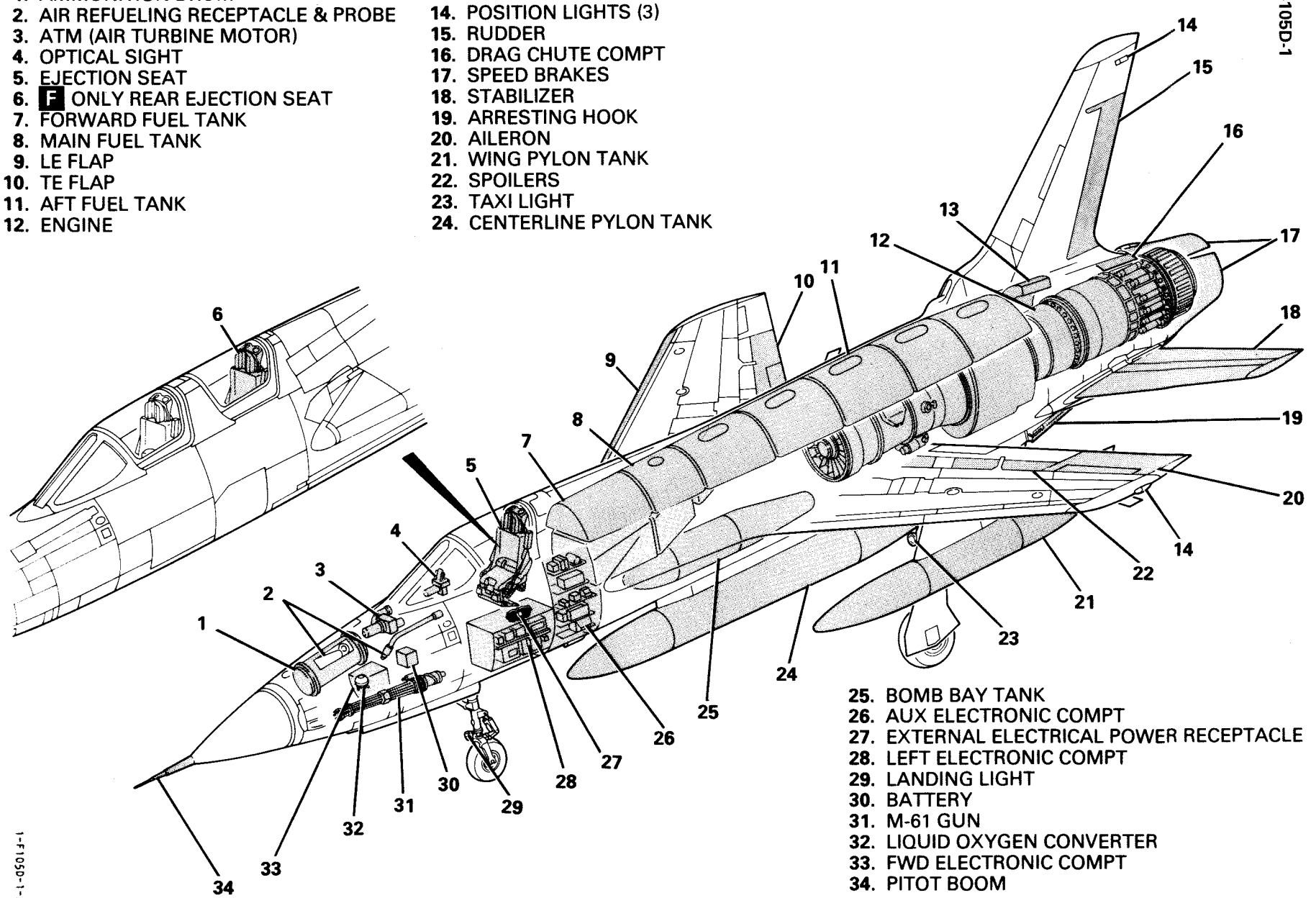
GENERAL ARRANGEMENT

GROUND SERVICE UNITS — SEE FIGURE 1-78
ANTENNA LOCATIONS — SEE FIGURE 1-40

1. AMMUNITION DRUM
2. AIR REFUELING RECEPTACLE & PROBE
3. ATM (AIR TURBINE MOTOR)
4. OPTICAL SIGHT
5. EJECTION SEAT
6. F ONLY REAR EJECTION SEAT
7. FORWARD FUEL TANK
8. MAIN FUEL TANK
9. LE FLAP
10. TE FLAP
11. AFT FUEL TANK
12. ENGINE
13. WATER TANK
14. POSITION LIGHTS (3)
15. RUDDER
16. DRAG CHUTE COMPT
17. SPEED BRAKES
18. STABILIZER
19. ARRESTING HOOK
20. AILERON
21. WING PYLON TANK
22. SPOILERS
23. TAXI LIGHT
24. CENTERLINE PYLON TANK



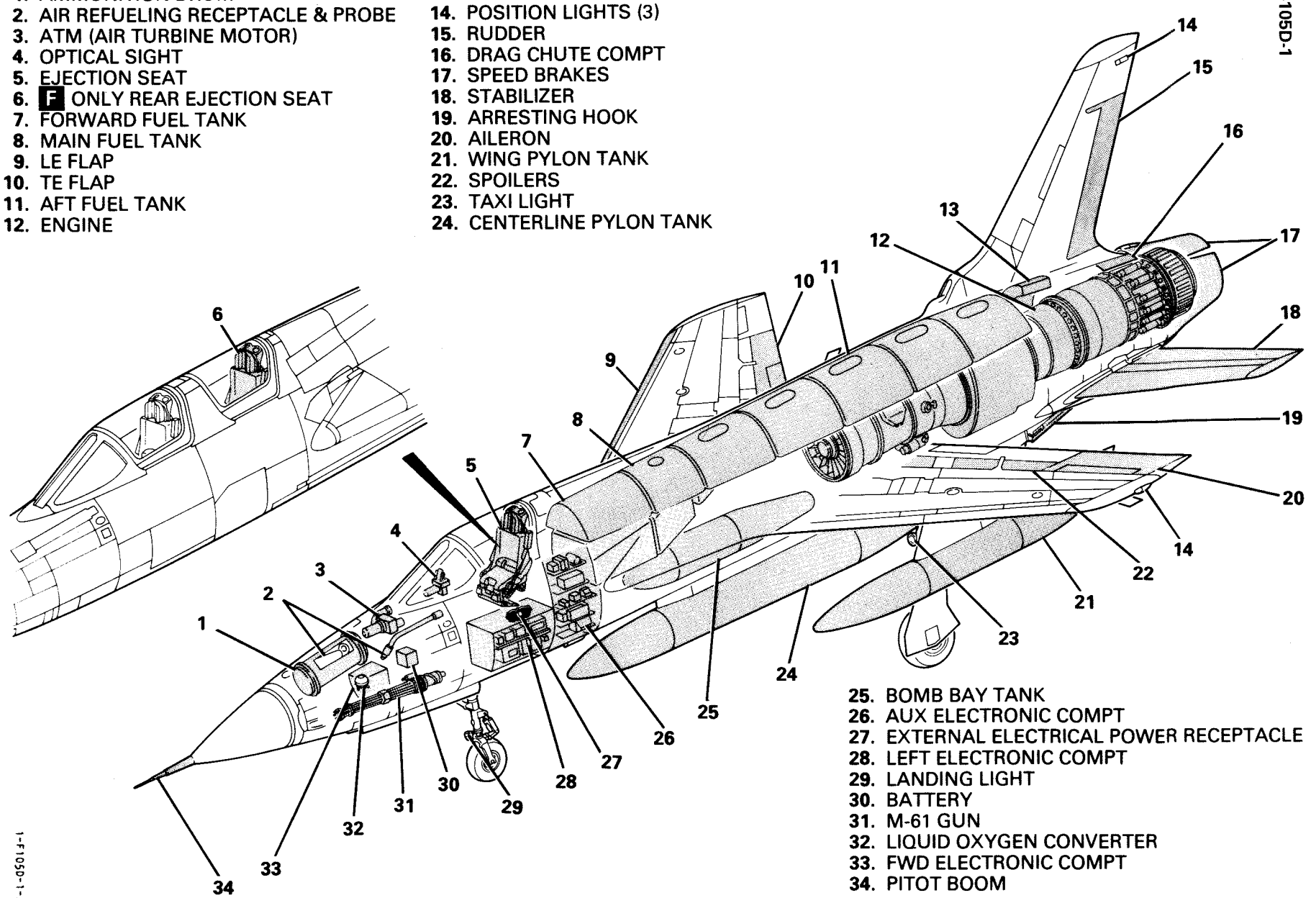
25. BOMB BAY TANK
26. AUX ELECTRONIC COMPT
27. EXTERNAL ELECTRICAL POWER RECEPTACLE
28. LEFT ELECTRONIC COMPT
29. LANDING LIGHT
30. BATTERY
31. M-61 GUN
32. LIQUID OXYGEN CONVERTER
33. FWD ELECTRONIC COMPT
34. PITOT BOOM

Figure 1-1

GENERAL ARRANGEMENT

GROUND SERVICE UNITS — SEE FIGURE 1-78
ANTENNA LOCATIONS — SEE FIGURE 1-40

1. AMMUNITION DRUM
2. AIR REFUELING RECEPTACLE & PROBE
3. ATM (AIR TURBINE MOTOR)
4. OPTICAL SIGHT
5. EJECTION SEAT
6. F ONLY REAR EJECTION SEAT
7. FORWARD FUEL TANK
8. MAIN FUEL TANK
9. LE FLAP
10. TE FLAP
11. AFT FUEL TANK
12. ENGINE
13. WATER TANK
14. POSITION LIGHTS (3)
15. RUDDER
16. DRAG CHUTE COMPT
17. SPEED BRAKES
18. STABILIZER
19. ARRESTING HOOK
20. AILERON
21. WING PYLON TANK
22. SPOILERS
23. TAXI LIGHT
24. CENTERLINE PYLON TANK



25. BOMB BAY TANK
26. AUX ELECTRONIC COMPT
27. EXTERNAL ELECTRICAL POWER RECEPTACLE
28. LEFT ELECTRONIC COMPT
29. LANDING LIGHT
30. BATTERY
31. M-61 GUN
32. LIQUID OXYGEN CONVERTER
33. FWD ELECTRONIC COMPT
34. PITOT BOOM

