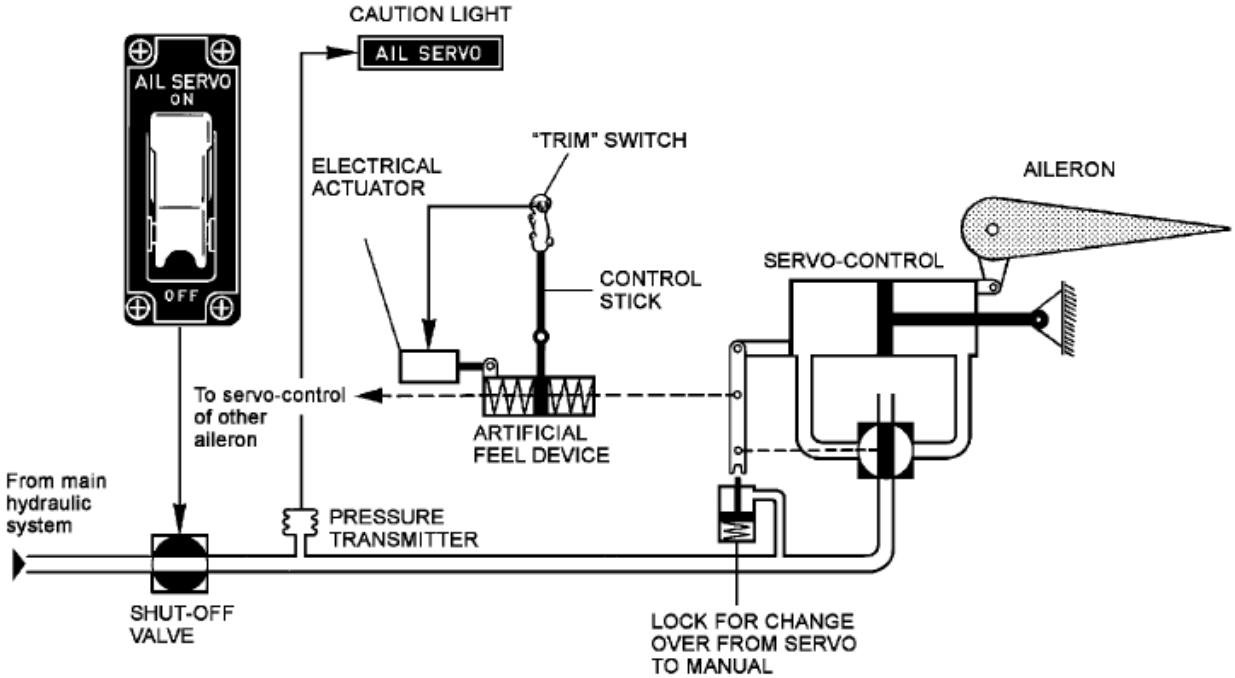
HYDRAULIC POWER SYSTEM



9AA/MMGV/0584_02

AILERON CONTROL SYSTEM



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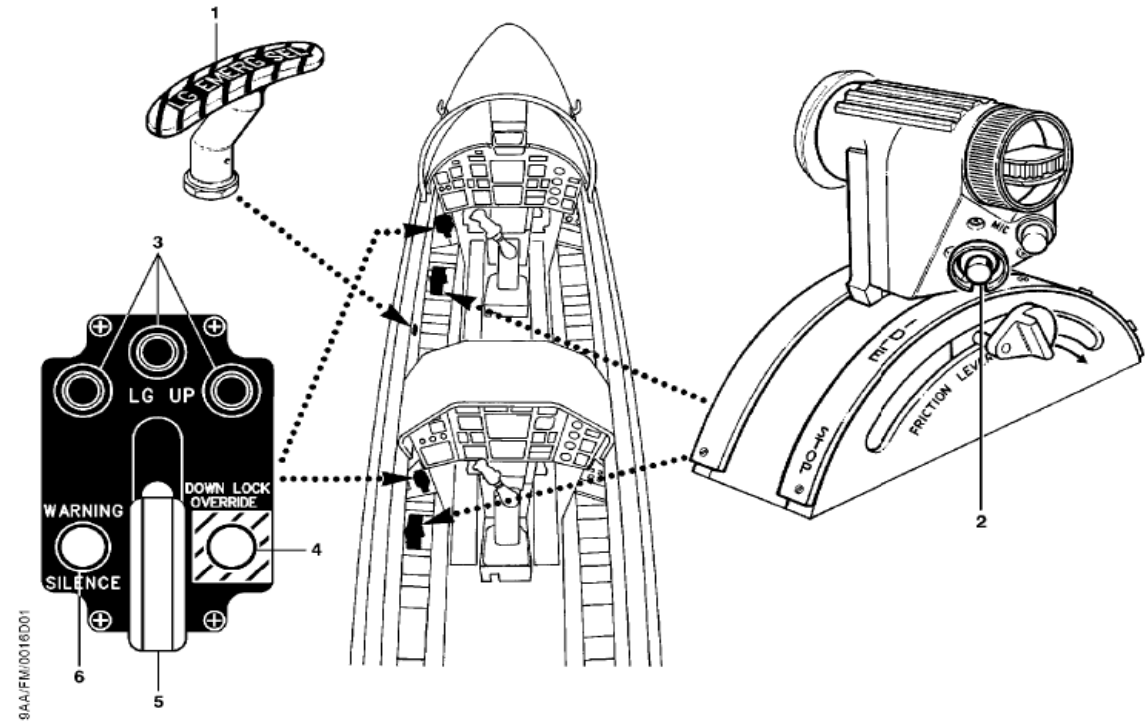
LANDING GEAR CONTROLS AND INDICATORS



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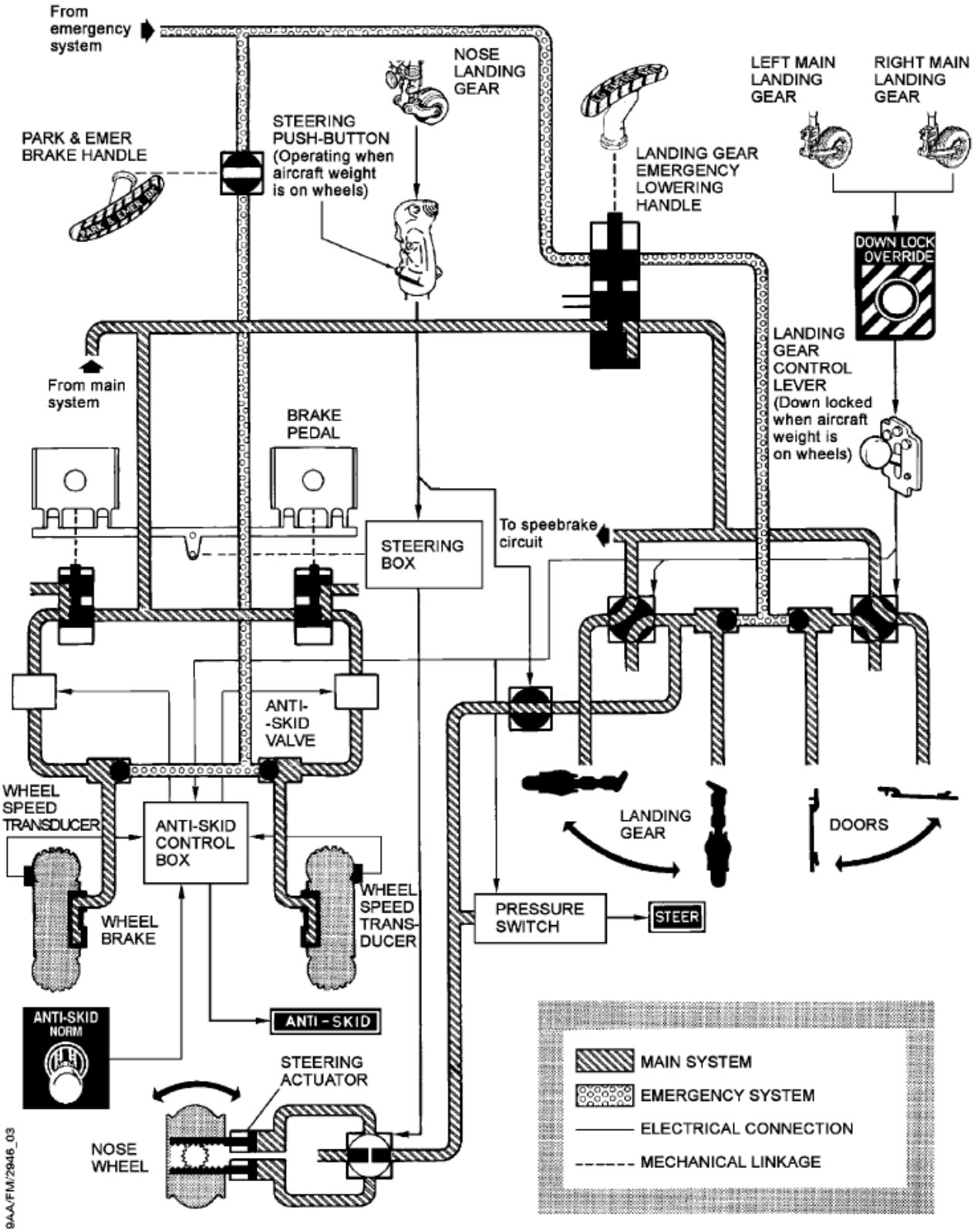
LANDING GEAR SYSTEM

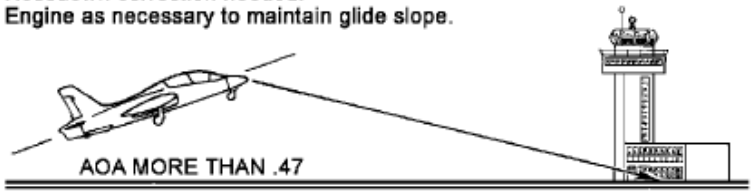


9AA/FM/2946_03

ANGLE-OF-ATTACK INDICATION DURING APPROACH PHASE

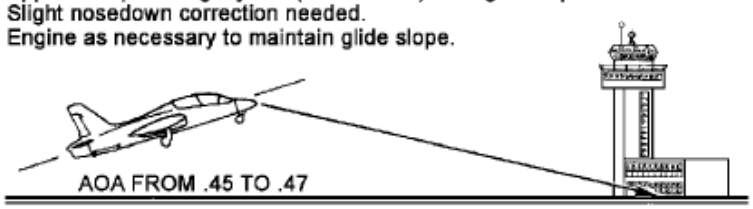
Pointer well above upper edge of approach index marker

Approach speed too low (more than 5 knots) as regards optimum.
Nosedown correction needed.
Engine as necessary to maintain glide slope.



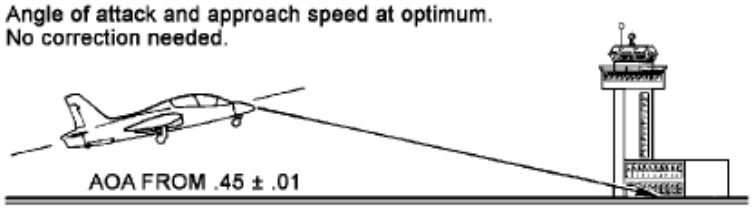
Pointer just above center of approach index marker

Approach speed slightly low (3 to 5 knots) as regards optimum.
Slight nosedown correction needed.
Engine as necessary to maintain glide slope.