Figure 1-1

ENGINE J-75

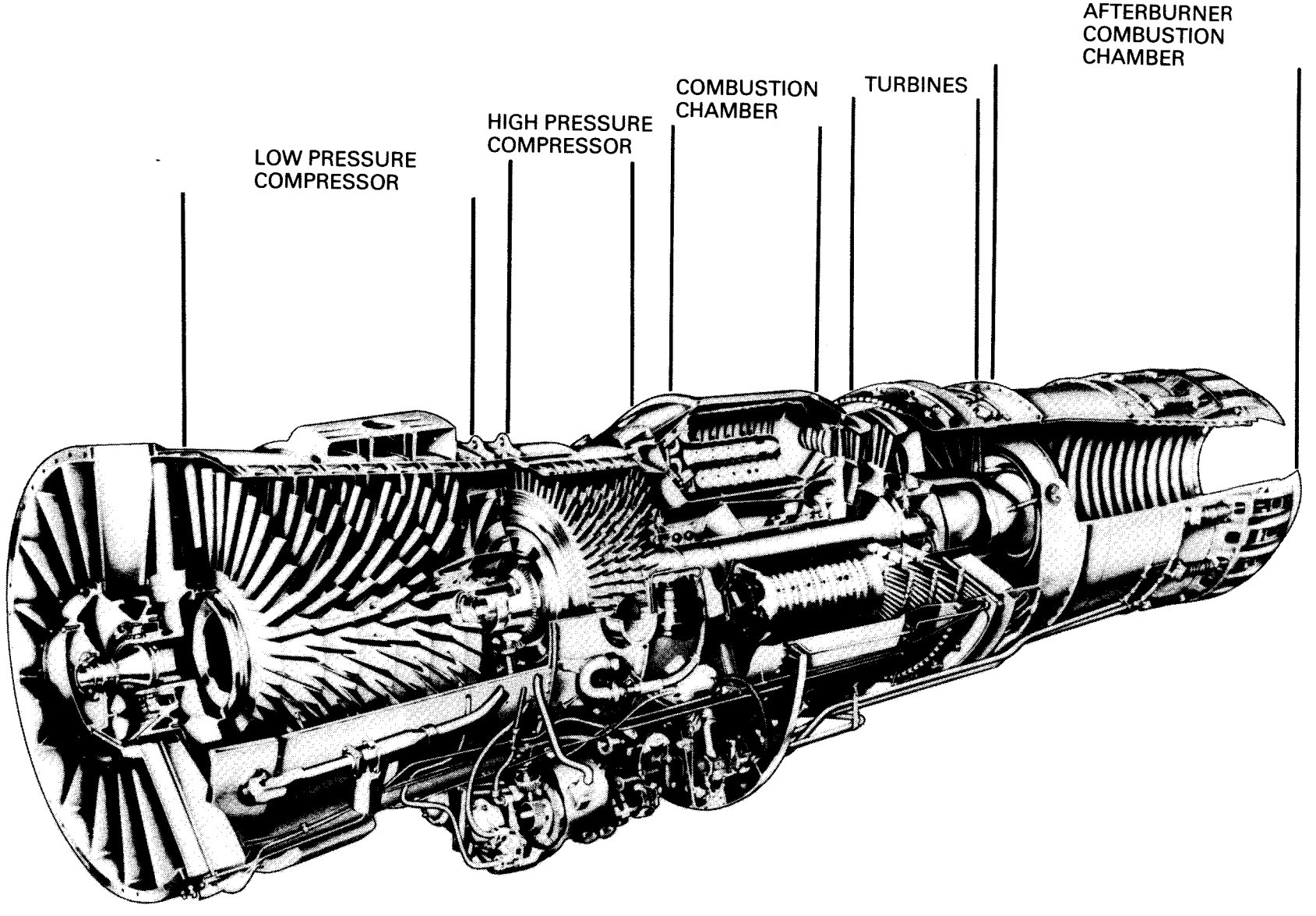


Figure 1-2

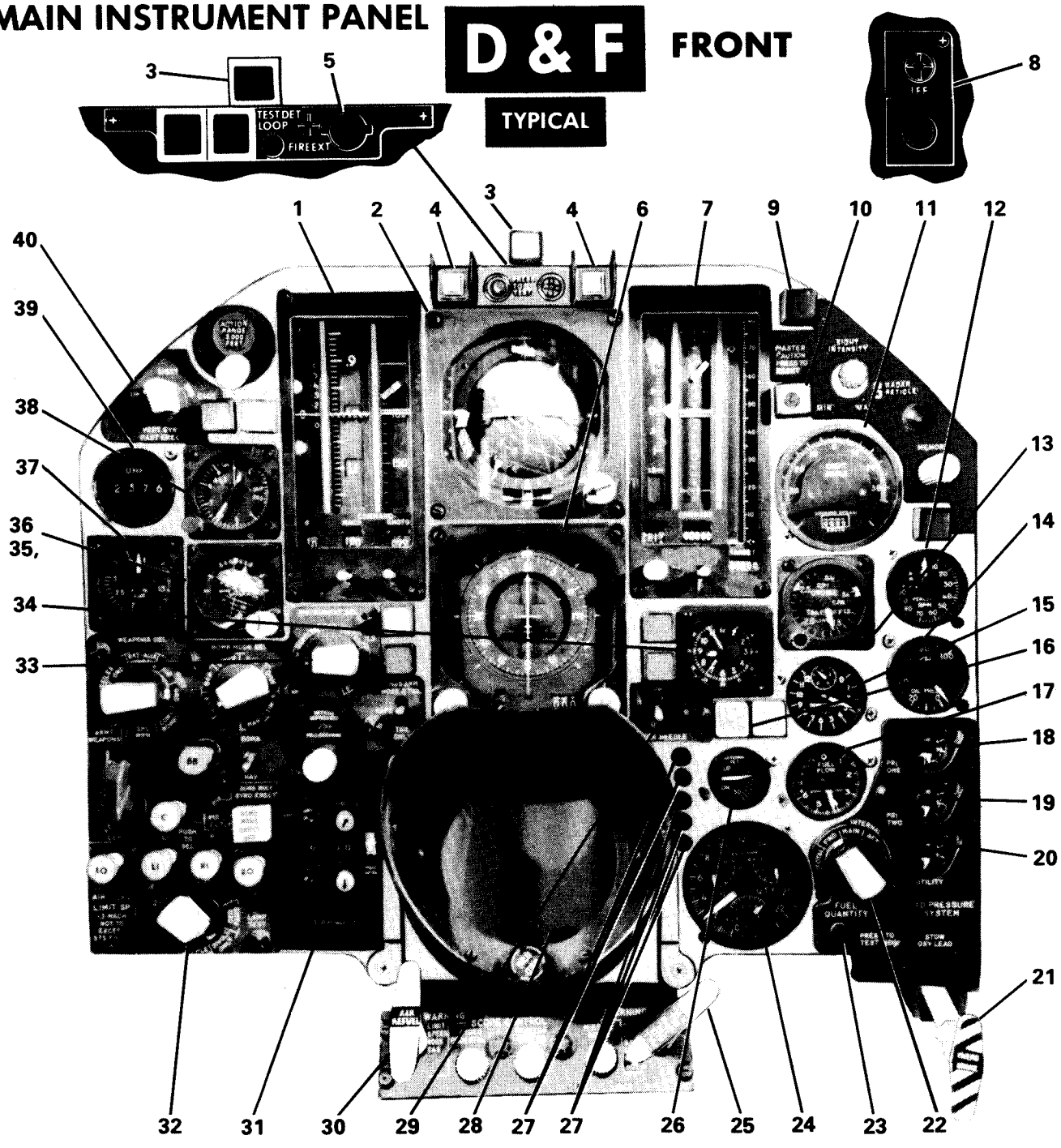
1-F105D-1-3

MAIN INSTRUMENT PANEL

D & F

TYPICAL

FRONT



1. AMI (AIRSPEED MACH INDICATOR)
2. ADI (ATTITUDE DIRECTOR INDICATOR)
3. STABILIZER LOCK LIGHT [1045] C/W
4. ENGINE OVERHEAT AND FIRE WARNING LIGHTS
5. FIRE EXTINGUISHER BUTTON
6. HSI (HORIZONTAL SITUATION INDICATOR)
7. AVVI (ALTITUDE-VERTICAL VELOCITY INDICATOR)
8. IFF CAUTION LIGHT
9. BAIL-OUT LIGHT (**F** ONLY)
10. MASTER CAUTION LIGHT
11. GROUND SPEED AND DRIFT ANGLE INDICATOR
12. TACHOMETER
13. PRESSURE RATIO GAGE
14. OIL PRESSURE GAGE

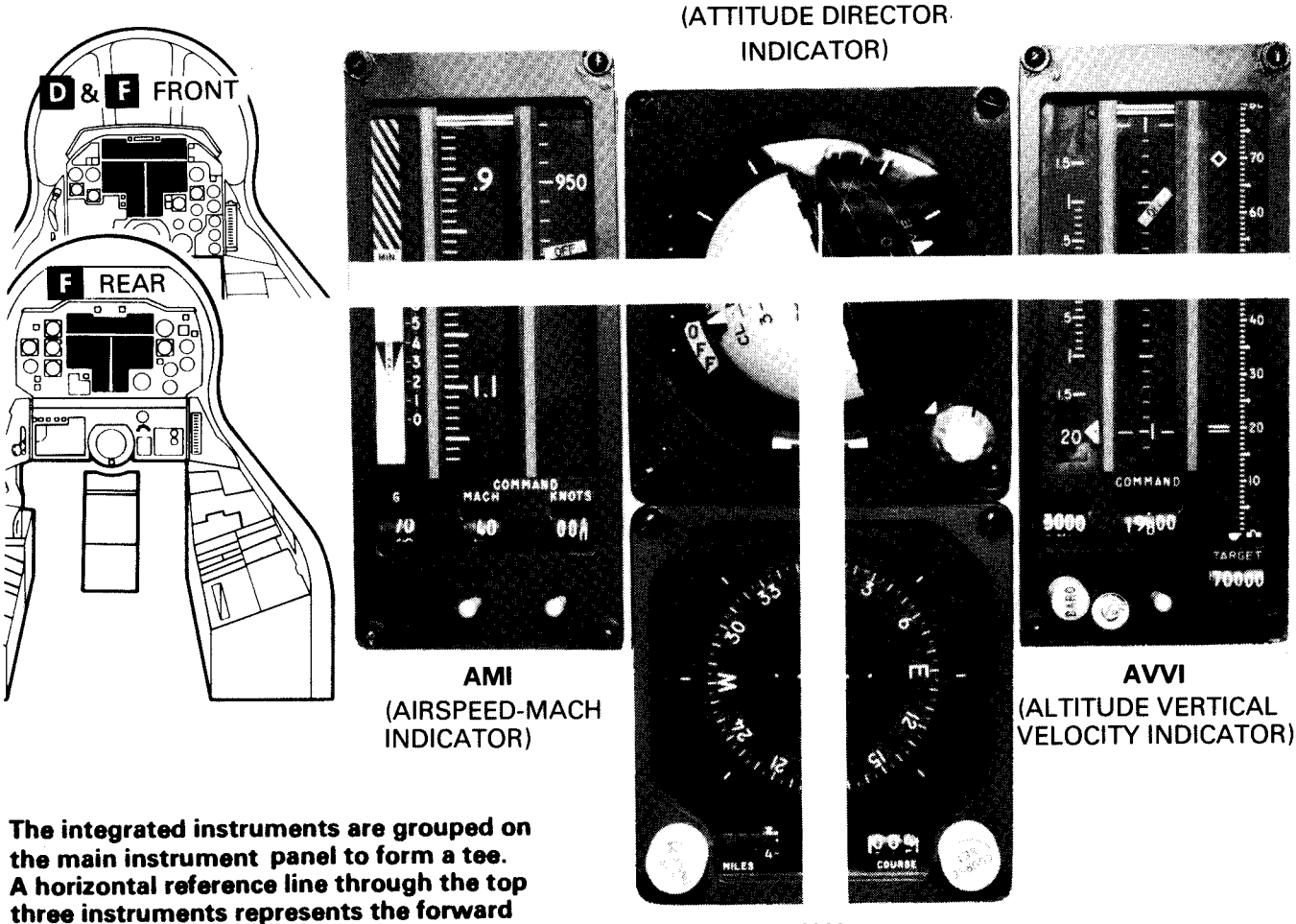
All armament controls are presented in T.O. 1F-105B-34-1-1.
All caution, warning and indicator lights are presented in detail in Figure 1-60.
See T.O. 1F-105G-1 for G cockpit configuration.

1-F105D-1-4

Figure 1-3 (Sheet 1 of 2)

INTEGRATED FLIGHT INSTRUMENT

DISPLAY



The integrated instruments are grouped on the main instrument panel to form a tee. A horizontal reference line through the top three instruments represents the forward looking view. A vertical reference line through the ADI and HSI represents the downward look (or plan) view.

NOTE

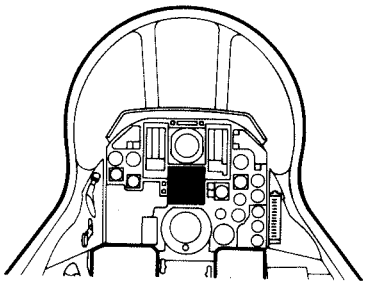
- **The display in the forward looking view, along the horizontal reference line, is governed by fore and aft movements of the stick and/or throttle, and include pitch, airspeed, Mach number, vertical velocity, altitude, angle of attack and acceleration.**
- **The downward looking display is controlled by motions of the stick sideways and include heading, bank, turn rate, and navigational as well as tactical information.**
- **By scanning the horizontal or vertical reference lines, it is possible to determine as indicated by the command marker and other indicators whether or not the aircraft's performance, in relation to airspeed, altitude, and course, differs from the desired performance.**

1-F105D-1-69

Figure 1-54

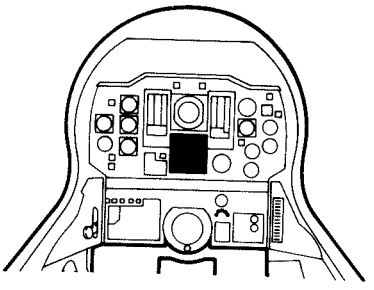
HSI
(HORIZONTAL SITUATION INDICATOR)

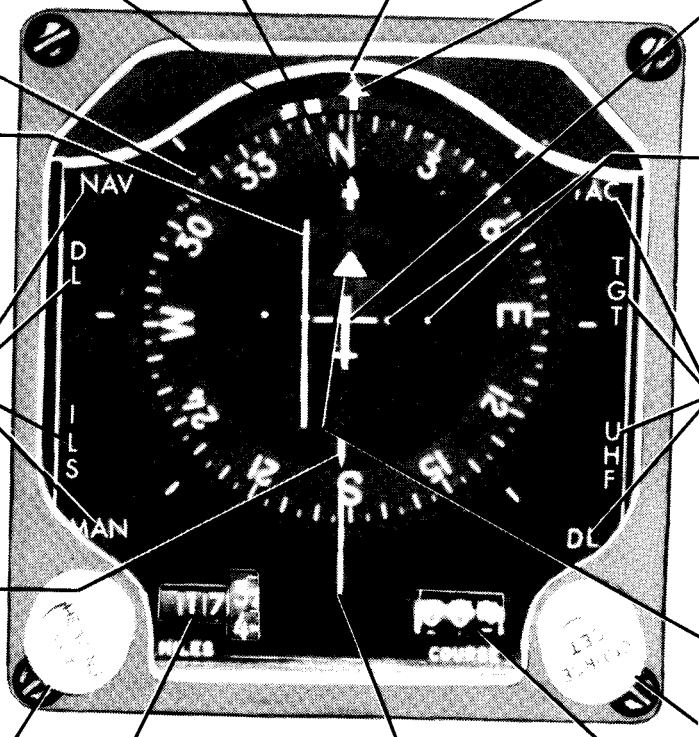
D & F FRONT



NOTE
Situation shown is with the instrument selector at TAC and the TACAN function selector at T/R.