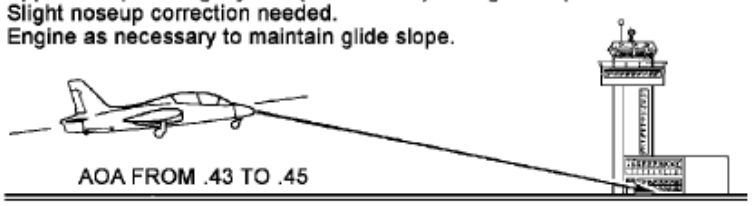
Pointer near center of approach index marker

Angle of attack and approach speed at optimum.
No correction needed.



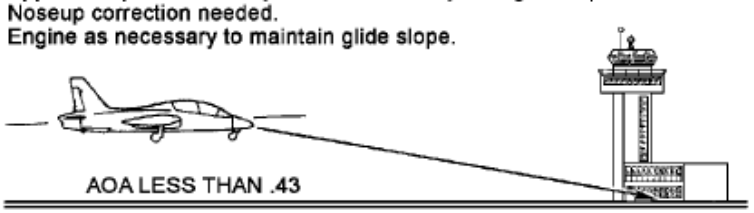
Pointer just below lower edge of approach index marker

Approach speed slightly fast (3 to 5 knots) as regards optimum.
Slight noseup correction needed.
Engine as necessary to maintain glide slope.



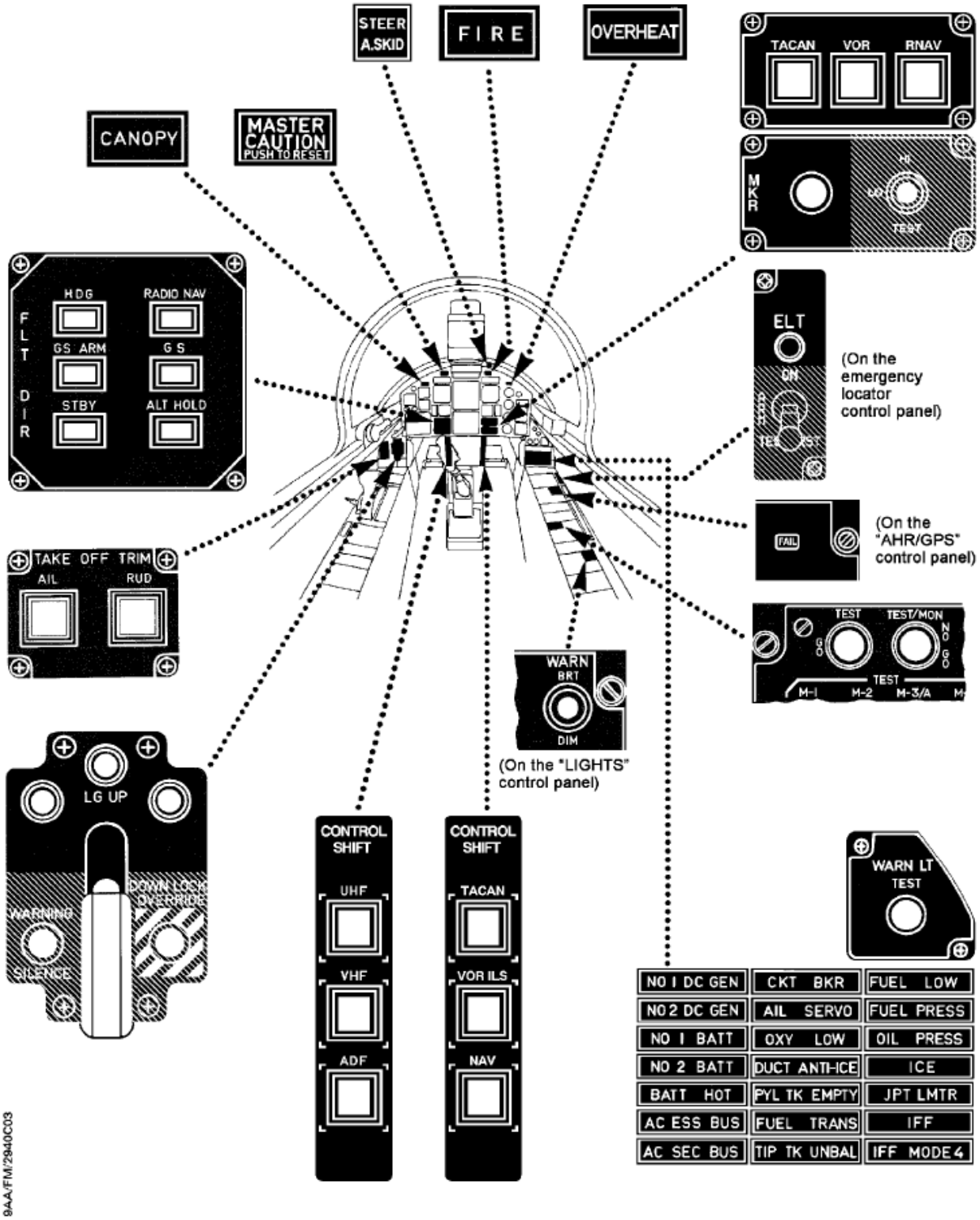
Pointer well below lower edge of approach index marker

Approach speed too fast (more than 5 knots) as regards optimum.
Noseup correction needed.
Engine as necessary to maintain glide slope.



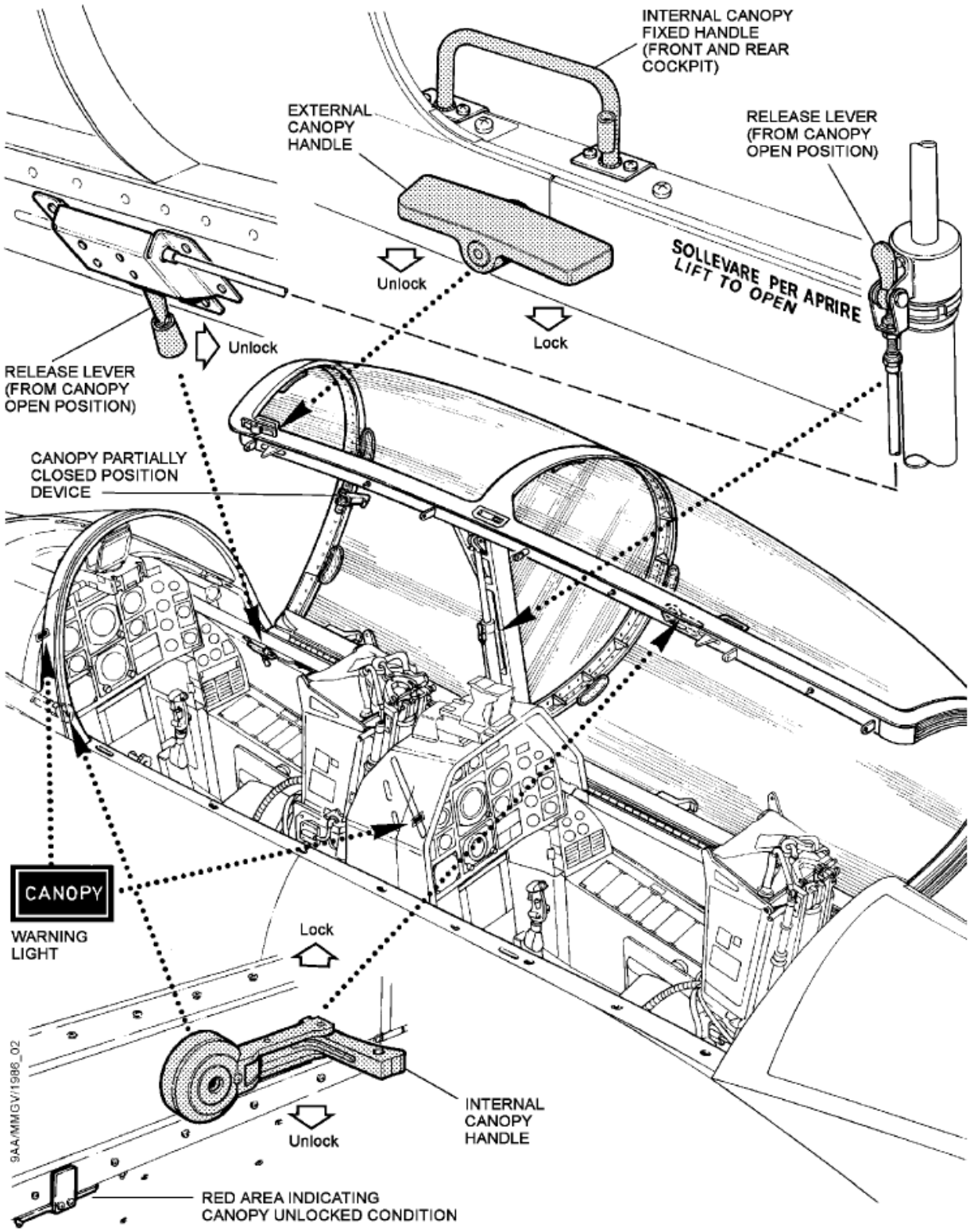
WARNING, CAUTION AND ADVISORY LIGHTS - FRONT COCKPIT

(AIRCRAFT PRE-MOD. PTA -322)

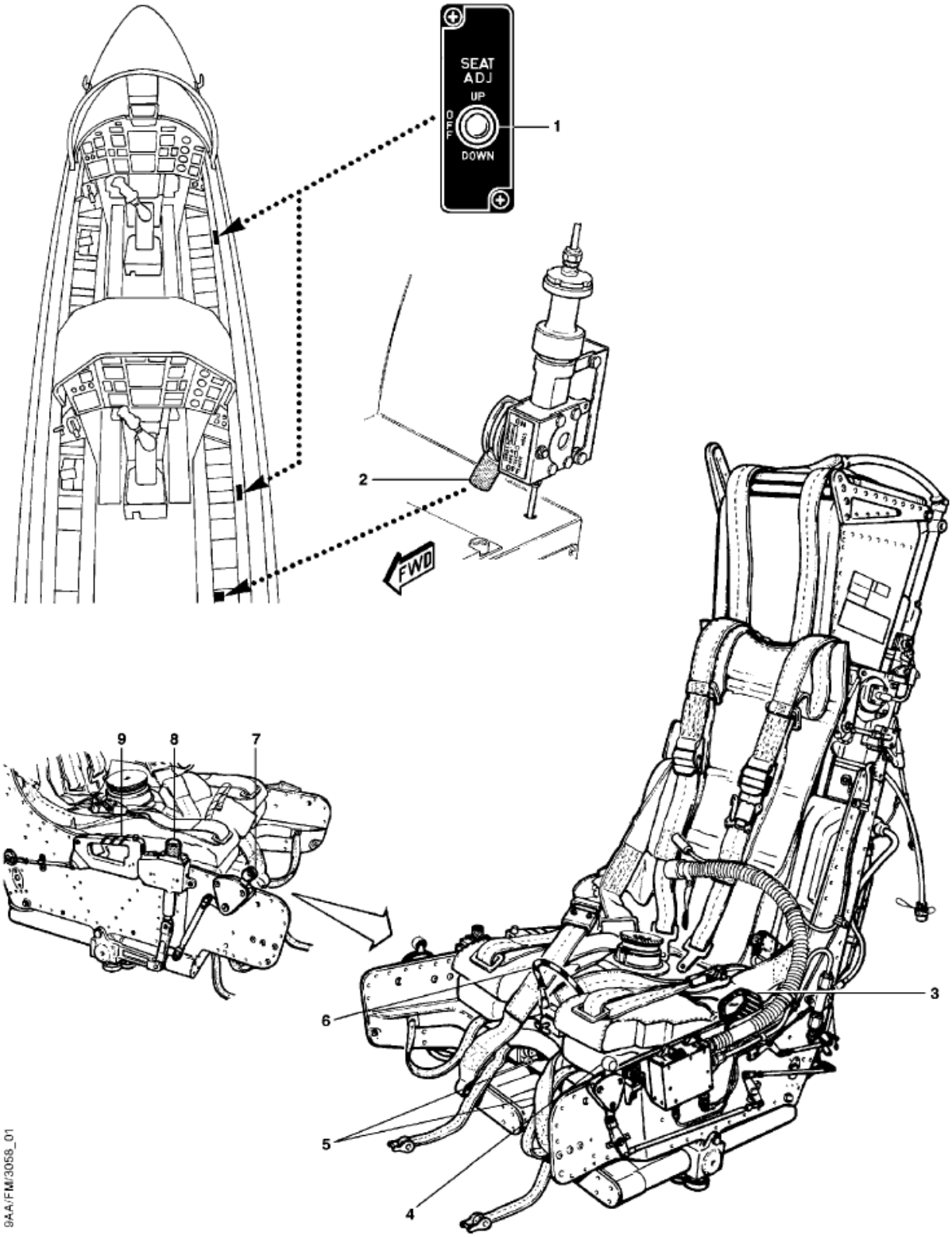


9AA/FM/2940C03

CANOPY CONTROLS



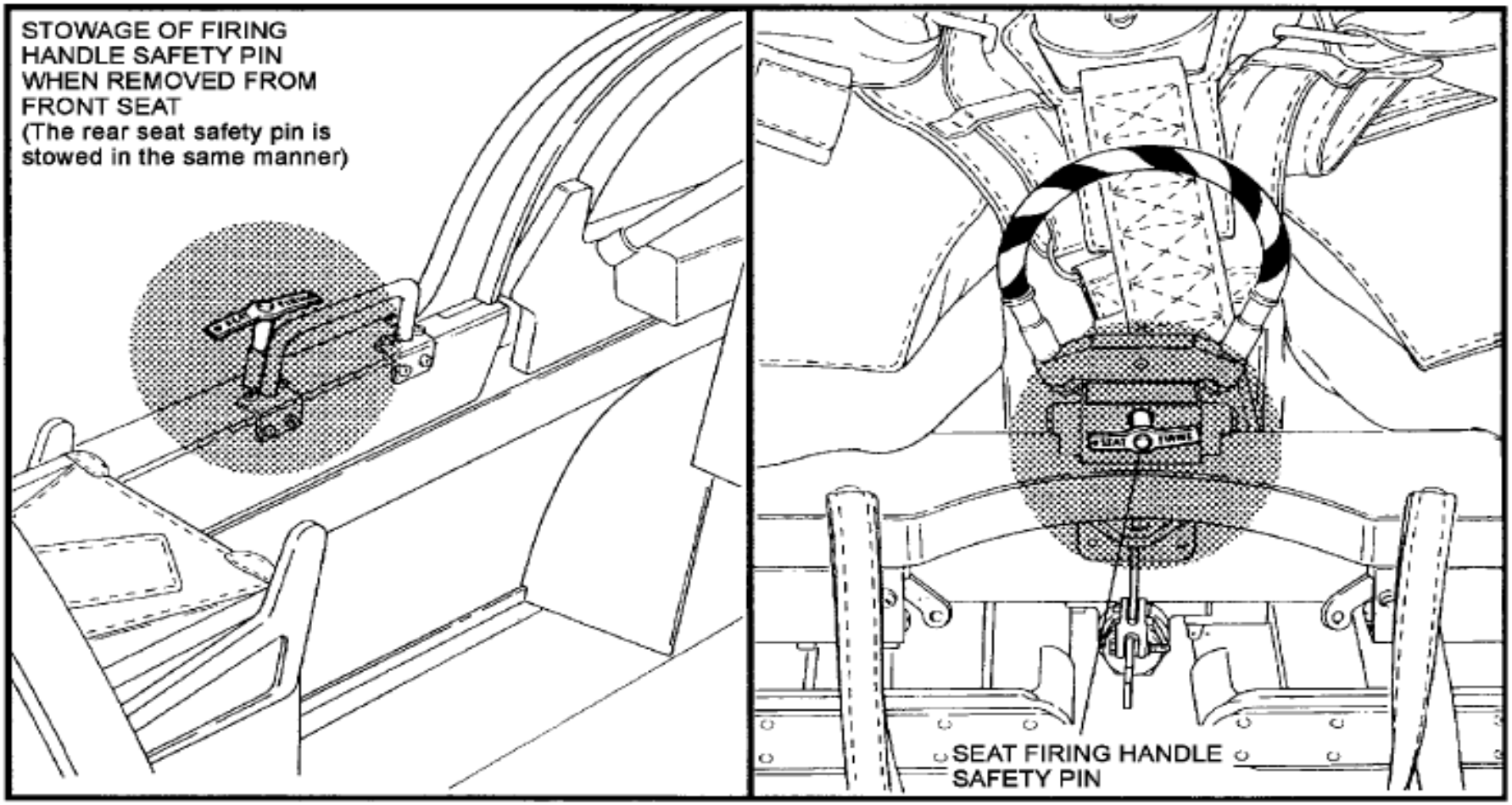
MK IT-10F EJECTION SEAT CONTROLS



94A/FM/3058_01

EJECTION SEAT SAFETY PINS

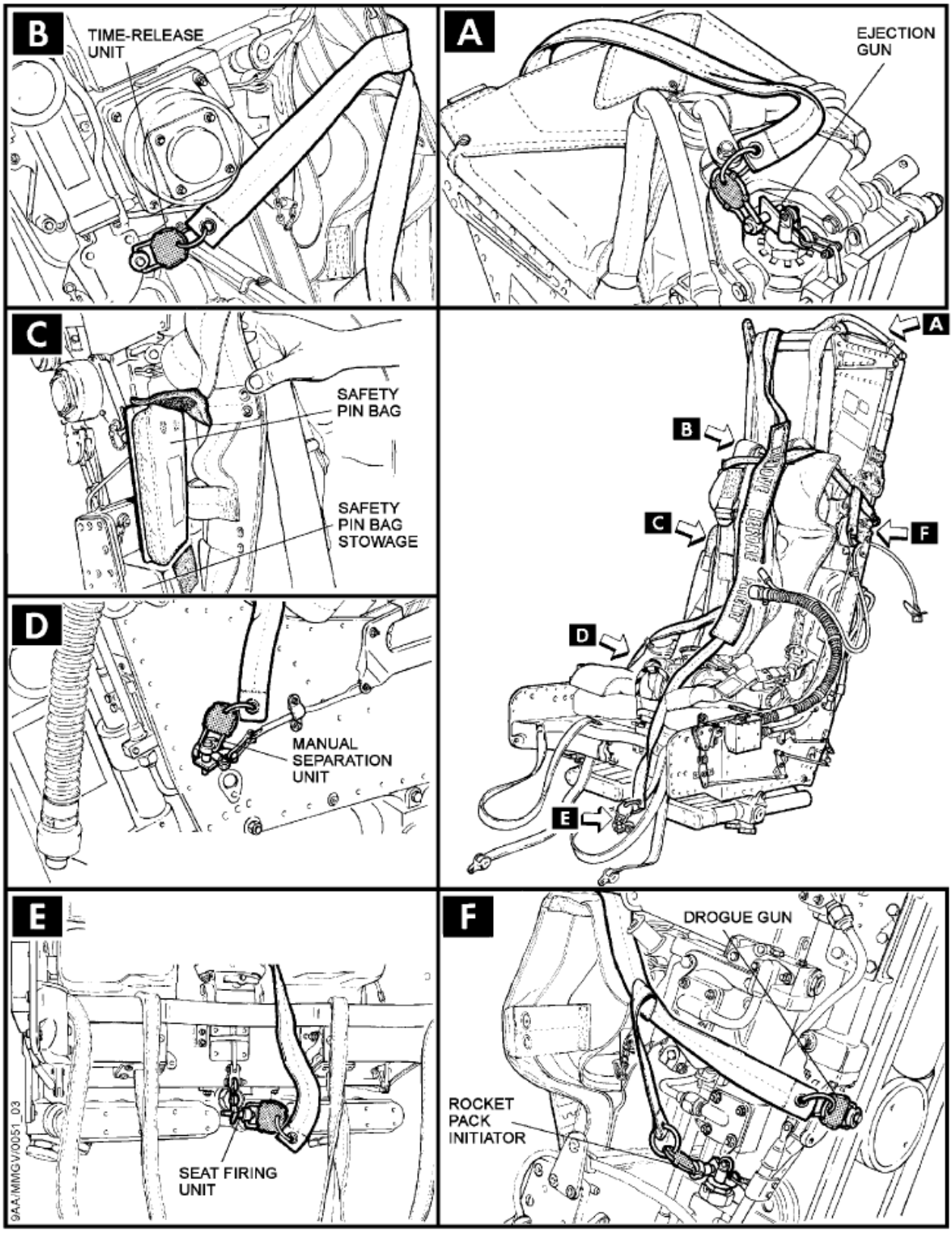
PARKING CONDITION



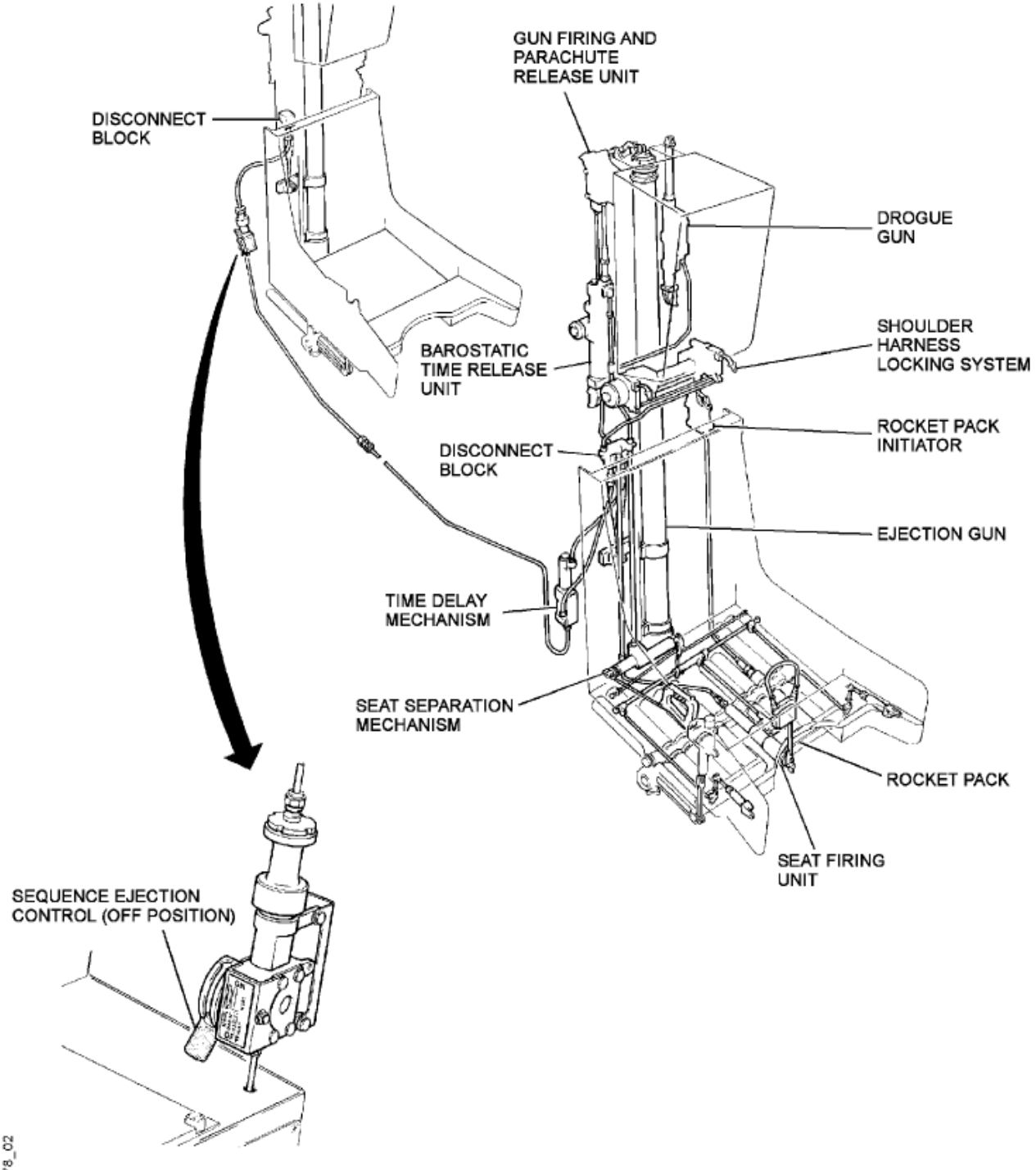
9AA/MMGV/0205A01

EJECTION SEAT SAFETY PINS

MAINTENANCE CONDITION



EJECTION SEAT FIRING SYSTEM



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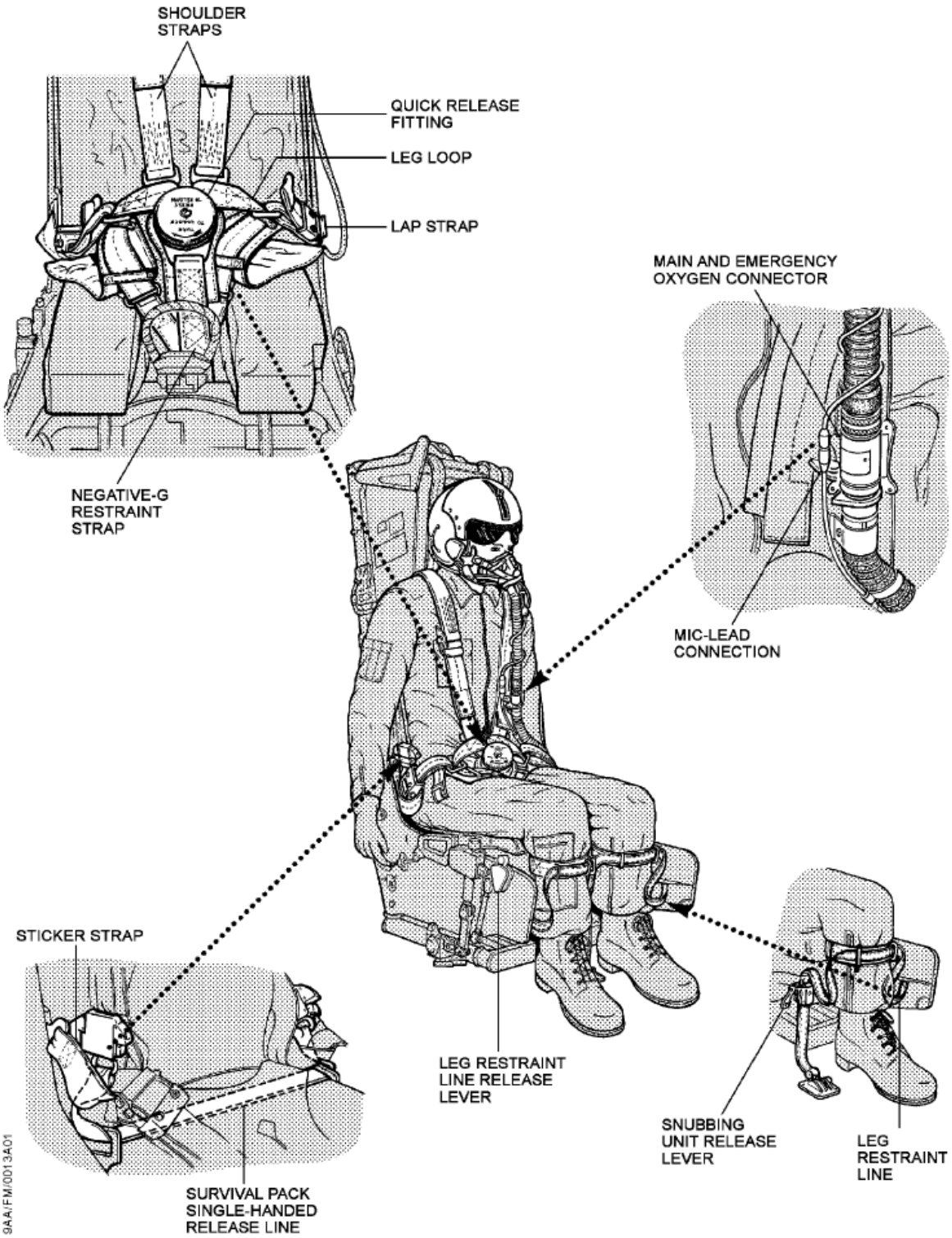
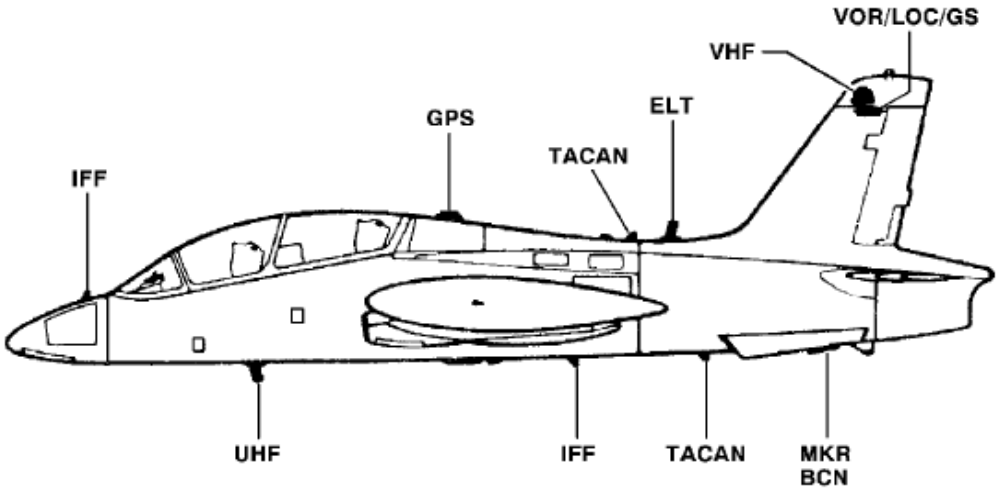