F REAR





1. HEADING MARKER
2. COURSE ARROW (HEAD)
3. UPPER LUBBER LINE
4. BEARING POINTER
5. AIRCRAFT SYMBOL
6. COURSE DEVIATION SCALE
7. MODE INDICATOR LIGHTS
8. TO-FROM INDICATOR
9. COURSE SET KNOB
10. COURSE SELECTOR WINDOW
11. LOWER LUBBER LINE
12. RANGE INDICATOR*
13. HEADING SET KNOB
14. COURSE ARROW (TAIL)
15. MODE INDICATOR LIGHTS
16. COURSE DEVIATION INDICATOR
17. COMPASS CARD

***Range warning flag not shown.**

1-F105D-1-68

Figure 1-53

AMI
(AIRSPEED-MACH INDICATOR)

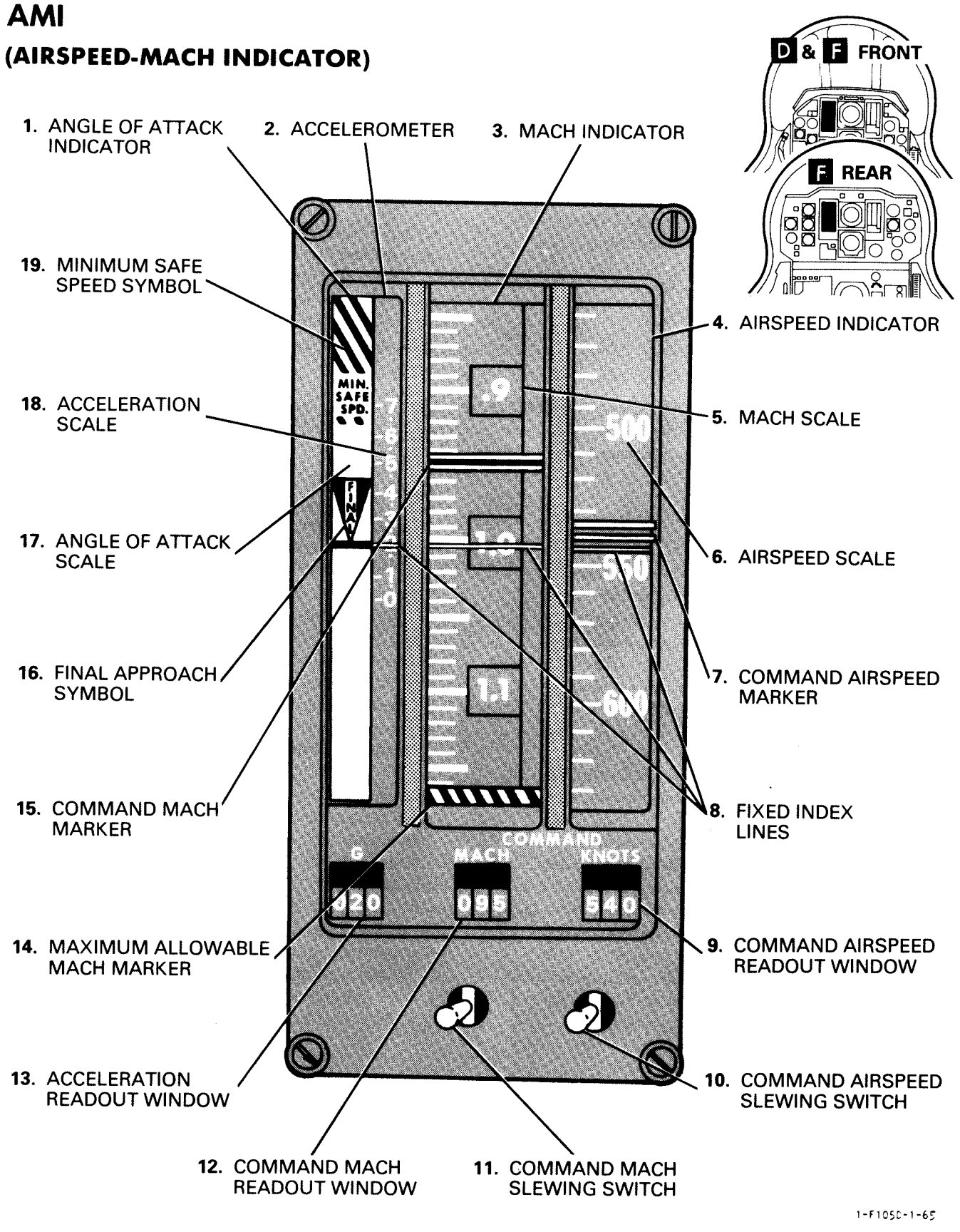


Figure 1-50

AVVI
(ALTITUDE VERTICAL VELOCITY INDICATOR)

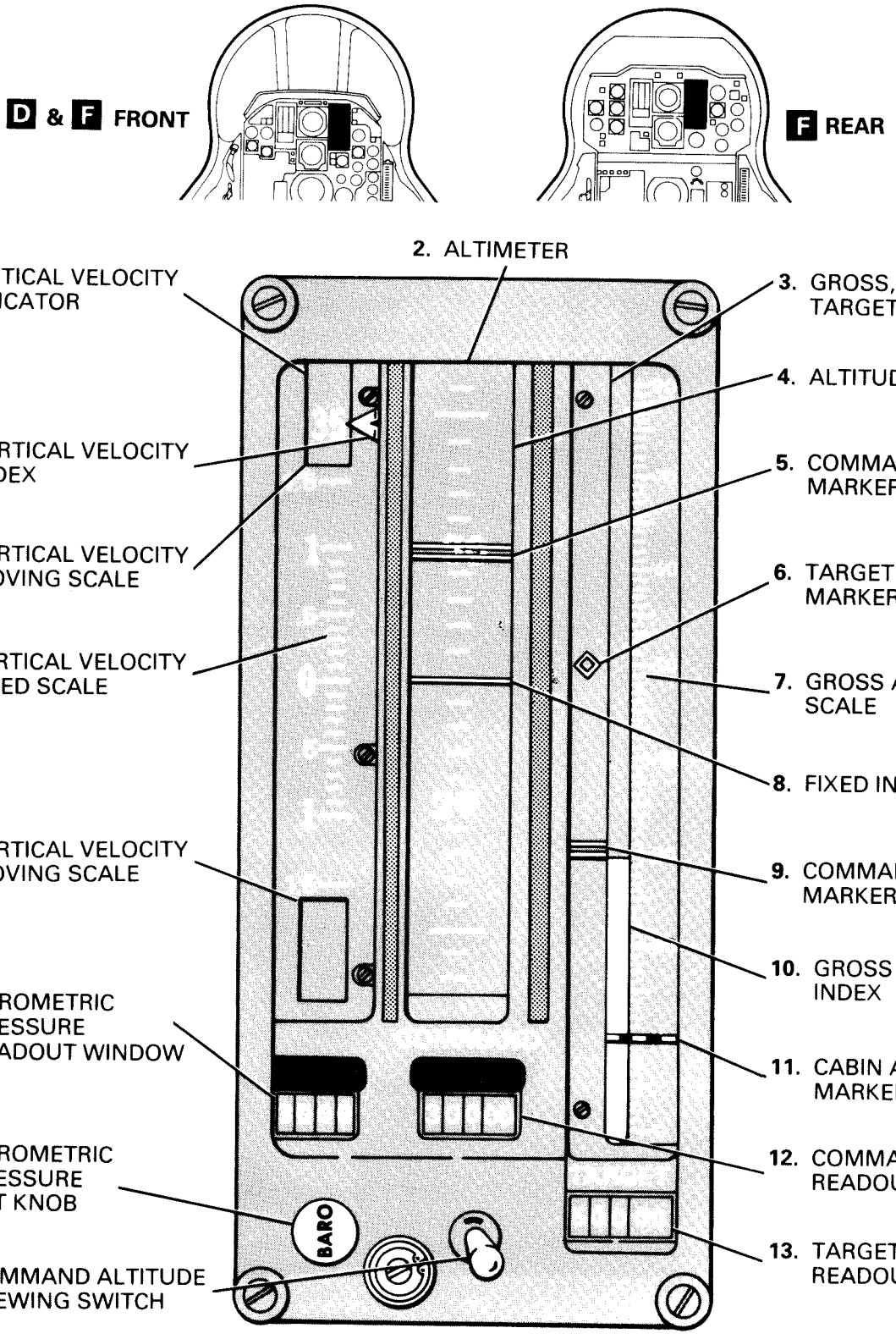


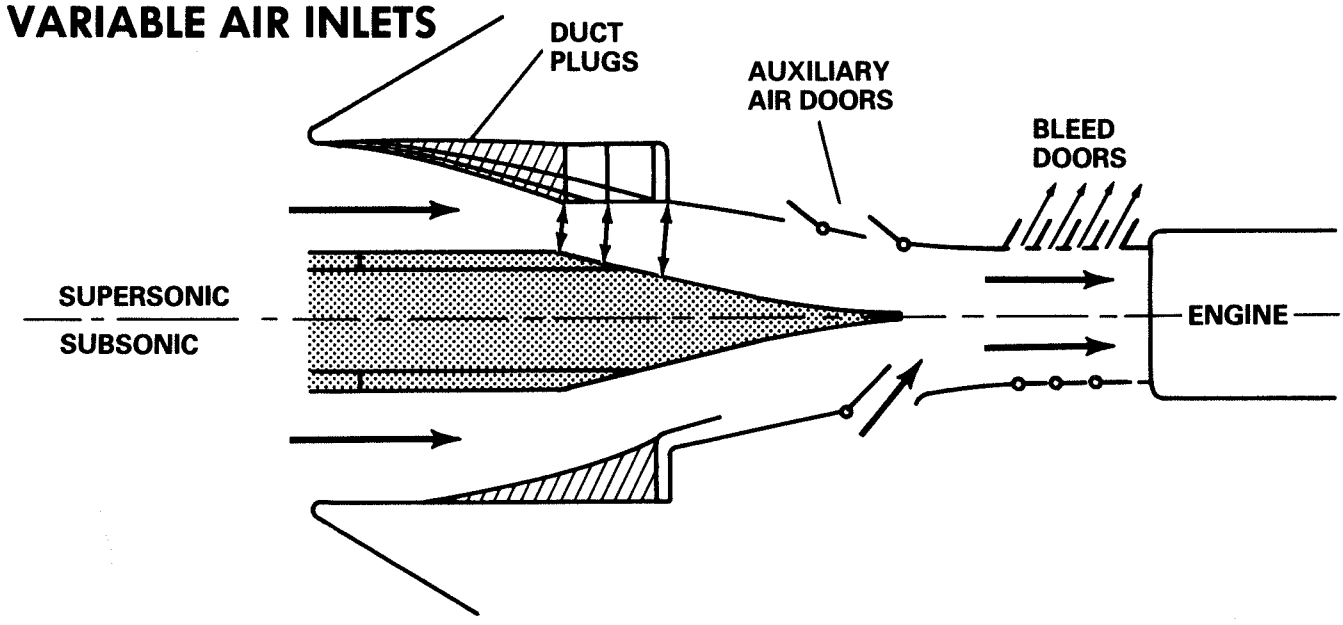
Figure 1-51

VARIABLE AIR INLET SYSTEM (VAI) (DEACTIVATED).

The variable air inlet (VAI) system (figure 1-8) is provided to match the inlet airflow to the engine requirements for maximum efficiency through the wide speed range of the aircraft. The system consists primarily of moveable contoured plugs located in the air inlet in each wing root and bleed doors on each side of the fuselage. Both the contoured plugs and the bleed doors are positioned by hydromechanically operated screw jacks, utilizing utility hydraulic system pressure. Plug movement controls the size of the air inlet area and the bleed door opening bypasses (or dumps) excess air. The amount of air flow through the inlet is controlled primarily by the projected frontal area of the lips and the engine air-flow demand imposed on the inlets. A VAI switch is provided to select automatic, emergency or cruise operation. In automatic operation during takeoff, subsonic acceleration, climb, or cruise, the plugs remain fixed in the full aft position and the bleed doors closed. On increasing speed, at approximately Mach 1.05 (±0.05) the VAI system is energized and controlled by signals from the central air data computer (CADC). Refer to figure 1-49 and CADC system. Between Mach 1.05 and 1.5 the bleed doors may open depending on the airspeed and temperature. Above Mach 1.5 the bleed doors start to open regardless of air temperature and the plugs start to move forward, both scheduled by a Mach number signal from the CADC. The plugs will reach their full forward position at approximately Mach 1.92. As the aircraft decelerates the plugs return to the aft position along the same schedule. Automatic operation requires DC primary, AC primary and AC secondary power.

CAUTION

At supersonic speeds, the VAI system schedules air flow intake to match the engine airflow demand at maximum thrust to avoid engine compressor stall. For this reason the throttle must be maintained full forward above 1.3 Mach.



DUCT PLUGS

DUCT PLUG MOVEMENT FORWARD AND AFT AS A FUNCTION OF MACH NUMBER VARIES THE SIZE OF THE DUCT THROAT AT SPEEDS ABOVE APPROXIMATELY MACH 1.5.

AUXILIARY AIR INLETS

THE AUXILIARY AIR INLETS ARE OPENED BY DIFFERENTIAL AIR PRESSURE. WHEN NEGATIVE PRESSURE EXISTS IN THE DUCTS THE AIR INLETS OPEN PROVIDED THE LANDING GEAR IS EXTENDED. WHEN THE LANDING GEAR IS RETRACTED, A MECHANICAL INTERLOCK KEEPS THE INLETS CLOSED.

BLEED DOORS

BLEED DOORS ARE POSITIONED AS A FUNCTION OF MACH NO. AND TOTAL TEMPERATURE. EXCESS AIR, WHICH WOULD TEND TO FORCE THE SHOCK WAVE OUT OF THE DUCT THROAT, IS DUMPED.

1-F105D-1-13

Figure 1-8

Air Start Buttons.

The air start button (figure 1-11) is a guarded, momentary contact, pushbutton, type switch placarded AIR START. The button is used to start the engine when it is windmilling in flight, or when making a ground start with externally supplied air. With DC primary power energized, momentarily depressing the button operates the engine ignition timer for approximately 20 seconds after the release of the button; however, ignition will not be supplied to the engine ignition plugs unless the throttle is out of the OFF position.

ENGINE INSTRUMENTS.

Pressure Ratio Gage.