EJECTION SEAT EQUIPMENT



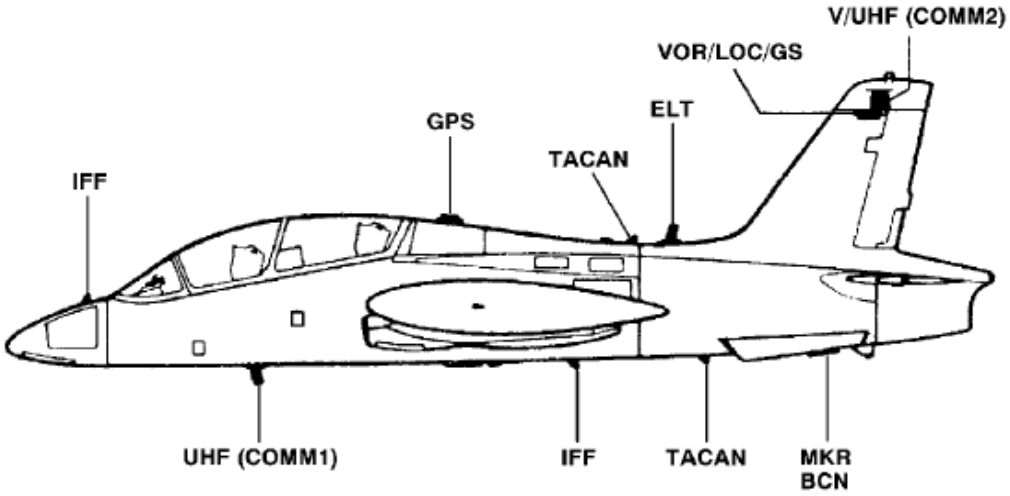
AVIONIC EQUIPMENT

ANTENNA LOCATION

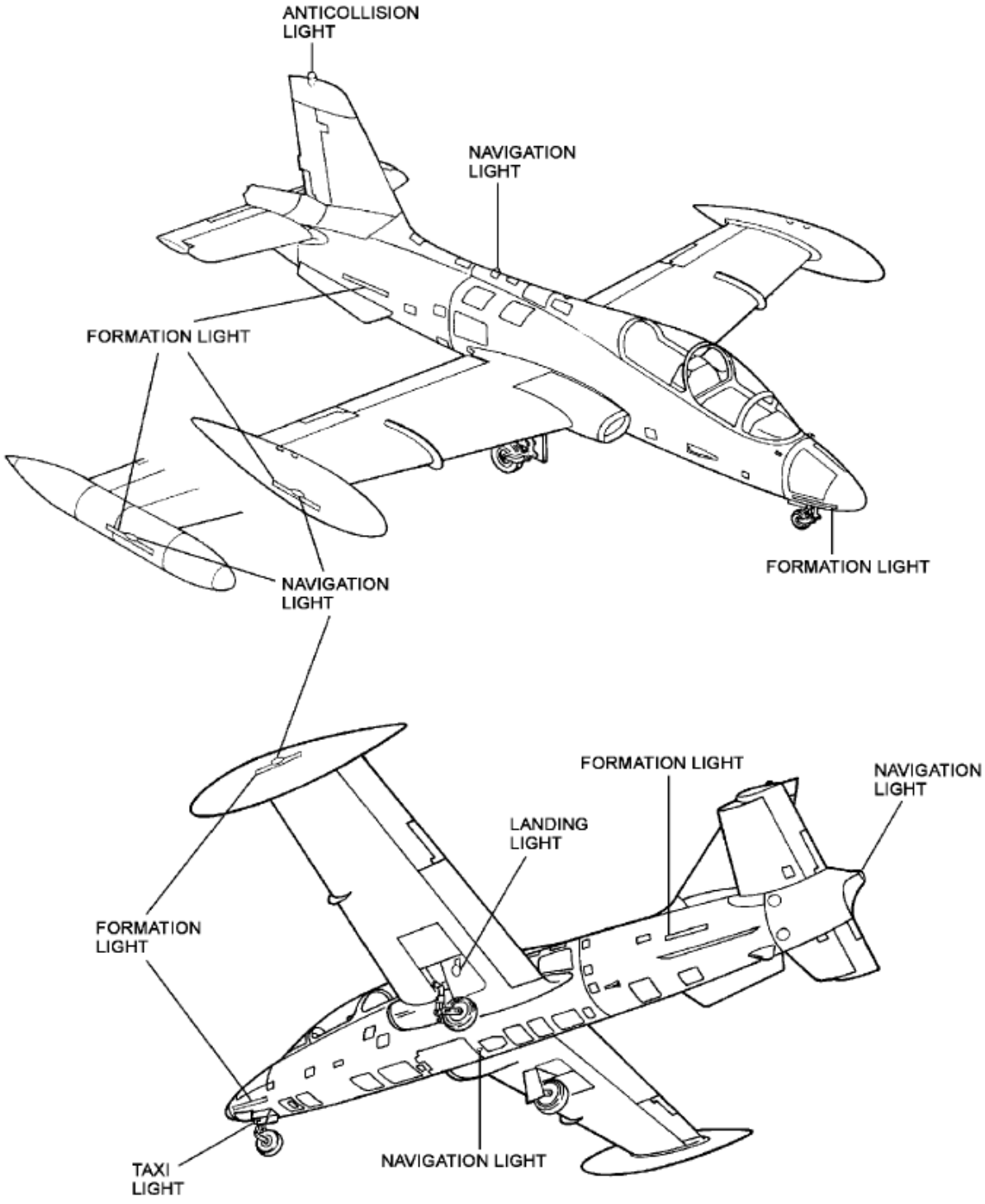
(AIRCRAFT PRE-MOD. PTA -322)



(AIRCRAFT POST-MOD. PTA -322)



EXTERIOR LIGHTS



9AA/FM/2836A02

PROCEDURES

The procedures described in this section are given in detail, where possible.
In some cases, the controls in the simulation have no effect on the aircraft behavior but are reported in the checklists for information – those actions are written in *italics*.

The following checklists have been kept as close as pratical to the real-world checklists.

CONTROL AVAILABILITY IN THE TWO COCKPITS
The procedures given in this section are relavant to the pilot in the front cockpit. The controls in the front cockpit are not fully duplicated and available in the rear cockpit. Therefore the rear pilot, when in control, must instruct the front pilot to actuate the following controls,available inthe front cockpit only:

--- Electrical power supply switches: “BATT”, “GEN 1”, “GEN 2”, “AC POWER”, “BUS RESET”.
--- Engine switches: “STARTER”, “JPT LMTR”, “MASTER”.
--- “FUEL TRANSFER” switch.
--- “IN GPS” switch.
--- Air-conditioning panel: “CABINTEMP” switch, “CABIN PRESS”, “WINDSHIELD/DEMIST” and “WINDSHIELD/RAIN RMVL” switches.
--- “NAV”, “BCN”, “LDG/LT/TAXI LT” light switches and “FORM LIGHTS” knob.
--- “IFF” panel.
--- Armament and gunsight controls.
--- “LG EMERG SEL” handle.
--- “MKR” panel.
--- “WARN LT TEST” push-button.
--- “RAM-AIR SCOOP” handle.
--- “ANTI-ICE/ENGINE” switch.
--- Engine throttle friction.
--- “MASTER CAUTION” “reset” control.
--- ELT switch.
--- “PARKING BRAKE” handle.

Note: only the front cockpit is depicted in the simulation.

PRE-FLIGHT CHECKS
BEFORE EXTERIOR INSPECTION, FRONT COCKPIT

1. In case of strong wind make sure the aircraft is heading into wind.

CAUTION
STRONG TAILWIND CAN CAUSE AN INCREASE IN THE JET PIPE TEMPERATURE AND WORSEN ANY FIRE SITUATION.

2. Check the aircraft log book for aircraft serviceability, servicing and inspections carried out.

3. Canopy - Locked fully open.

4. FUEL DUMP - White line horizontal.

5. Flight controls - Unlocked.

CAUTION
IN STRONG WIND,DO NOT UNLOCK THE FLIGHT CONTROLS UNTIL THE COCKPIT CHECKS ARE COMPLETED OR DAMAGE MAY RESULT TO THE CONTROL SURFACES AND ASSOCIATED CONTROL LINKAGES.

6. External power supply - As required.

7. Stand-by attitude indicator - Caged.

8. BATT - OFF.

9. GEN 1 - OFF.

10. GEN 2 - OFF.

11. AC POWER - NORM.

12. GROUND FIRE - OFF.

13. Ground utilities control panel:

a. IGN - Guard down.
b. FUEL PUMP - Guard down.
c. LG SW ORIDE - Guard down.

14. If necessary, insert the data card in the receptacle of the front “AHR/GPS” control panel.

EXTERIOR INSPECTION

The exterior inspection procedures are based on the assumption that maintenance personnel have performed all post-flight and pre-flight inspections specified in the applicable technical publications. The pilot is not required to repeat the same operations, except those which are flight critical. When performing exterior inspection, the pilot must check for the aircraft general conditions as indicated in figure.

REAR COCKPIT CHECKS FOR “SOLO” FLIGHTS

1. Ejection seat safety pin in place in the firing handle.

2. Make sure that the survival pack, seat belts, communication lead, normal and emergency oxygen hoses are fastened by means of the special cover assembly.

CAUTION
ONLY DURING FERRY FLIGHT IF A COVER ASSEMBLY IS NOT AVAILABLE, THE PARACHUTE AND SURVIVAL PACK MAY BE FASTENED BY MEANS OF THE SEAT BELTS OR OTHER FASTENING SYSTEM.

THE PILOT SHALL CHECK THAT FASTENING IS SECURE.

WARNING

AEROBATICS ARE FORBIDDEN WHEN THE COVER ASSEMBLY IS NOT INSTALLED ON THE REAR SEAT.

3. Oxygen regulator supply lever – OFF.

4. ANTI-SKID - NORM.

5. FUEL SHUT OFF - OPEN (guard down).

6. AIL SERVO - ON (guard down).

7. FUEL DUMP - White line horizontal.

8. FIRE (on the armament repeater panel) - ON (guard down).

9. Stand-by altitude indicator - CAGED.

10. All switches - OFF.

11. Circuit breaker panel - All circuit breakers in.

BEFORE ENTERING THE COCKPIT

1. Don the leg restraint garters (below the knees, rings forward, the buckle inward).

2. Carry out the following seat checks:

a. Safety pin in place in the seat firing handle.

b. Other safety pins stowed in the backrest.

c. Gun sear extraction link fitted and safety pin not fitted to the sear.

d. Leg restraint garters correctly attached to the cabin floor.

e. Manual override handle - Down and locked.

f. Manual override safety pin - Removed.

g. Time release unit control rod - Secured and safety pin removed.

h. Safety link of the “U” ring in the ejection parachute and every other visible link - Check for integrity.

i. Seat correctly locked on ejection gun. Make sure that the indicator spigot is flush with the threaded end of the latch plunger and that the latch plunger is level with or slightly below the housing face.

j. Parachute extraction rope secured to the drogue gun piston.

k. Drogue gun control rod - Bound to the crosspiece of the gun with safety pin removed.

l. Shoulder harness retraction trip lever - In rear position.

m. Rocket pack initiator safety pin -Removed.

n. Emergency oxygen cylinder - Indicator in the green.

o. Emergency oxygen handle - Lowered.

p. Secure fastening in the lock points of the belts.

q. Check connection between survival pack retain belt and parachute belts.

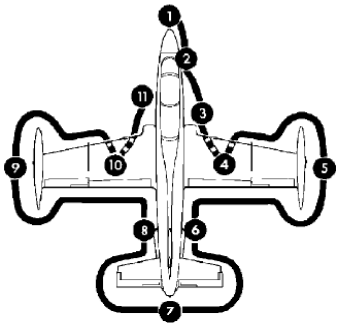
r. Sticker strap lugs engaged in clips.

3. Ejection sequence control (rear cockpit) - As required.

EXTERIOR INSPECTION

CONDITIONS:
- Flaps and speedbrake - Down
- Flight controls - Unlocked
- Covers - Removed
- Areas, free from objects that could be ingested by the engine
- Fire extinguisher - Available

GENERAL ITEMS:
- Damage, distortion, loose screws or rivets
- Damage to metal skins
- Incomplete fastening of panels or doors
- Fuel, oil and hydraulic fluid leakage



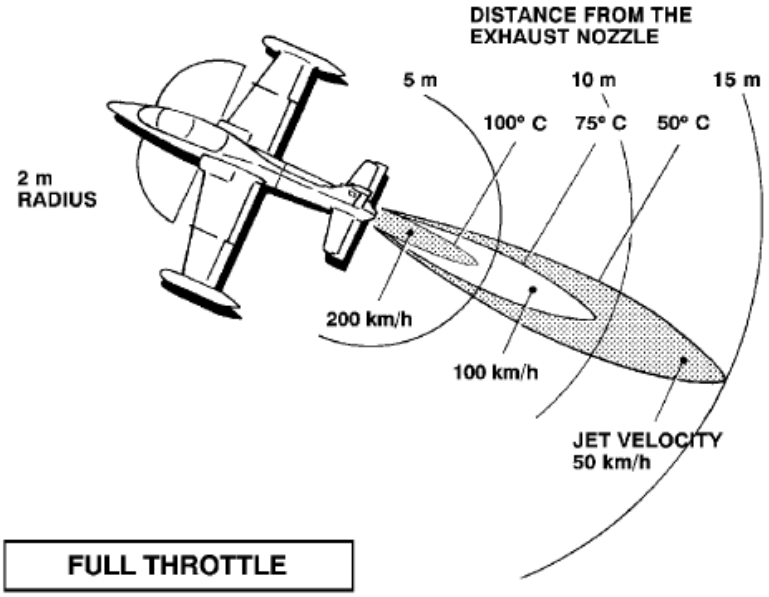
1. FUSELAGE NOSE
- Left and right Pitot - Unobstructed.
- Upper IFF antenna - Conditions.
- Formation lights - Check conditions.
- AOA transmitter - Unobstructed and free to rotate.

2. NOSE LANDING GEAR
- Landing gear door - Check conditions.
- Taxi light - Conditions and security.
- Shock-absorber - Check proper extension.
- Splash guard - Conditions and fastening.
- Tire - Conditions and inflation.
- Microswitch - Check conditions.