The pressure ratio gage (figure 1-12) indicates the ratio of engine turbine discharge pressure to compressor inlet total pressure. The gage is used to determine if engine thrust output on the ground is acceptable for takeoff. The engine compressor section consists of an eight-stage low pressure compressor and a seven-stage high pressure compressor. The rotor assemblies in each compressor section are mechanically independent and therefore do not rotate at the same RPM. The tachometer indicates the percentage of RPM of the high pressure compressor rotor and provides only an approximate indication of engine thrust. Each engine must be treated individually with respect to the RPM at which Military Thrust is obtained. Because of the maximum speed variations between engines and the inherent inaccuracies of tachometers, the engine is trimmed and power checked according to turbine discharge pressure, which does not vary as much with thrust as does RPM. A one percent variation in RPM will result in approximately five percent variation in thrust at the higher thrust settings, while a one percent variation in turbine discharge pressure results in approximately one and one-half percent variations in thrust. The pressure ratio gage gives a more accurate indication of takeoff thrust than the tachometer or exhaust gas temperature gage. The desired pressure ratio gage reading at Military Thrust depends upon outside air temperature, therefore, the gage must be adjusted just before takeoff to compensate for air temperature. Since engine pressure ratio is not used in the performance data presented in the Appendix, the engine pressure ratio gage is not used during flight. However, if RPM drops off due to an engine malfunction, the pressure ratio and exhaust gas temperature gages will also drop off. If the pressure ratio drops and RPM and EGT remain constant, it can be assumed that the malfunction is in the pressure ratio gage system. The ratio is shown by a conventional indicating dial pointer. Two windows in the dial face show recommended takeoff

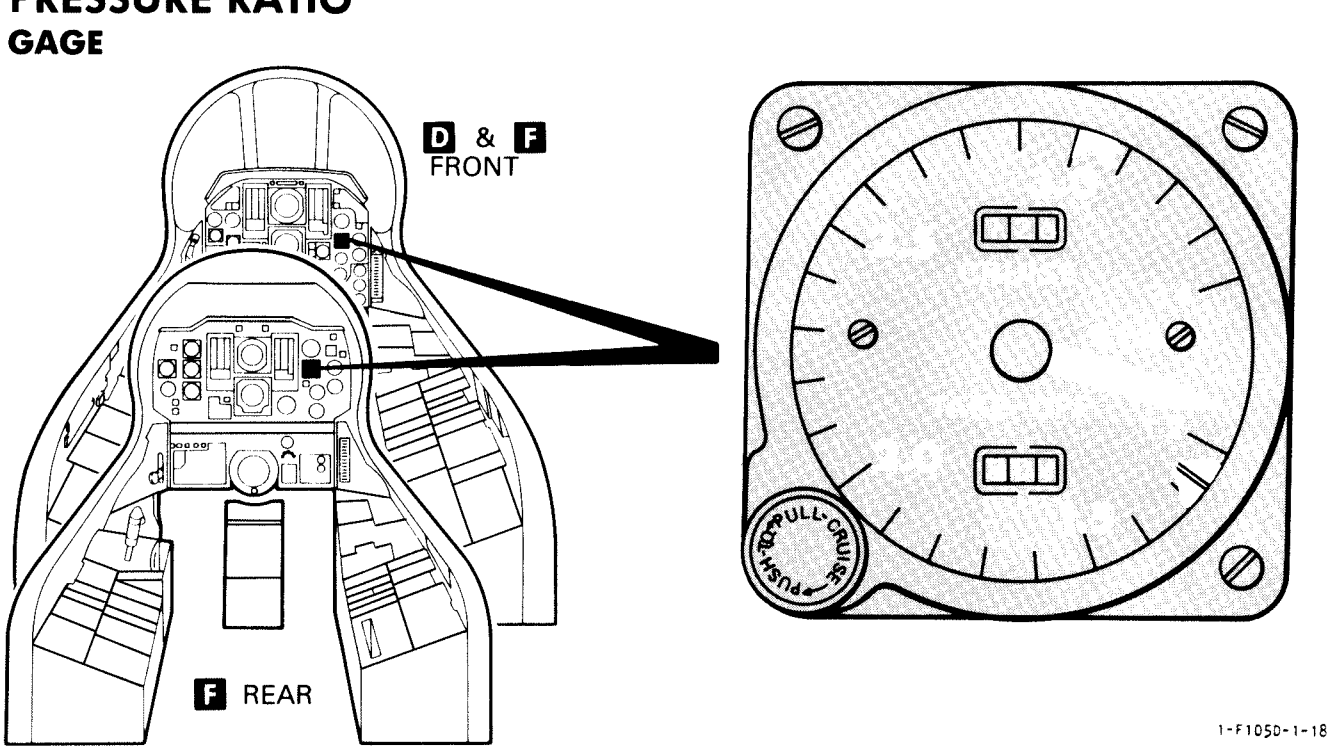
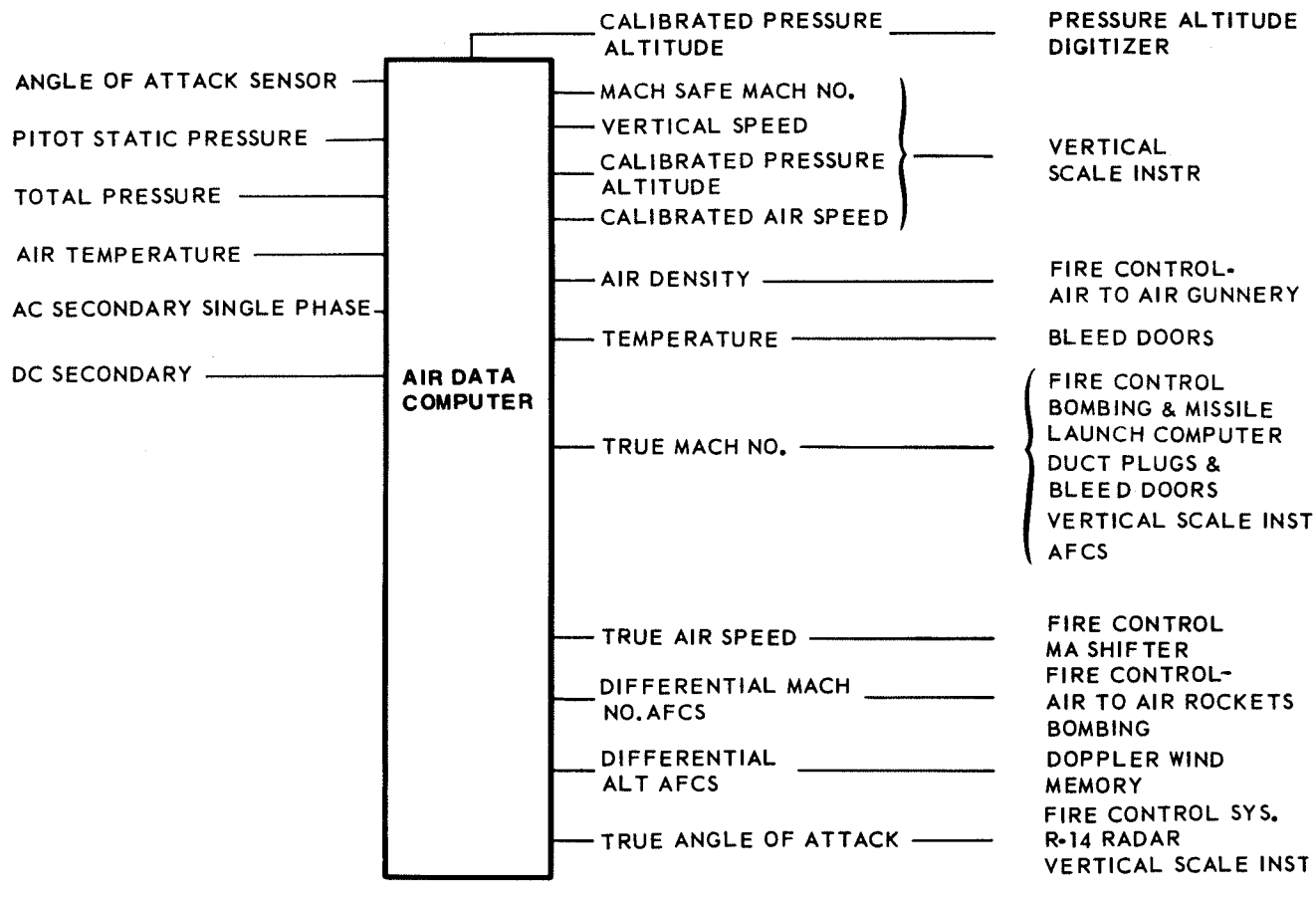


Figure 1-12

CADC (CENTRAL AIR DATA COMPUTER) SYSTEM



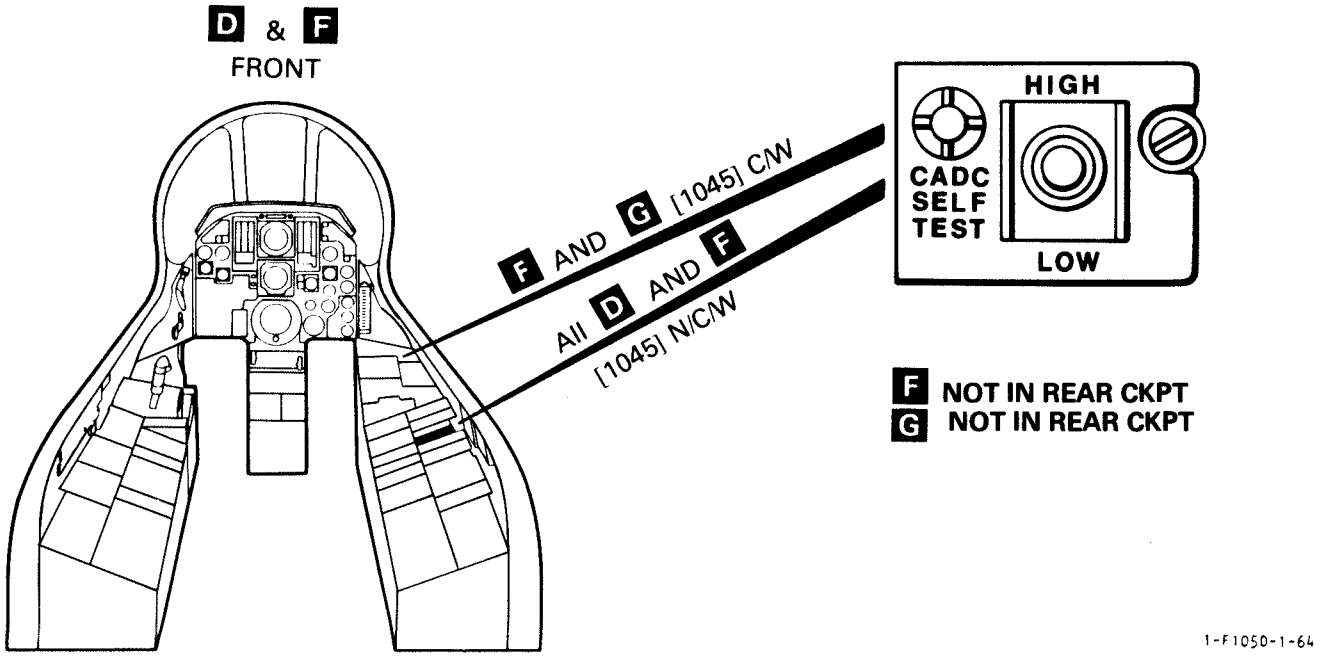


Figure 1-49

ATM SYSTEM
(AIR TURBINE MOTOR)

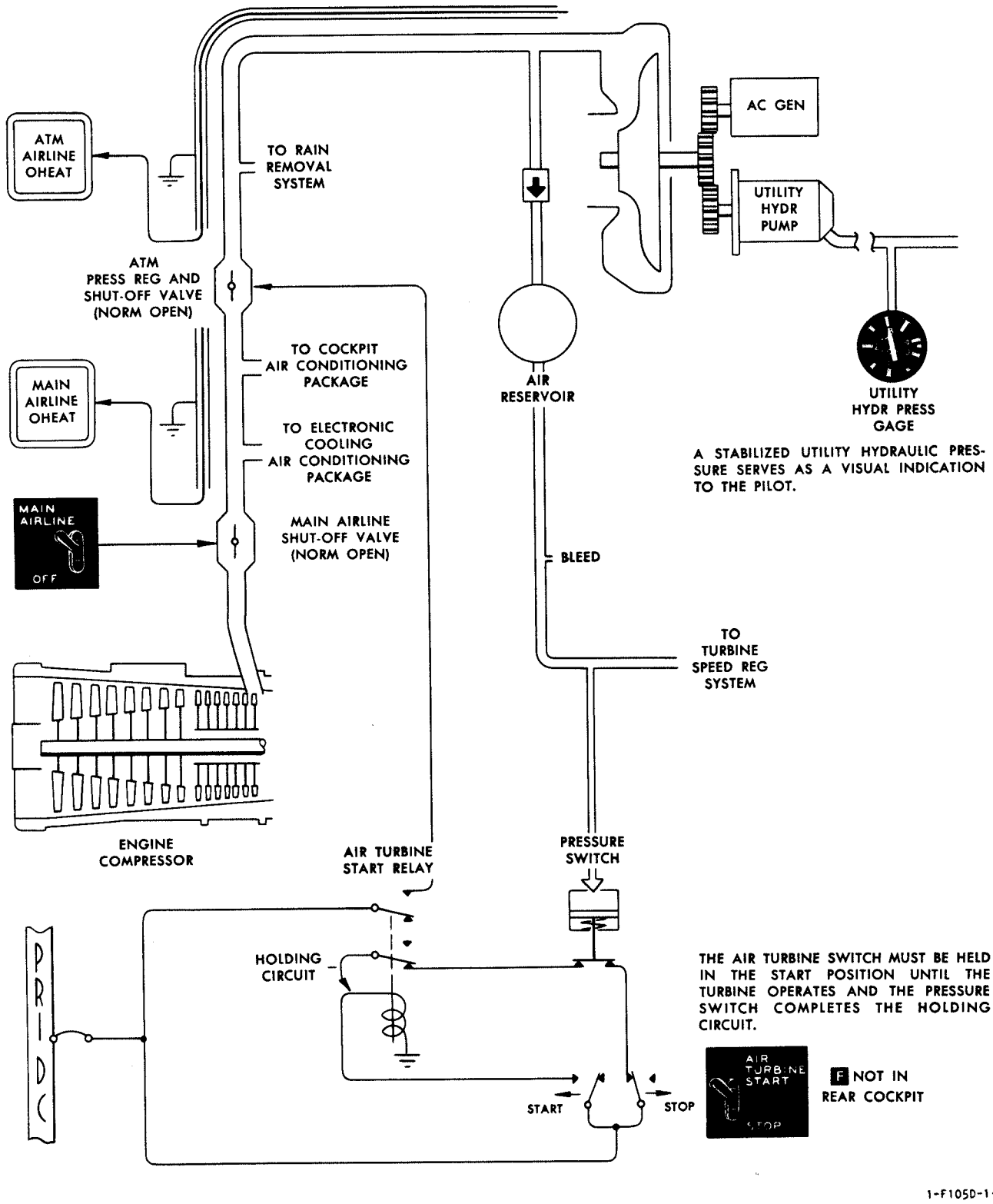


Figure 1-22

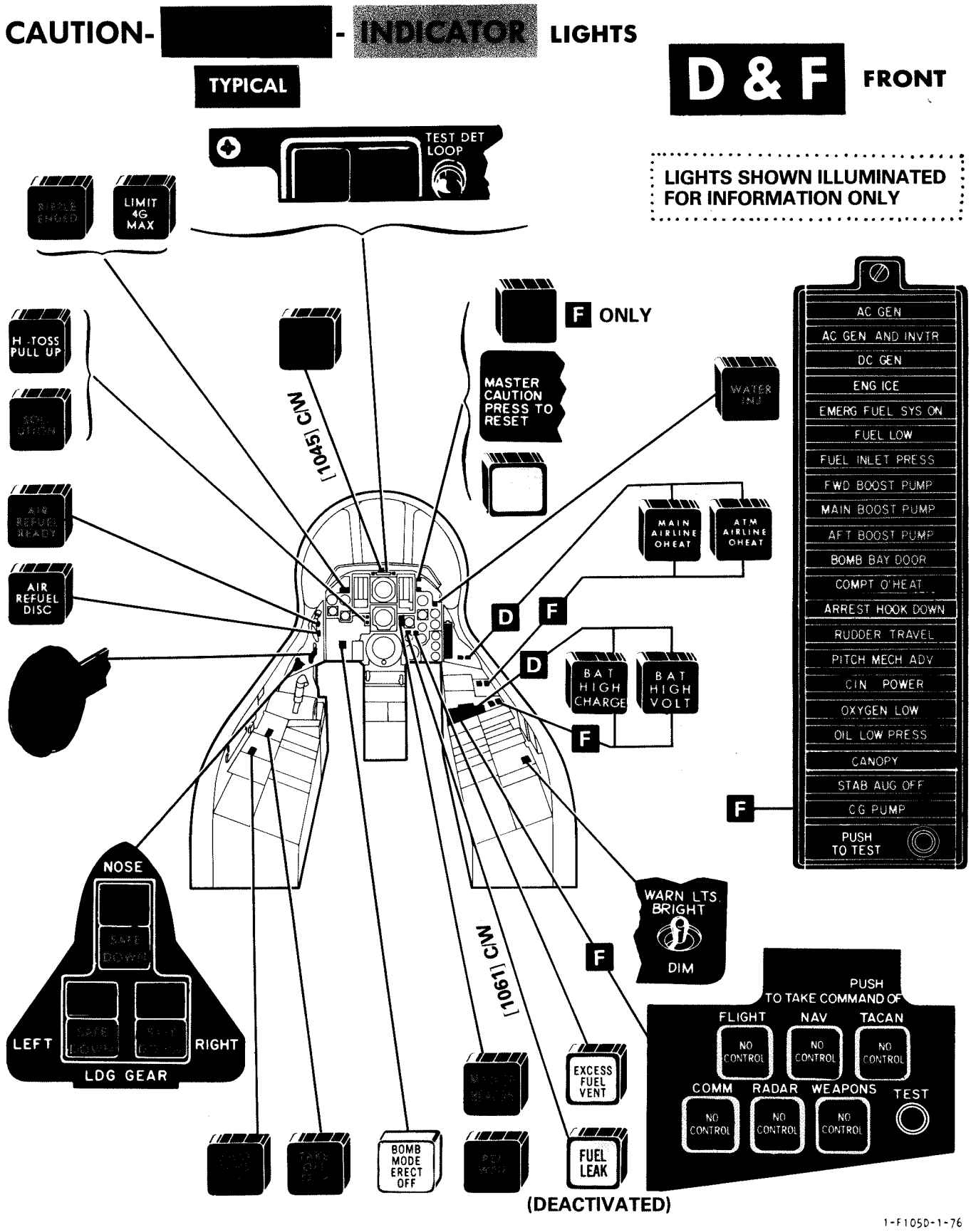
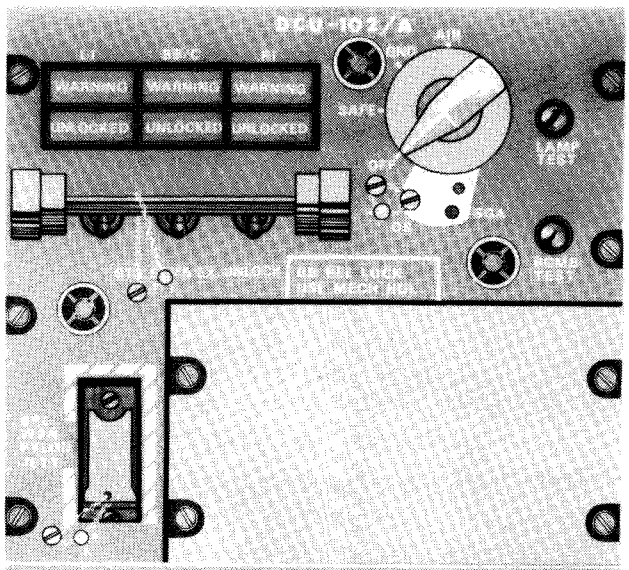
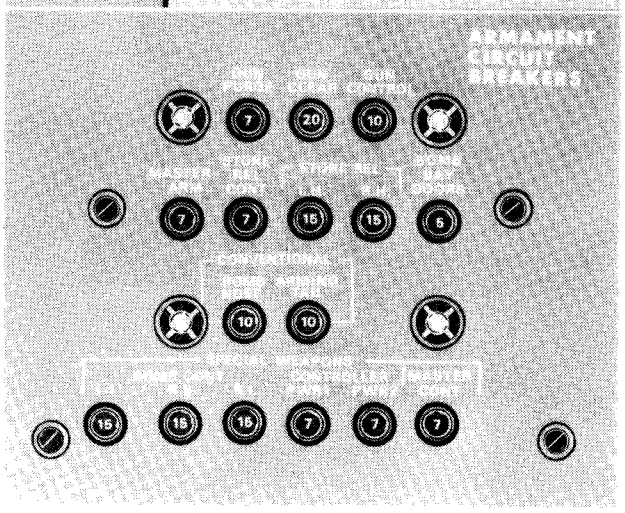
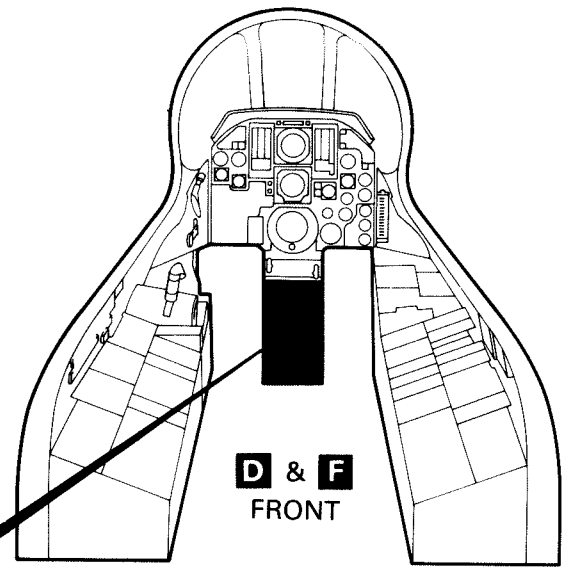


Figure 1-60 (Sheet 1 of 2)

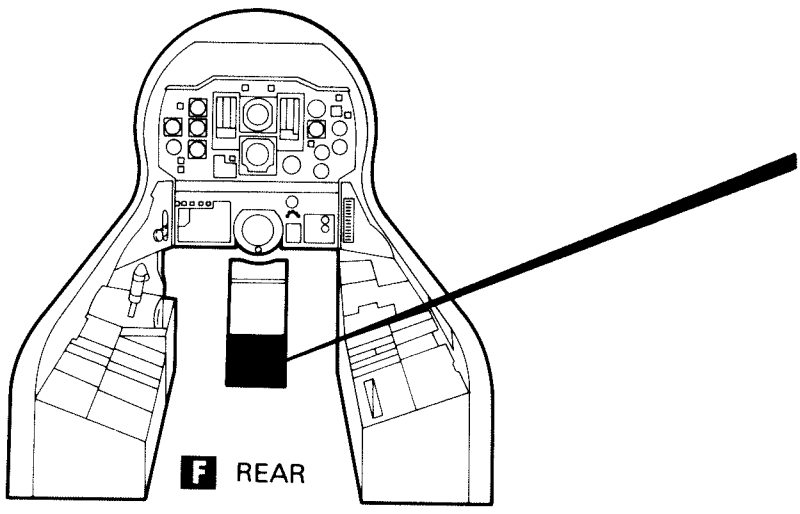
SPECIAL WEAPONS
CONTROLS

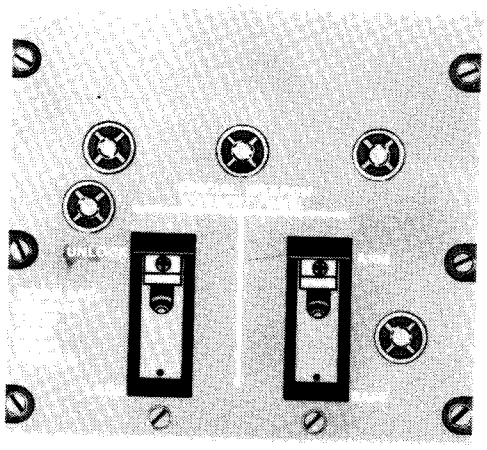






"ORANGE CRATE" CONFIGURATION





1-F105D-1-12

Figure 1-7

RADAR SCOPES AND CONTROLS

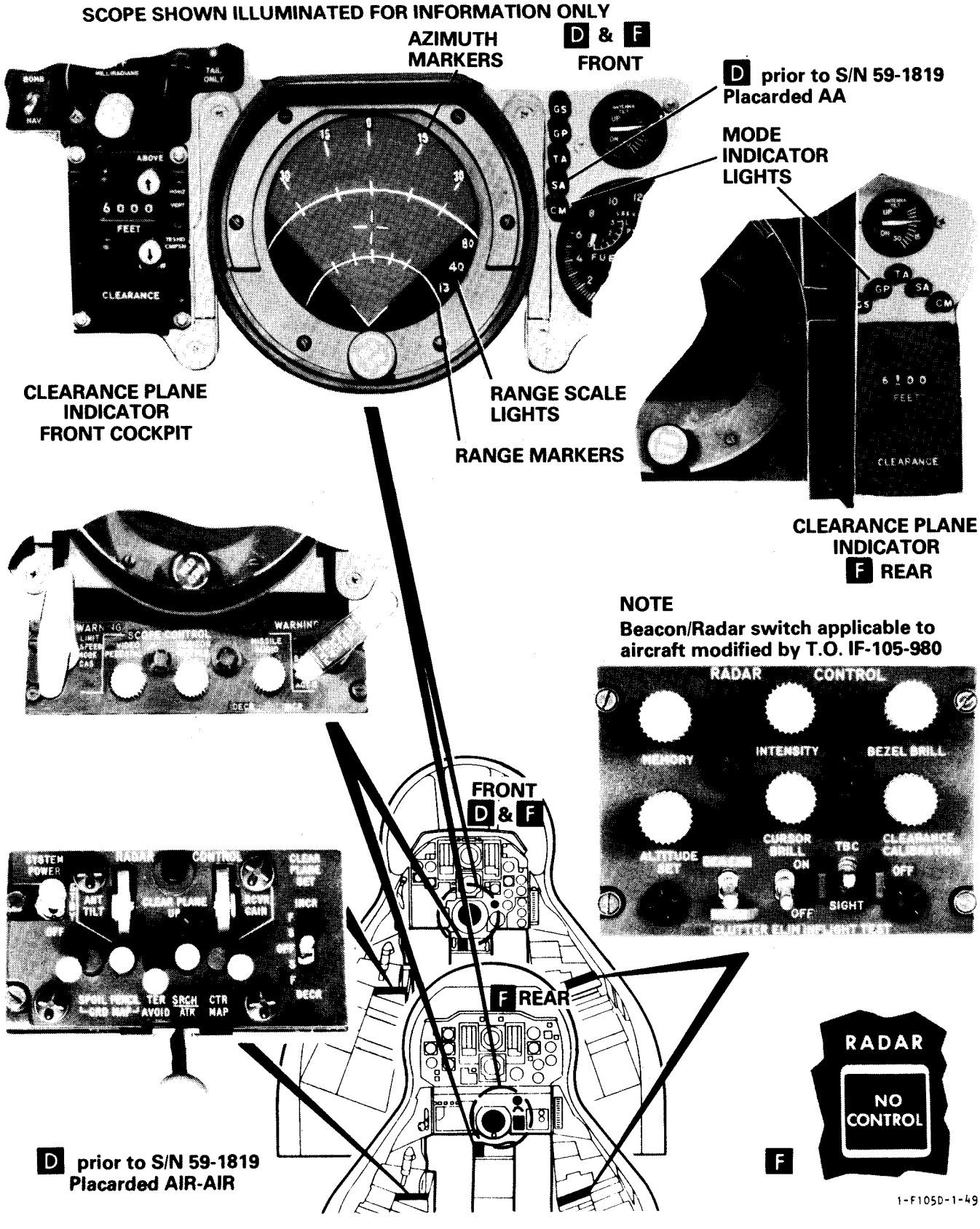
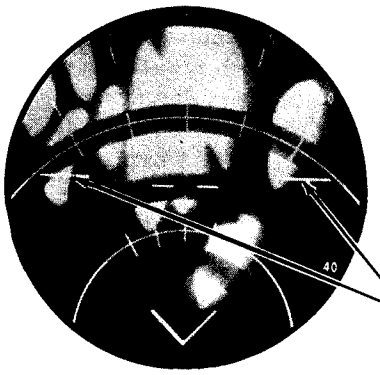


Figure 1-33

GROUND MAP MODES

SPOIL MODE



GROUND RANGES 13/40/80
NAUTICAL MILES

D & F FRONT

GS

HORIZON BARS

GS

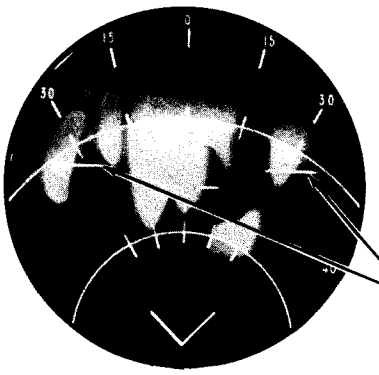
F REAR

NOTE

For clarity, the range and azimuth cursors are not shown, and altitude set is not adjusted.