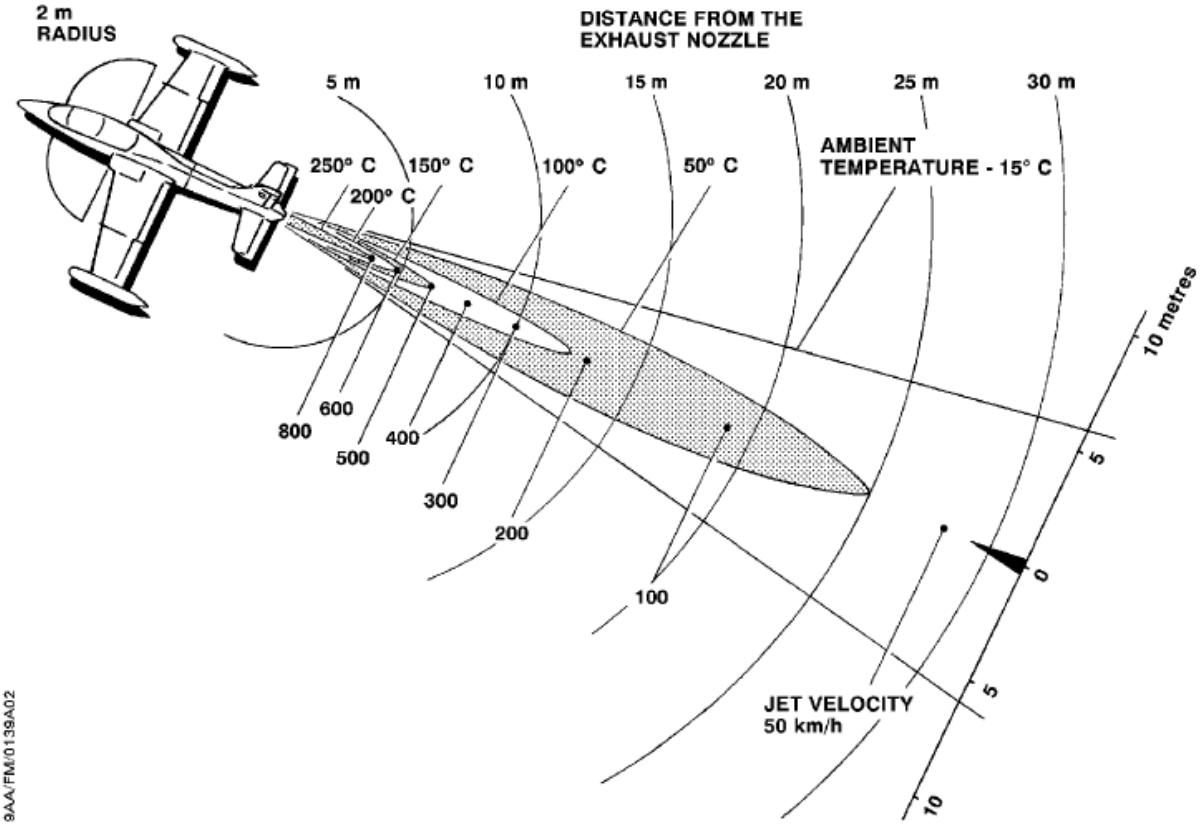
3. RIGHT FORWARD FUSELAGE

DANGER AREAS | **TEMPERATURE AND VELOCITY**

ENGINE AT IDLE



FULL THROTTLE



9AA/FM/0139A02

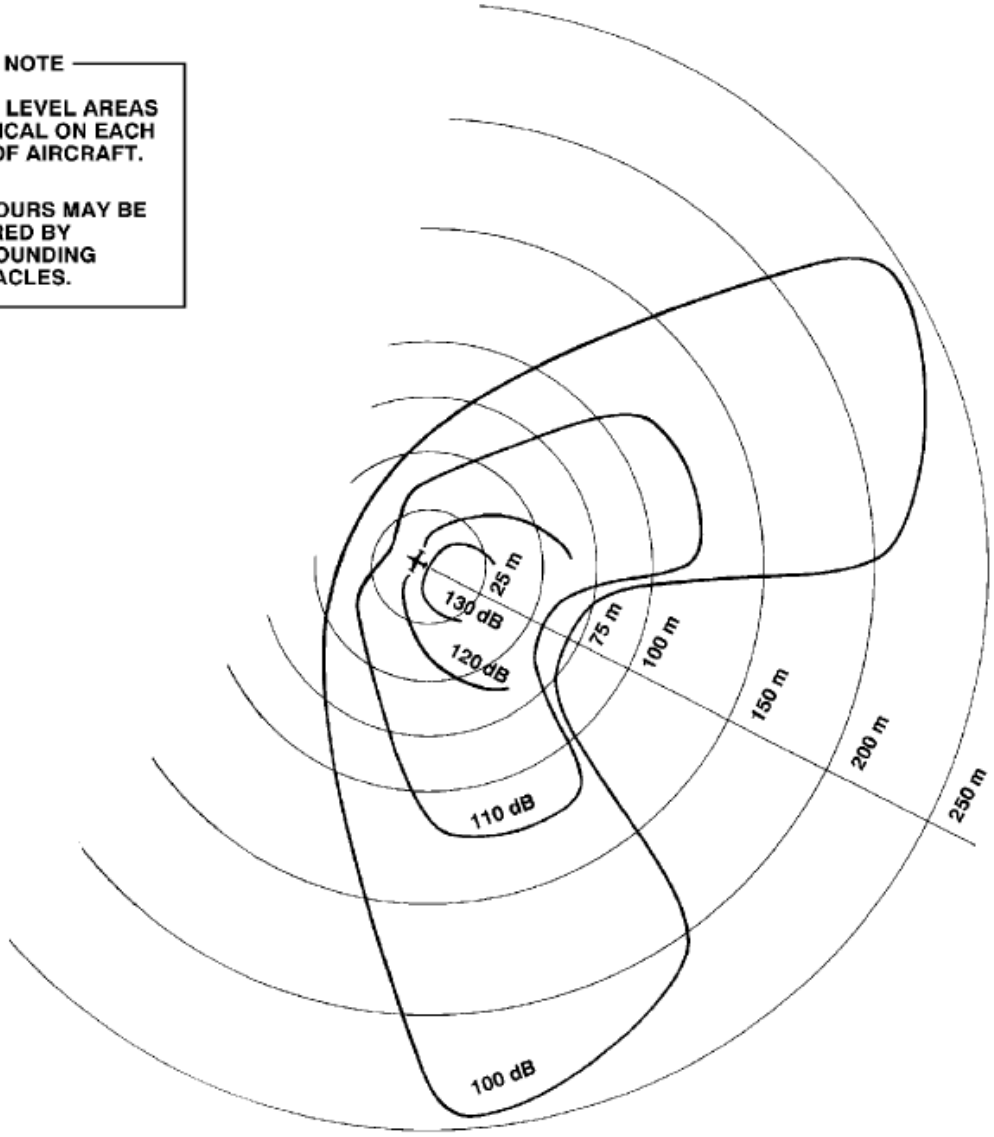
DANGER AREAS — NOISE LEVEL

NOISE PROTECTION REQUIREMENTS	
DECIBEL	**REQUIRED EAR PROTECTION**
0-85 dB	No protection required
85-120 dB	Ear muffs or ear plugs
120-135 dB	Ear muffs and ear plugs
135-145 dB	Ear muffs and ear plugs Limited time exposure
Above 145 dB	Prohibited

FULL THROTTLE

NOTE

- NOISE LEVEL AREAS IDENTICAL ON EACH SIDE OF AIRCRAFT.
- CONTOURS MAY BE ALTERED BY SURROUNDING OBSTACLES.



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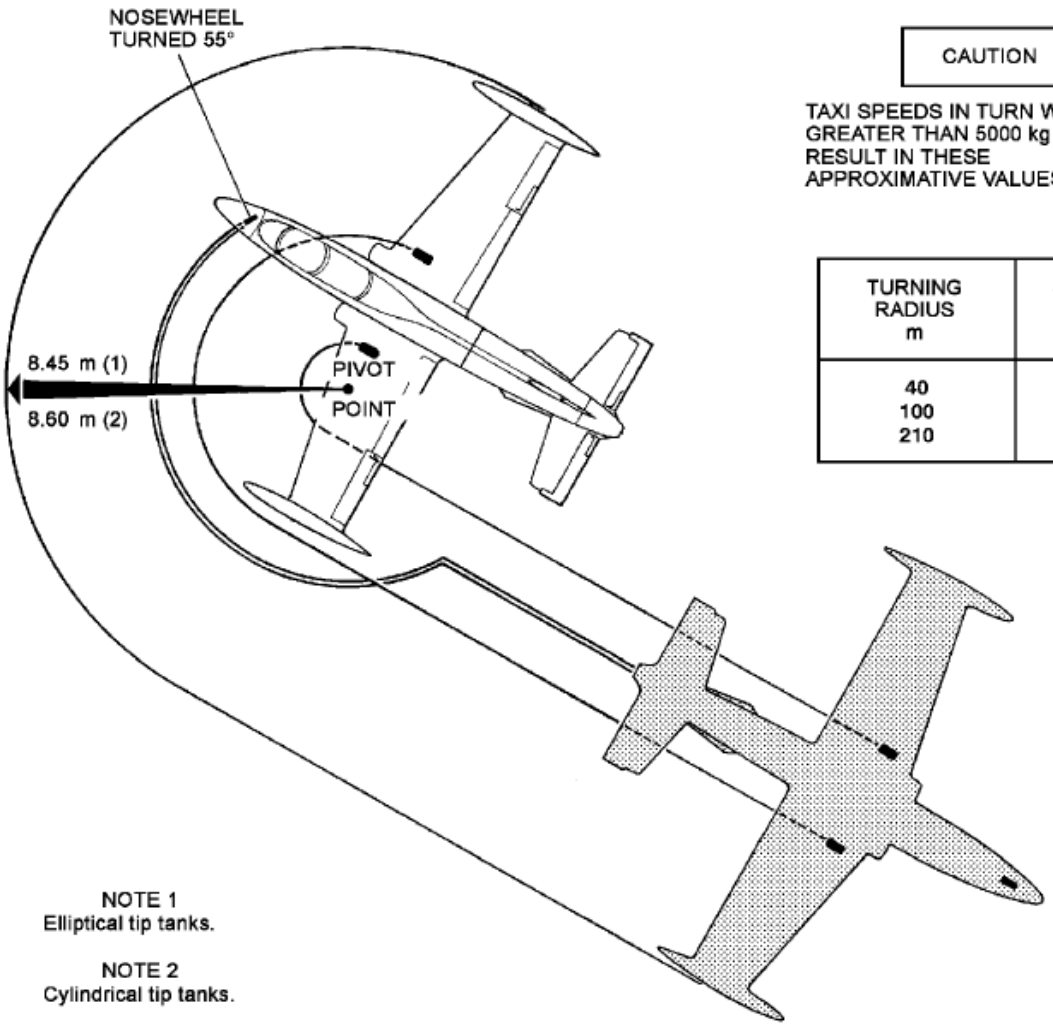
TURNING RADIUS AND GROUND CLEARANCE

MINIMUM TURNING RADIUS



NOTE 1
Elliptical tip tanks.

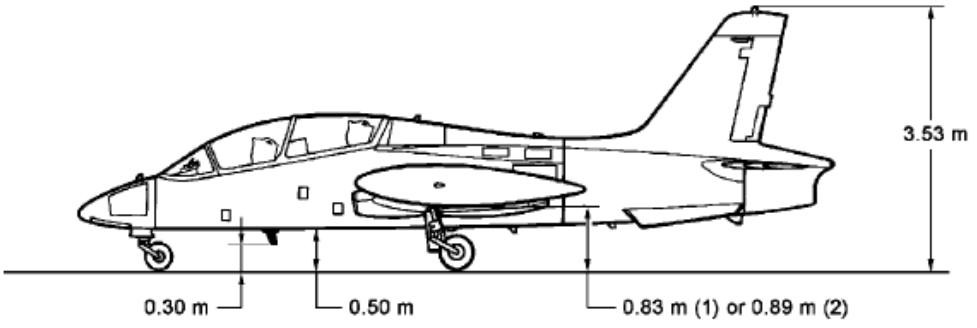
NOTE 2
Cylindrical tip tanks.

CAUTION

TAXI SPEEDS IN TURN WITH MASS GREATER THAN 5000 kg SHOULD RESULT IN THESE APPROXIMATIVE VALUES:

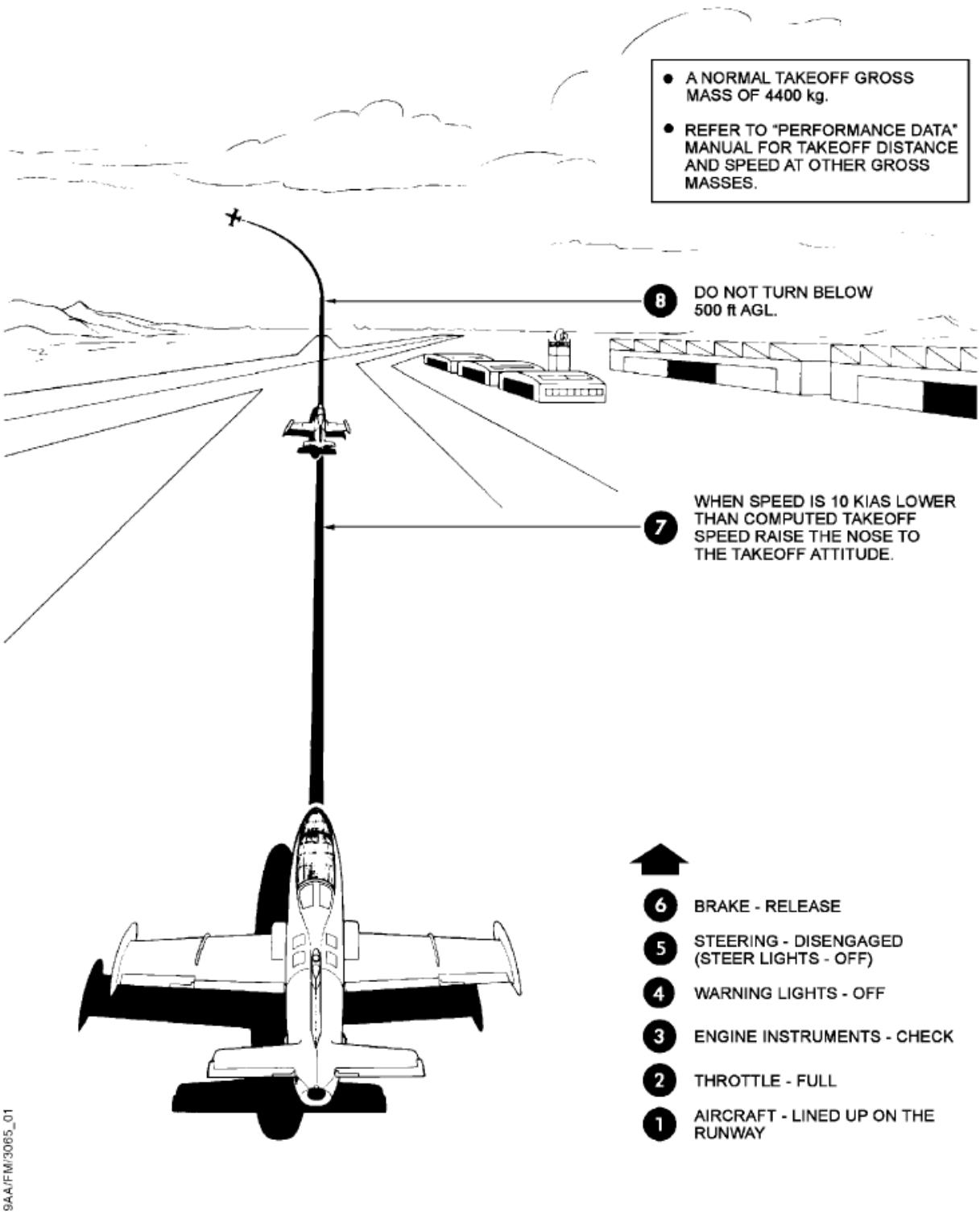
TURNING RADIUS m	SPEED kt
40	25
100	35
210	55

APPROXIMATE GROUND CLEARANCE



9AA/FM/2954_01

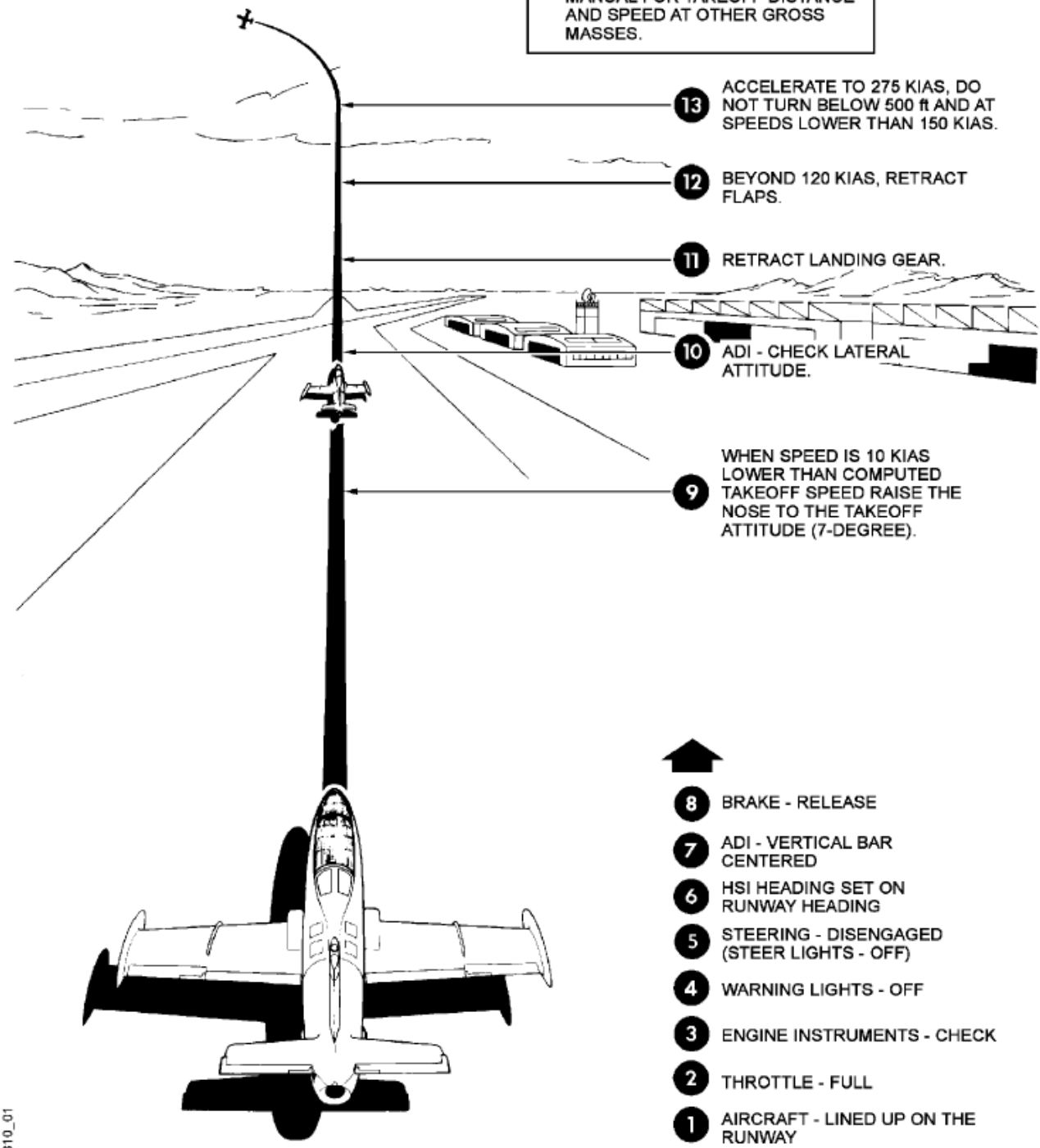
TAKEOFF (TYPICAL)



9AA/FM/3065_01

INSTRUMENT TAKEOFF (TYPICAL)

- NORMAL TAKEOFF GROSS MASS OF 4400 kg.
- REFER TO "PERFORMANCE DATA" MANUAL FOR TAKEOFF DISTANCE AND SPEED AT OTHER GROSS MASSES.

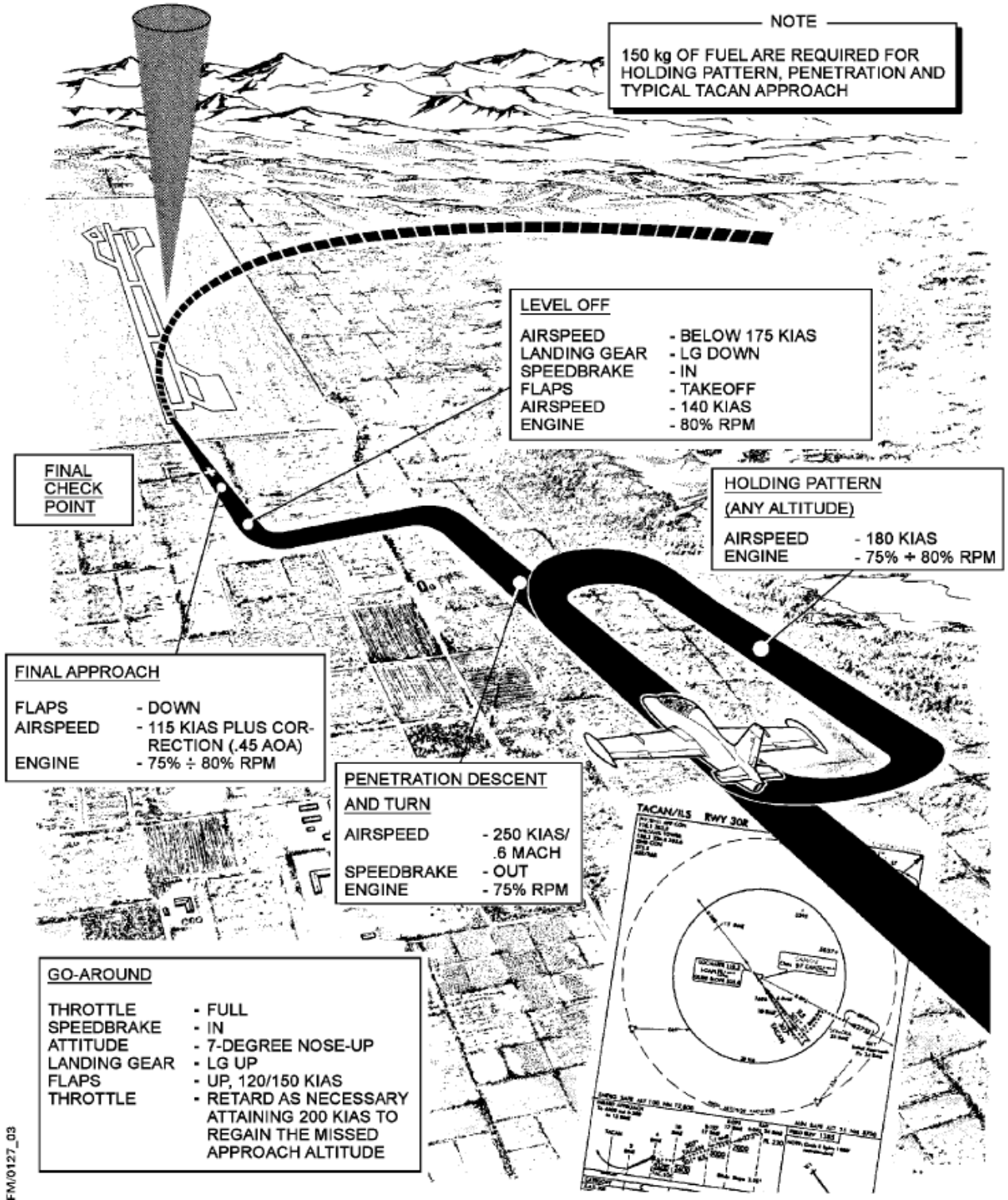


13. ACCELERATE TO 275 KIAS, DO NOT TURN BELOW 500 ft AND AT SPEEDS LOWER THAN 150 KIAS.
12. BEYOND 120 KIAS, RETRACT FLAPS.
11. RETRACT LANDING GEAR.
10. ADI - CHECK LATERAL ATTITUDE.
9. WHEN SPEED IS 10 KIAS LOWER THAN COMPUTED TAKEOFF SPEED RAISE THE NOSE TO THE TAKEOFF ATTITUDE (7-DEGREE).