From 0 to 4 blank areas (no radar return) may appear when in the 40 and 80 mile range.

PENCIL MODE



GROUND RANGES 13/40/80
NAUTICAL MILES

D & F FRONT

GP

HORIZON BARS

GP

F REAR

NOTE

For clarity, the range and azimuth cursors are not shown, and altitude set is not adjusted.

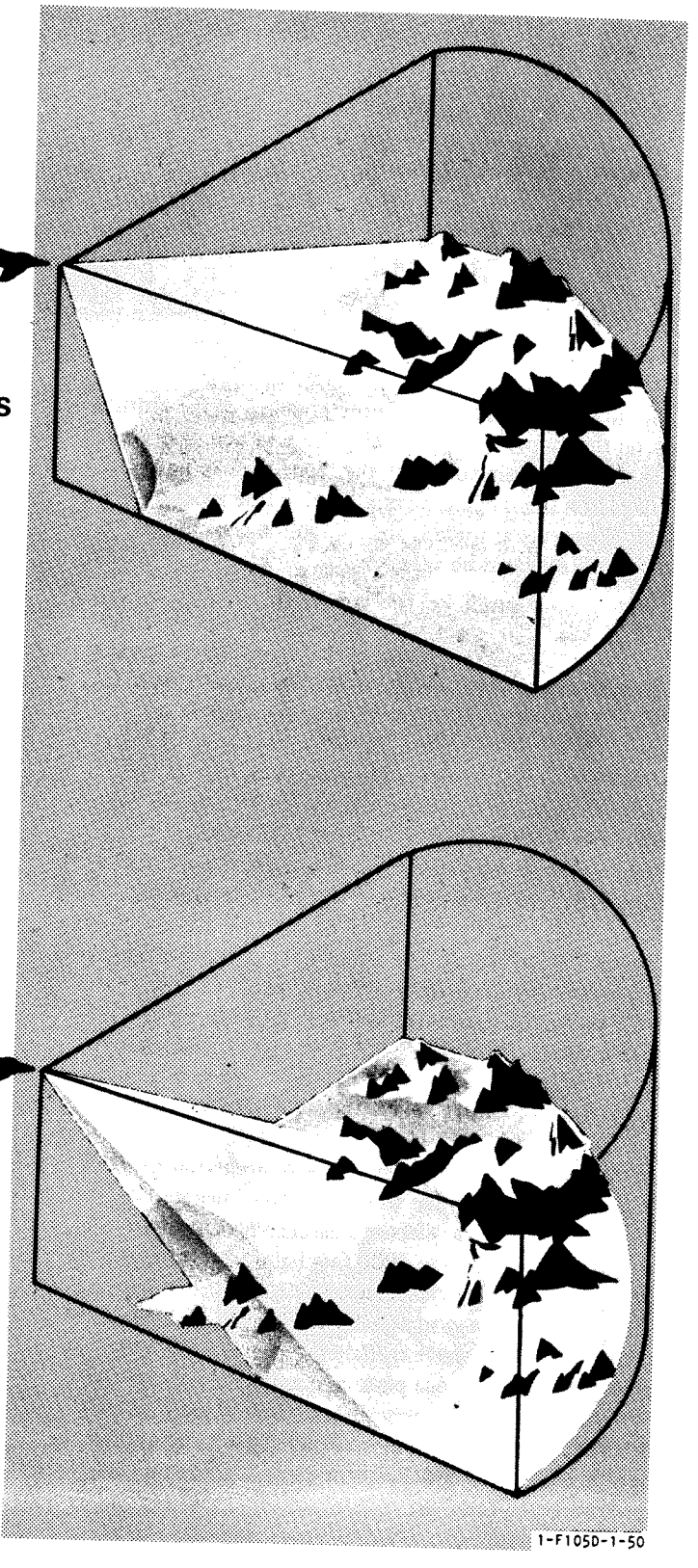


Figure 1-34

CONTOUR MAP MODE

NOTE

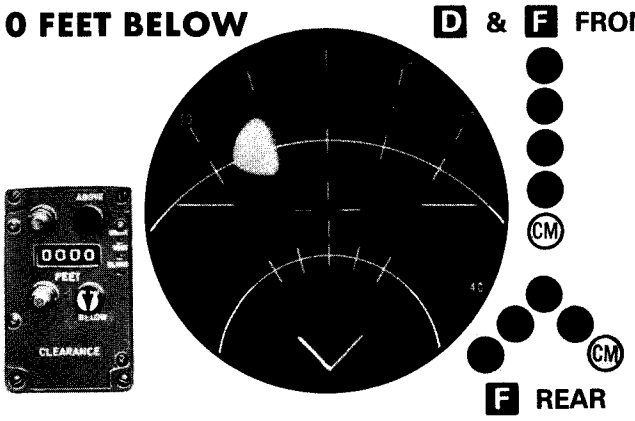
The clearance plane indicator shown is for the front cockpit.

For clarity, the range and azimuth cursors are not shown, and altitude set is not adjusted.

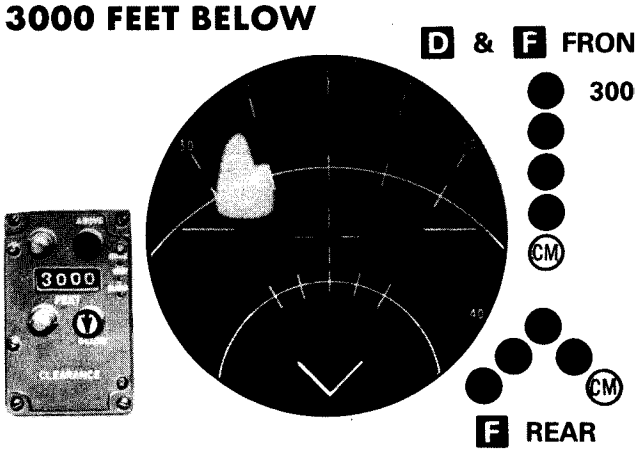
CLEARANCE PLANE PARALLEL TO TRUE HORIZON

GROUND RANGE 13 OR 40 NAUTICAL MILES

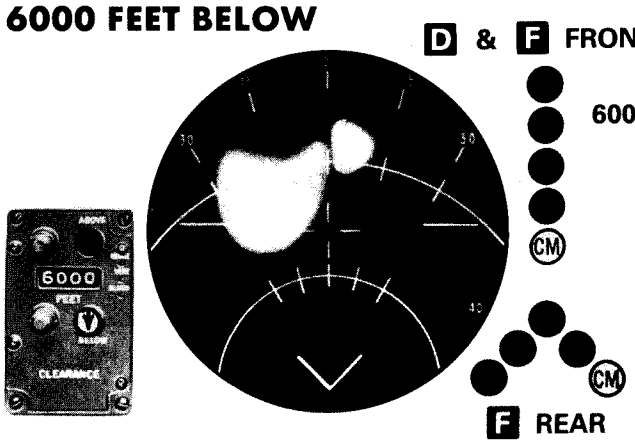
CLEARANCE PLANE SETTING 0 FEET BELOW



CLEARANCE PLANE SETTING 3000 FEET BELOW



CLEARANCE PLANE SETTING 6000 FEET BELOW



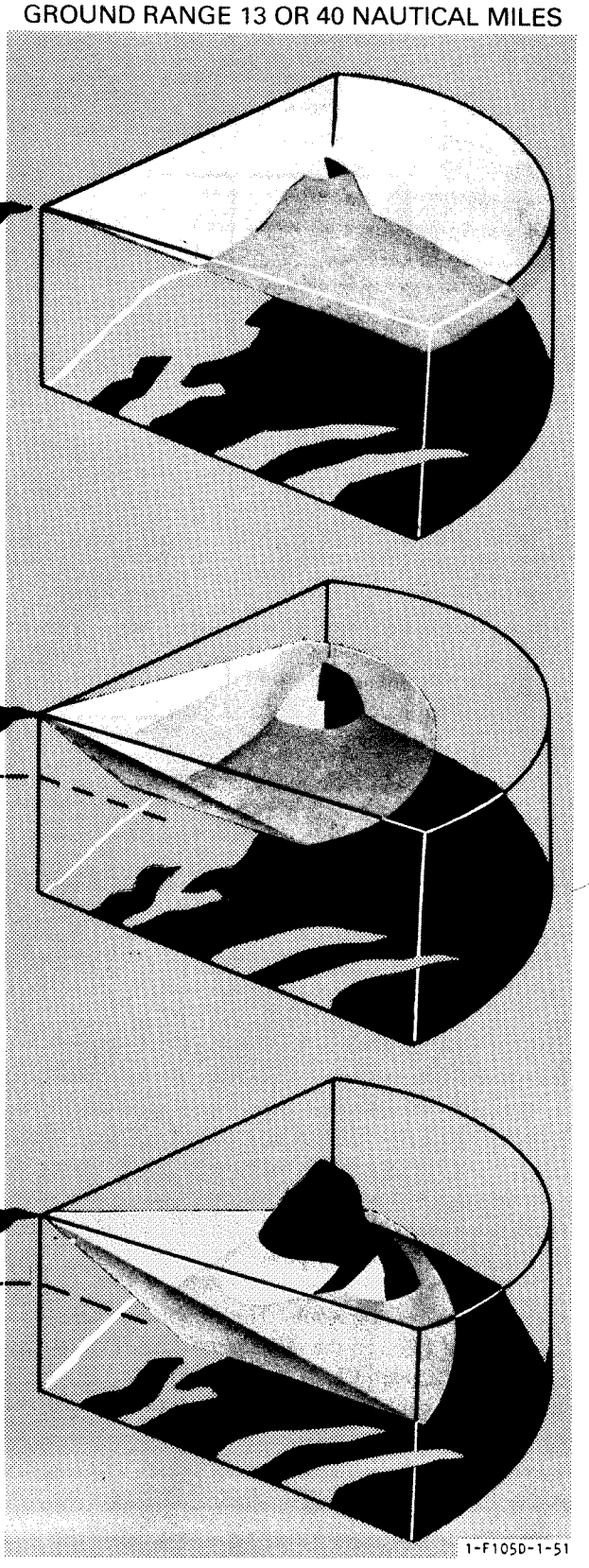


Figure 1-35

TERRAIN AVOIDANCE MODE

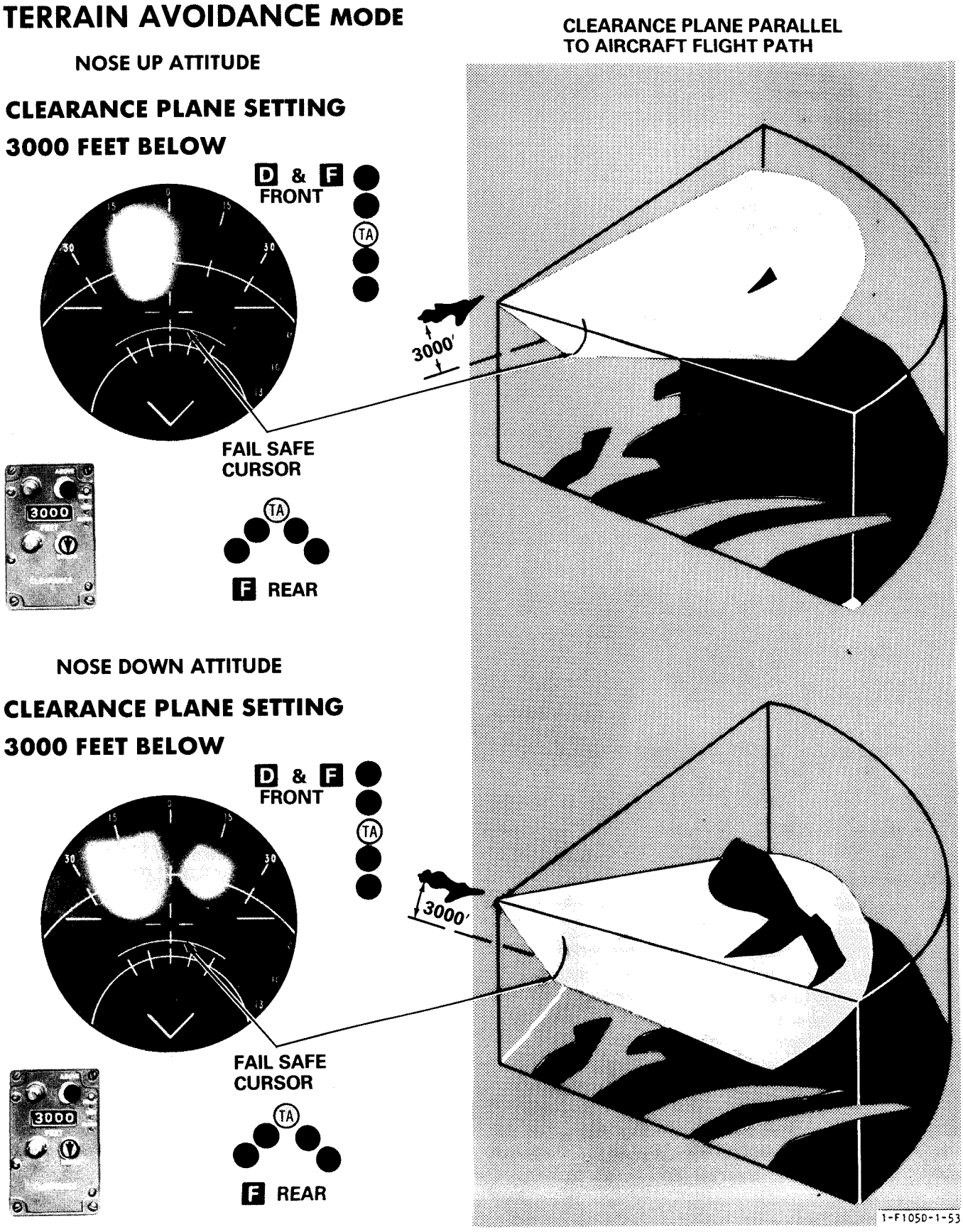


Figure 1-37

DOPPLER
AN/APN-131
CONTROL PANELS

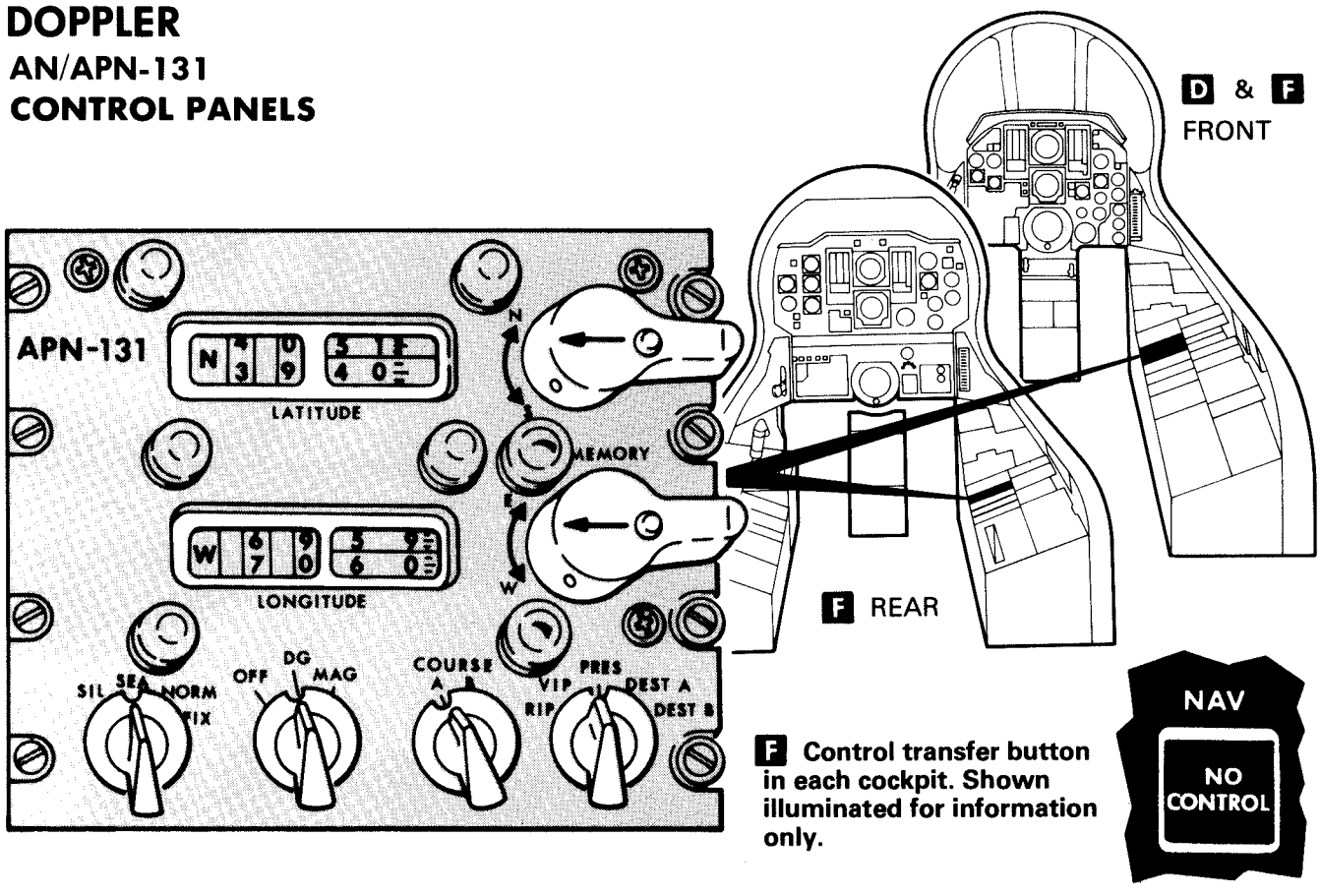


Figure 1-58

NOTE

The Doppler navigator uses heading information from the all-attitude directional control gyro. For conventional navigation (MAG position on heading reference switch) the compass control panel function selector knob must be in the slaved position. For polar grid navigation both the heading reference switch and the compass controller function selector knob must be set at DG.

- When the all-attitude compass function selector knob is left at SLAVED and the AN/APN-131 heading reference switch is set to DG, the present position readout will be in error.
- DG mode will introduce errors when used with conventional charts. The extent of the error varies as a function of meridian convergence angle.

Course-Selector Switch.

The course-selector switch (figure 1-58) is a two-position rotary switch placarded COURSE, with positions A and B. When positioned to A or B, the course and distance computation to the respective preset destination (A or B) are indicated on each HSI.

Coordinate Display Switch.

The coordinate display switch (figure 1-58) is a five-position switch with positions placarded; PRES, DEST A, DEST B, RIP, and VIP, and is used to set the present position and destinations into the counters, or select visual or radar means for a position fix in flight. PRES is used to set the present position of the aircraft in latitude and longitude into the counter windows. DEST A is used to set the prime destination or a preset check point, and DEST B allows any alternate destination to be set if a prime destination was set on DEST A, or a prime destination to be set if a preset check point was set on DEST A.

GROUND SPEED and DRIFT ANGLE INDICATOR

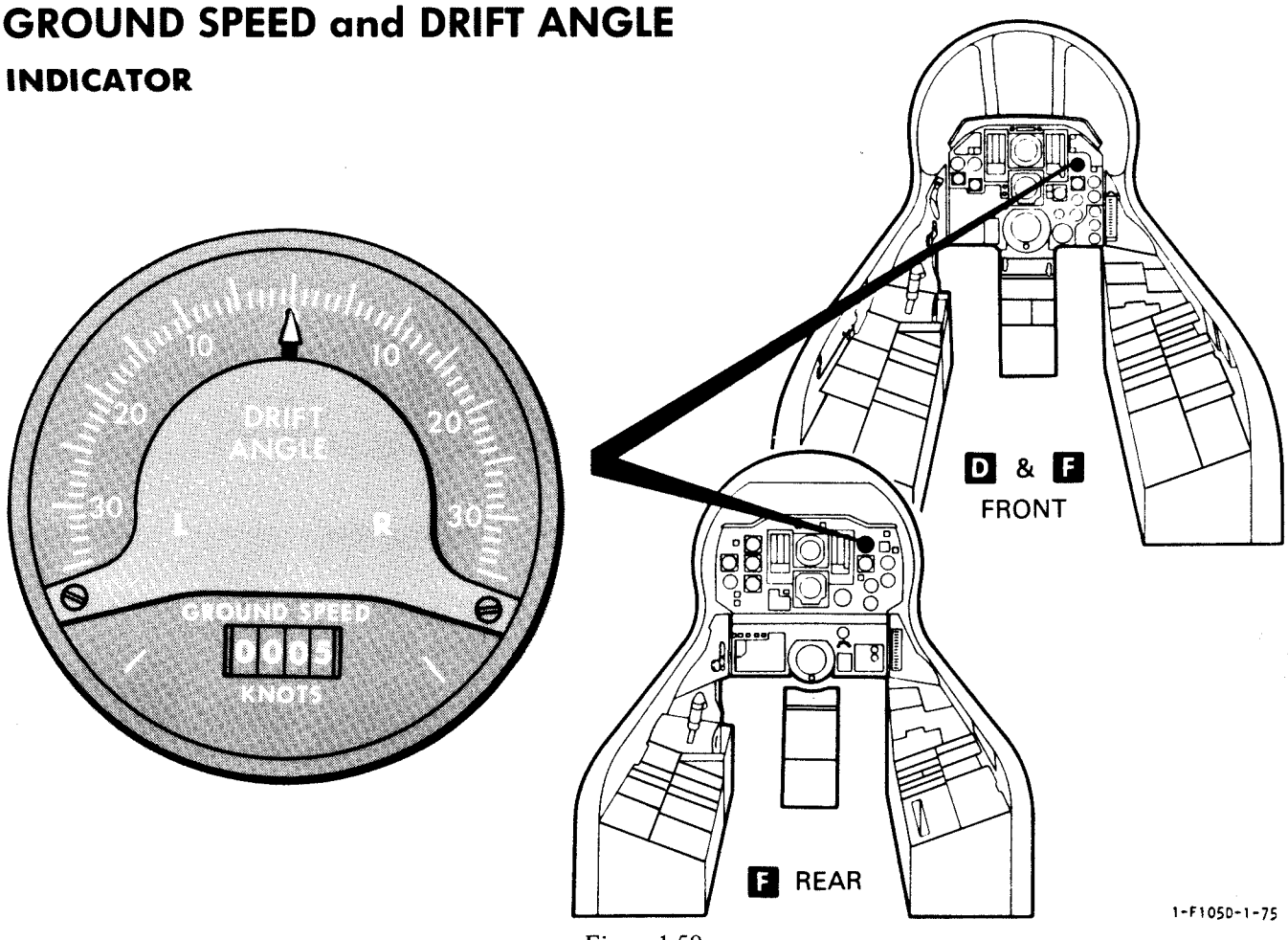


Figure 1-59

Operation of AN/APN-131 Doppler System.

Preflight.

NOTE

[F] Control of the Doppler system cannot be transferred from one cockpit to another unless the heading reference switch in that cockpit is at DG or MAG, prior to engaging the NAV (take-over) button. When power is initially applied to the aircraft, the front cockpit has control of the Doppler system whether or not the NAV (take-over) button is engaged.

1. Heading reference switch – Set as required.
2. Function-switch – NORM.
3. [F] NAV (take-over) button of cockpit in control of Doppler system – Engage.
4. [F] FLIGHT (take-over) button of cockpit in control of Doppler system – Engage.
5. Instrument selector switch – DOPPLER. Check that the NAV mode indicator light on the HSI is illuminated. Allow a minimum of one minute warmup time before proceeding in order to prevent erroneous counts from being fed into the navigation computer from previous residual counter settings.
6. Steering bar (needle) switch – ON.
7. Course warning flag on ADI and range warning flag on HSI – Out of view.

Disappearance of the flags indicates warmup is completed. If the flags do not disappear after one minute, cycle the heading reference switch to OFF and back and allow one more minute for warmup.

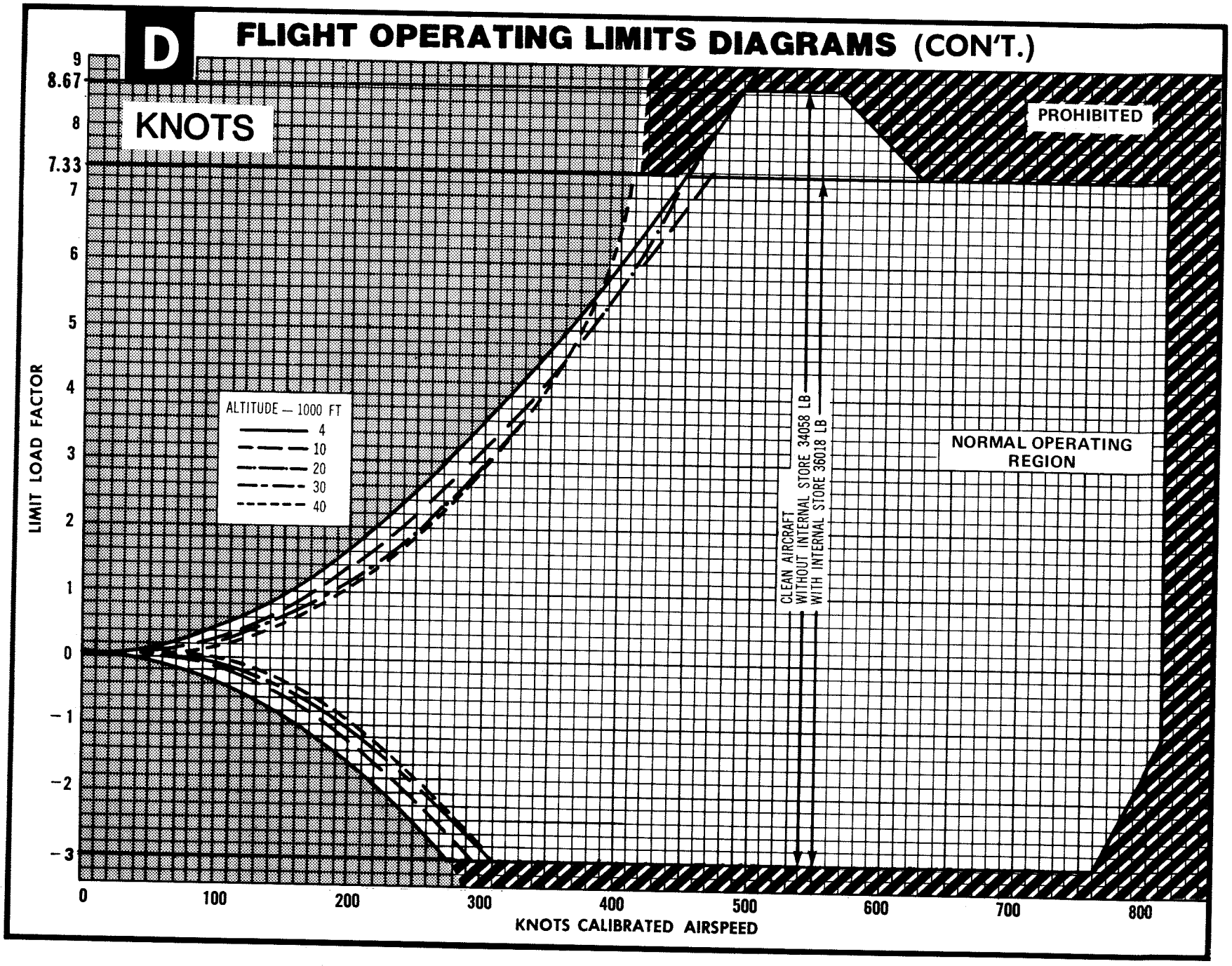
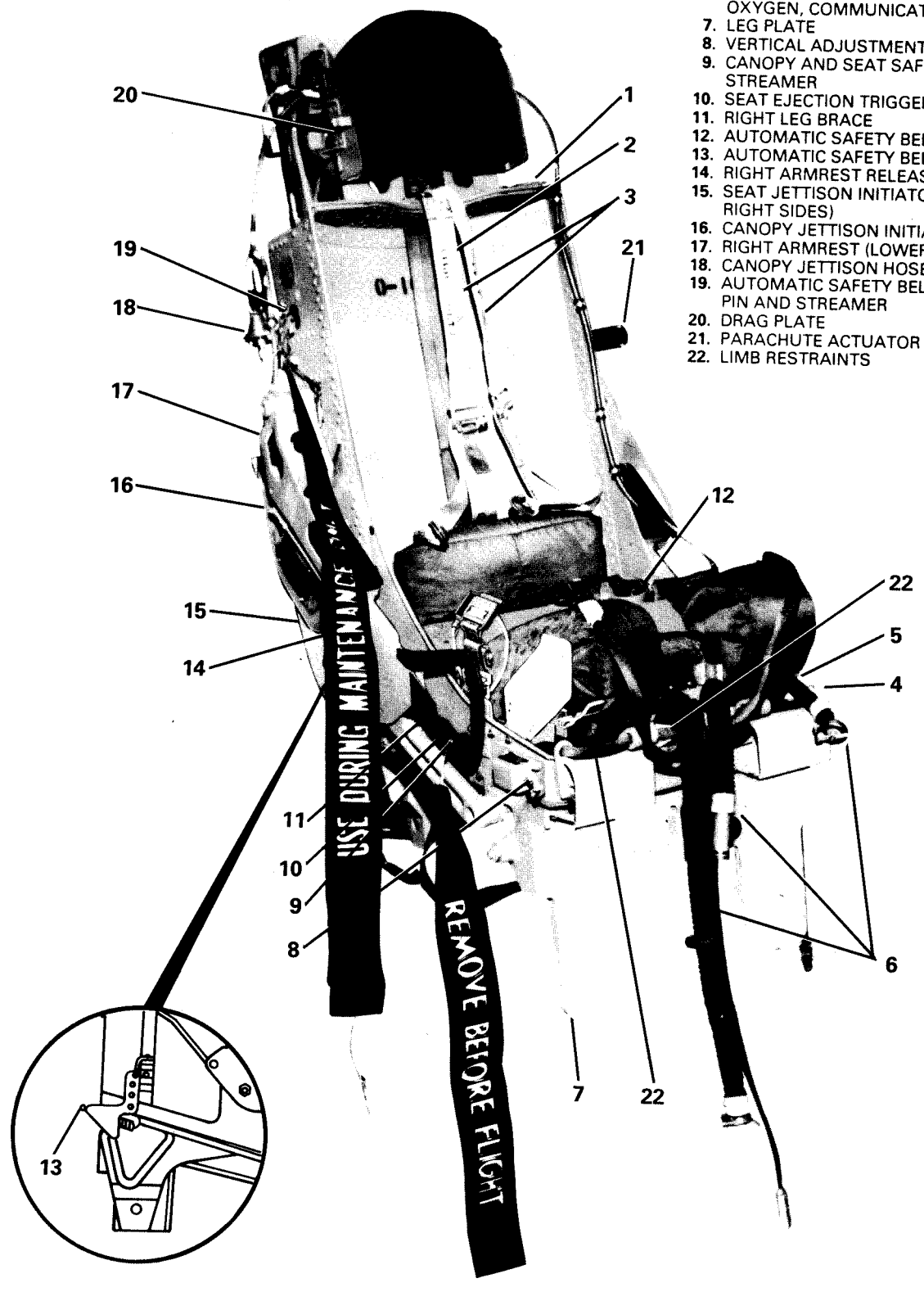