8. BRAKE - RELEASE
7. ADI - VERTICAL BAR CENTERED
6. HSI HEADING SET ON RUNWAY HEADING
5. STEERING - DISENGAGED (STEER LIGHTS - OFF)
4. WARNING LIGHTS - OFF
3. ENGINE INSTRUMENTS - CHECK
2. THROTTLE - FULL
1. AIRCRAFT - LINED UP ON THE RUNWAY

9AA/FM/0310_01

HOLDING, PENETRATION AND TACAN APPROACH (TYPICAL)



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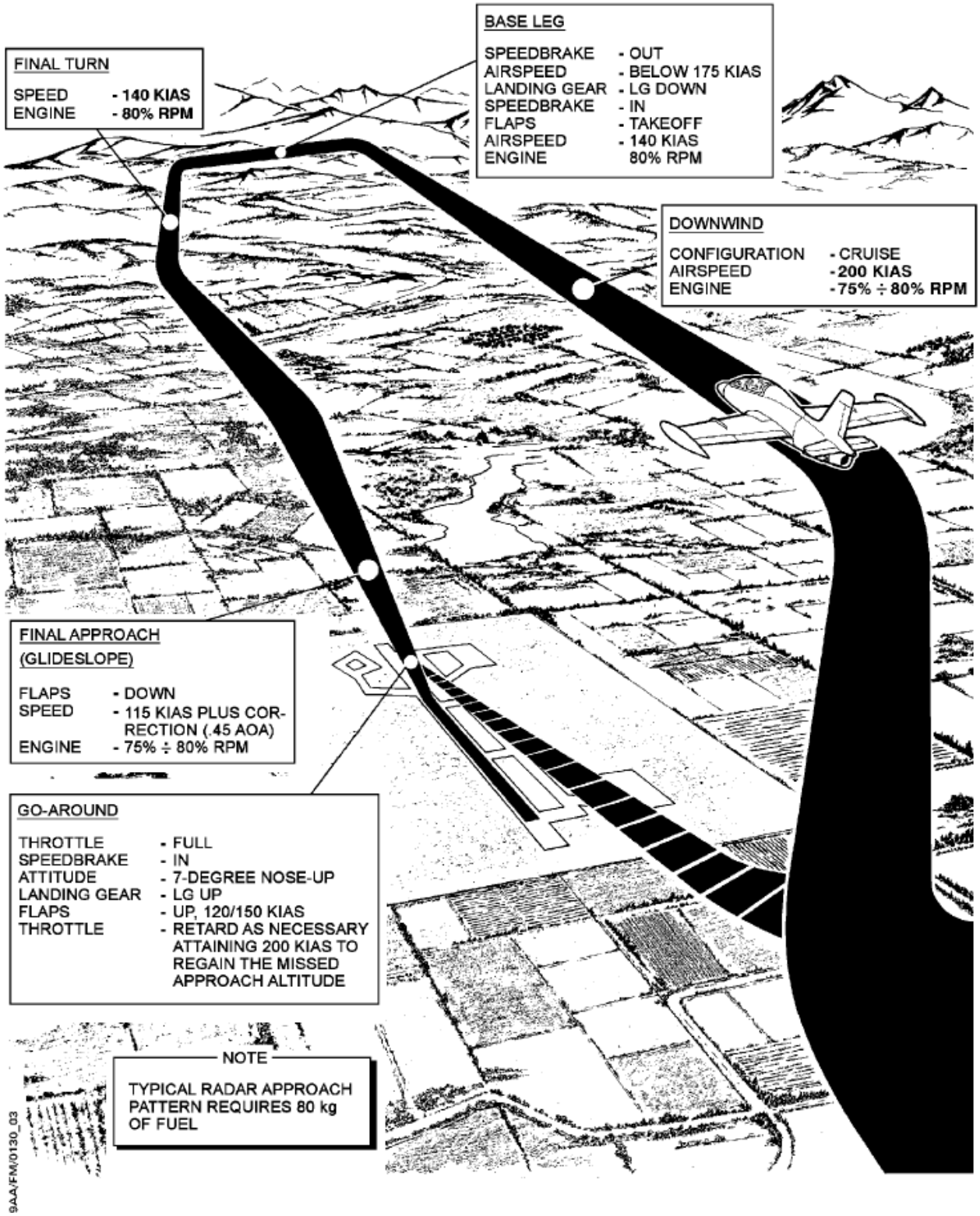
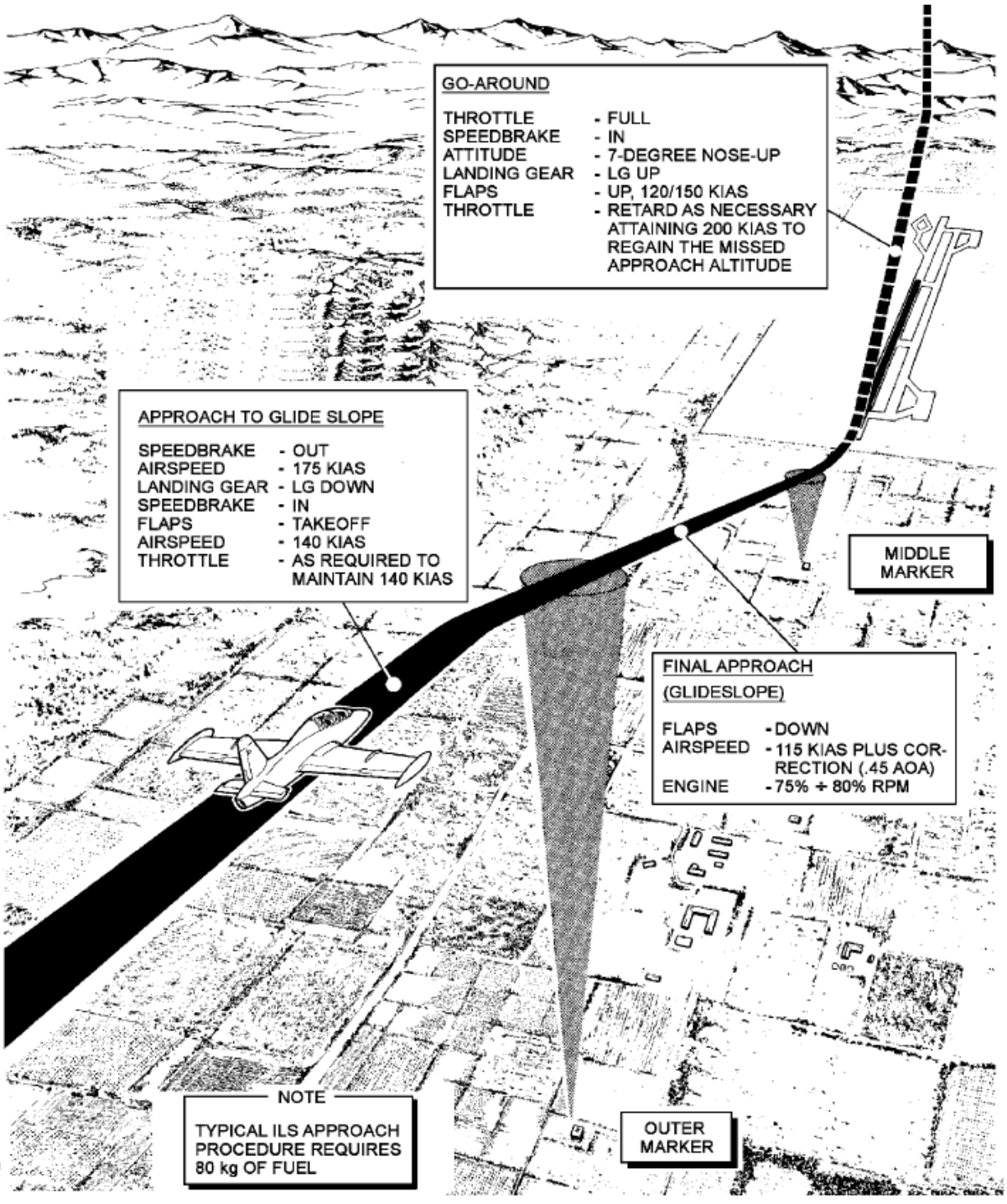
RADAR APPROACH (TYPICAL)



ILS APPROACH (TYPICAL)



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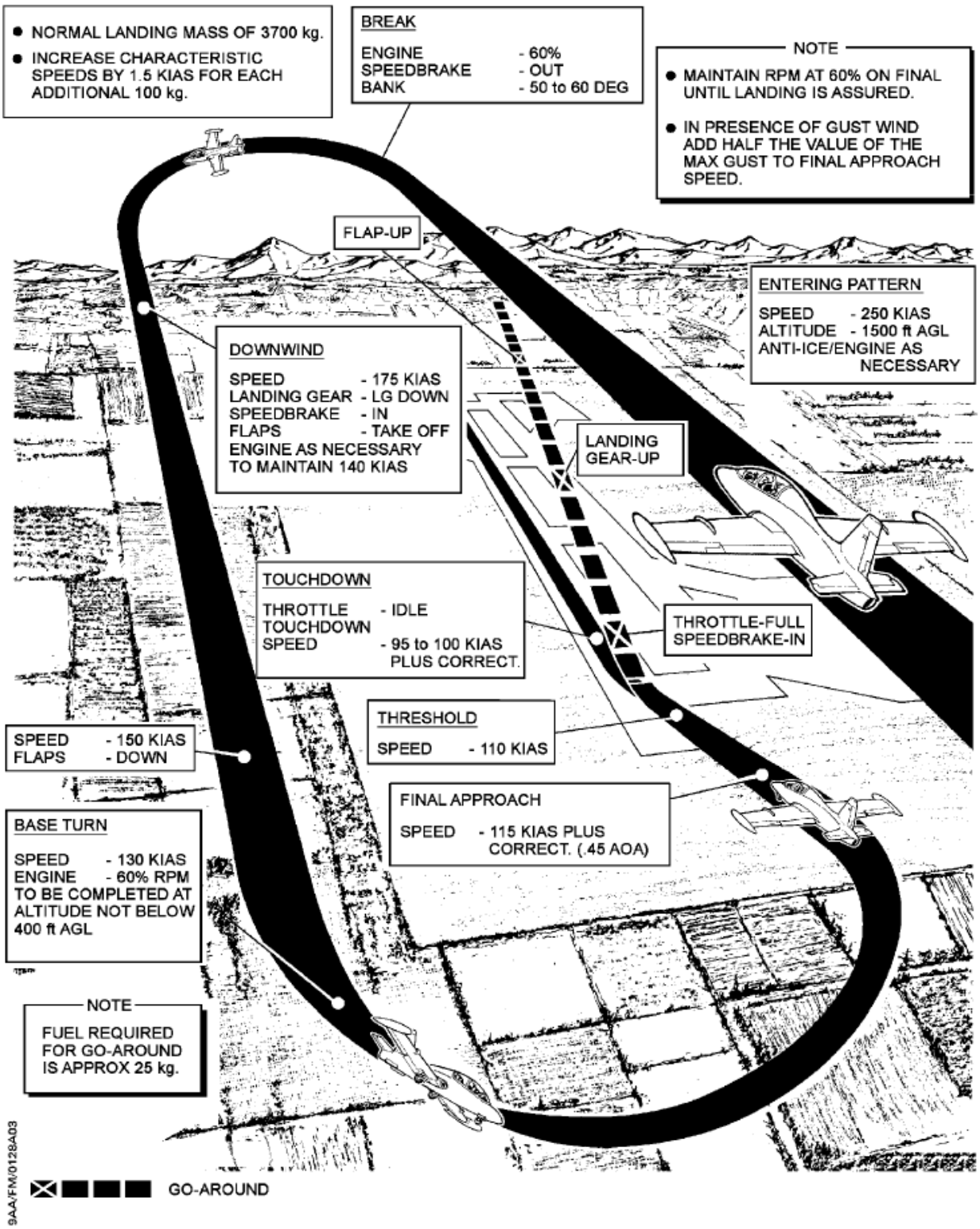
LANDING AND GO-AROUND (TYPICAL)



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