Figure 5-6 (Sheet 3 of 4)

EJECTION SEAT

1. CHAFF DISPENSER BOX
2. SEAT-MAN SEPARATOR
3. SHOULDER HARNESS
4. SHOULDER HARNESS CONTROL HANDLE
5. PERSONAL LEAD QUICK DISCONNECT
6. PERSONAL LEADS, G SUIT, VENT SUIT OXYGEN, COMMUNICATIONS
7. LEG PLATE
8. VERTICAL ADJUSTMENT SWITCH
9. CANOPY AND SEAT SAFETY PIN AND STREAMER
10. SEAT EJECTION TRIGGER
11. RIGHT LEG BRACE
12. AUTOMATIC SAFETY BELT
13. AUTOMATIC SAFETY BELT TRIGGER
14. RIGHT ARMREST RELEASE BUTTON
15. SEAT JETTISON INITIATOR (LEFT AND RIGHT SIDES)
16. CANOPY JETTISON INITIATOR
17. RIGHT ARMREST (LOWERED POSITION)
18. CANOPY JETTISON HOSE QUICK DISCONNECT
19. AUTOMATIC SAFETY BELT INITIATOR, SAFETY PIN AND STREAMER
20. DRAG PLATE
21. PARACHUTE ACTUATOR ASSEMBLY
22. LIMB RESTRAINTS



1-F105D-1-83

Figure 1-64

INSTALLATION OF FORCED-DEPLOYED PARACHUTE

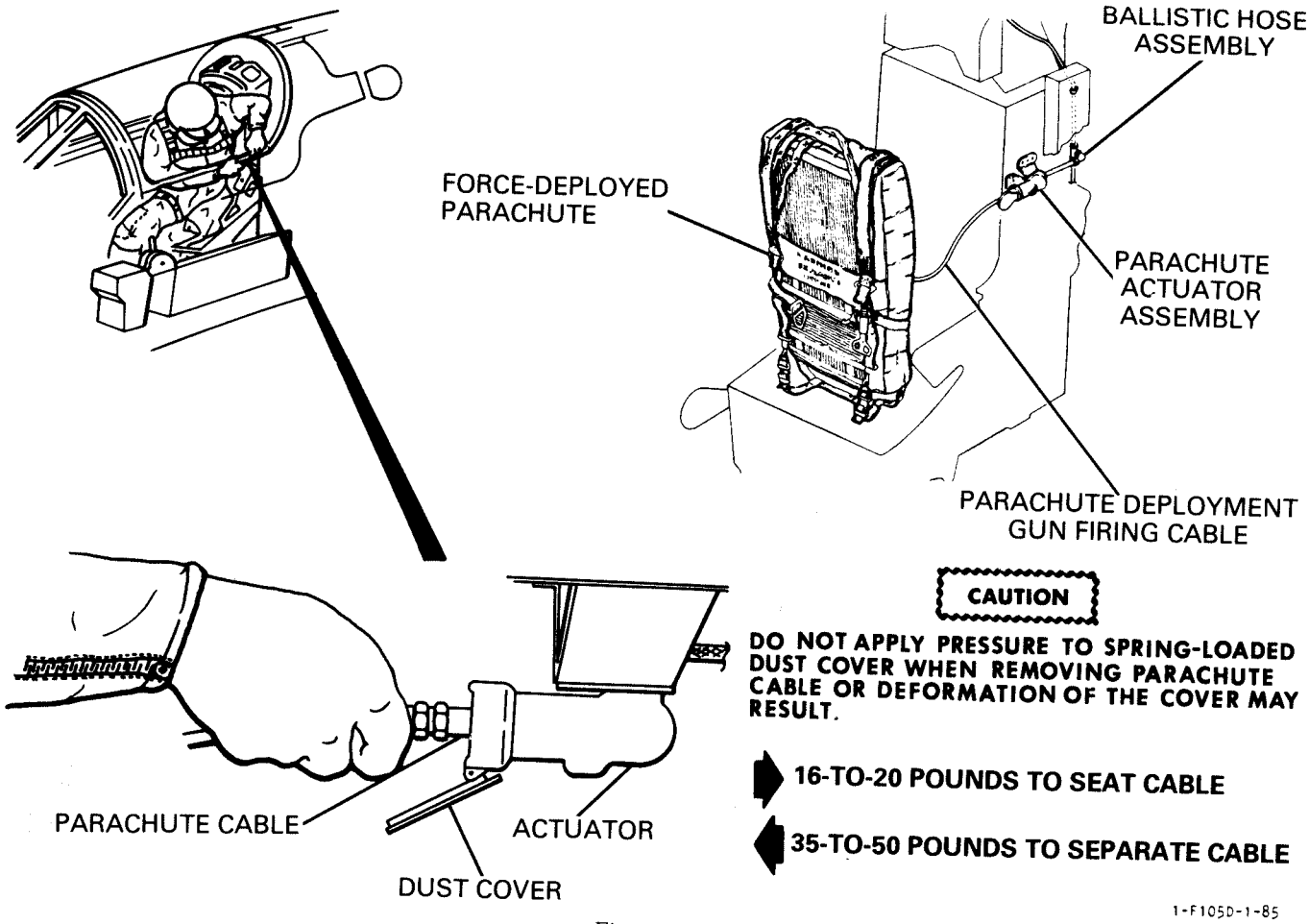


Figure 1-67

Manual Deployment.

For manual deployment, place the mode selector lever in the full-down position. The word MANUAL will be visible on the end of the mode selector lever. In this condition, raising the emergency release handle after ejection will release the survival kit. The kit deployment sequence after release is the same as for the automatic mode. The emergency release handle should be raised during the descent after parachute deployment and after the pilot has descended to an altitude not requiring oxygen.

WARNING

Do not raise the emergency release handle during descent until after parachute deployment to prevent the kit or the lanyard from fouling the parachute and to prevent over inflation with possible rupture of the life raft.

Ground Egress.

The emergency release handle may be used when an emergency escape other than ejection is required, such as escape from the aircraft after a crash landing. Raising the handle, when the seat has not been ejected, releases the left and right harness wedge connectors from the survival kit. The kit lid is also opened.

ACCELERATION AND JETTISON LIMITATIONS (CON'T.)

SINGLE STORES

STORE	INDEX NO.
AGM-45	1,2
AN/ALE-2	7
AN/ALQ-71(V)-2,-3	8
AN/ALQ-101(V)-3,-4,-6	8
BDU-33	9
BLU-1 (F)	10,11,12
BLU-1 STD FILL (U/F)	13
BLU-1 (U/F)	11,12,14
BLU-1 (W/SK430560 FINS)	14
BLU-27	15,16,17
BLU-52	18,19,20,21
CBU-7	.22,23
CBU-24, -49, -52, -58, -71	24,25,26
CBU-30, -38	.29,30
CBU-46/A	31
LAU-3, -68	.32,33
MC-1	49,50,54
MK-20	34
MK-82	36,37,38,39
MK-82 S/E	36,38,39
MK-83	41,42,43
MK-84	43,44
MXU-648	45
M-117	46,47,49,50,54
M-117-B,-D	48
M-118	51,52
M-129	53,54,55
NO STORE	.56,57
PYLON ONLY	58
QRC-160-1,-2,-8	59
SUU-21	.62,63
SUU-25	64

MIXED STORES

STORES	INDEX NO.
AGM-78 W/AGM-45	.3,4,5
AGM-78 W/AGM-45; CBU-24,-49,-52,-58,-71	4
AGM-78 W/CBU-24,-49,-52,-58,-71	4
AGM-78 W/QRC-160-1,-2,-8	4,5
AGM-78/QRC-160-1,-2,-8; CBU-24,-49,-52,-58,-71	4
AGM-78 W/QRC-335	5
AGM-78 W/450 GAL. TK	6
AGM-78 W/450 GAL. TK; AGM-45	6
BLU-1 (F) W/ANY CERT STORE	11
BLU-1 (F) W/BLU-1 (U/F)	11
BLU-52 W/QRC-160-1,-2,-8	21
CBU-24,-49,-52,-58,-71	24,26,27,28
CBU-46/A W/ANY CERT STORE	31
LAU-3, -68 W/SUU-21	54
LAU-3,-68 W/ANY CERT STORE	33
LAU-3,-68 W/QRC-160-1,-2,-8	33
MC-1 W/ANY CERT STORE	50
MC-1 W/LAU-3, -68	54
MC-1 W/SUU-21	54
MK-82 AND MIAL FUSE EXT W/650 GAL TK	40
MK-82 S/E W/MK-82	39
MK-82 S/E W/QRC-160-1,-2,-8	.37,39
MK-82 W/ANY CERT STORE	37
MK-82 W/QRC-160-1,-2,-8	.37,39
MK-82 W/650 GAL TK	40
MK-83 W/MK-84	43
MK-84 W/QRC-160-1,-2,-8	43
M-117 W/ANY CERT STORE	50
M-117 W/LAU-3,-68	54
M-117 W/MC-1	.50,54
M-117 W/SUU-21	54
M-129 W/ANY CERT STORE	55
M-129 W/LAU-3,-68	54
M-129 W/MC-1	54
M-129 W/M-117	54
M-129 W/QRC-160-1,-2,-8	.54,55
M-129 W/SUU-21	54
QRC-160-1,-2,-8 W/LAU-3,-68	54
SUU-20 W/ANY CERT STORE	60
450 GAL. TK W/AGM-45 (SGL OR DUAL RAIL)	65
450 GAL. TK W/AN/ALE-2	65
450 GAL. TK W/CBU-7	65
450 GAL. TK W/CBU-24,-49,-52,-58,-71	65
450 GAL. TK W/CBU-30,-38	65
450 GAL. TK W/LAU-3,-68	65
450 GAL. TK W/MC-1	65
450 GAL. TK W/MK-82	65
450 GAL. TK W/MK-82 S/E	65
450 GAL. TK W/MK-82 (W/MIAL FUSE EXT)	65
450 GAL. TK W/MK-83	65
450 GAL. TK W/M-117	65
450 GAL. TK W/M-117D	65
450 GAL. TK W/M-117R	65
450 GAL. TK W/M-129	65
450 GAL. TK W/QRC-160,-1,-2,-8	65
450 GAL. TK W/650 GAL. TK	.66,67
650 GAL. TK; B/B TK W/M-118	68
650 GAL. TK; B/B TK W/QRC-160-1,-2,-8	68

1-F105D-5-22

Figure 5-5 (Sheet 3 of 39)