FLIGHT MANUAL

USAF SERIES

F-100D (I) F-100F (I)

(HIGH WIRE) -2, -6, -11, -16, -20 (HIGH WIRE)

AIRCRAFT

This change replaces Operational Supplements 1F-100D(I)-1S-29-31 and Safety Supplement 1F-100D(I)-1SS-30.

This publication is incomplete without Performance Data Manual, T.O. 1F-100C(I)-1-1.

Commanders are responsible for bringing this publication to the attention of all personnel cleared for operation of subject aircraft.

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

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31 JULY 1973

CHANGE 5 – 15 SEPTEMBER 1978

LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

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Change.....1... 1 Jul 74
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Change.....4... 1 May 78
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USAF

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6-23 - 6-24	0
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7-10	0
7-11	3
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NOTE

PERFORMANCE DATA NORMALLY INCLUDED IN APPENDIX I IS CONTAINED IN T.O. 1F-100C(I)-1-1 FOR THE F-100 SERIES AIRPLANES.

SUPER SABRE NOTES

COMMAND REVIEW PRODUCT

This Flight Manual reflects decisions made by the using commands at the Command Review Conference. If you have any question concerning its content, especially regarding procedures, your inquiry should be directed to your Command Headquarters. Remember, this Flight Manual has not been tailored to the requirements of one command. It must reflect some compromises in order to satisfy the maximum possible requirements of all commands involved.

As a result of the F-100 Series Flight Manual Command Review, a major overhaul of the F-100 Flight Manual program was adopted. The following publications cover flight operations of the F-100 Series Airplanes.

T.O. 1F-100C(I)-1-1. This publication contains all performance data for F-100 Series Airplanes, and replaces Appendix I in the individual Flight Manuals for each model. All data is presented in the ASD drag format.

T.O. 1F-100D-1 and 1F-100D(I)-1CL-1. These publications cover all F-100D and F-100F-1 through F-100F-15 Airplanes that did not go through "Project High Wire."

T.O. 1F-100D(I)-1 and 1F-100D(I)-1CL-1. These publications cover late F-100D Airplanes and F-100F Airplanes that went through "Project High Wire."

T.O. 1F-100D(I)-1-2. This publication is a classified supplement and covers F-100 Series Airplanes.

In addition, T.O. 1F-100A-1, 1F-100A-1CL-1, 1F-100A(I)-1, 1F-100A(I)-1CL-1, 1F-100C(I)-1, and 1F-100C(I)-1CL-1 cover the F-100A and F-100C Series Airplanes.

"PROJECT HIGH WIRE"

"Project High Wire" was a modernization program for selected F-100 Airplanes. The program consisted of two simultaneous operations: an electrical rewiring operation, and a heavy-maintenance and PDM operation.

The rewire operation replaced the old wiring in each airplane with new wiring, including certain design and maintenance improvements.

The heavy-maintenance and PDM operation consisted of accomplishing all outstanding prime airplane T.C.T.O.'s published before 1 January 1962 and subsequent T.C.T.O.'s for which kits and material were available, modifications to standardize airplane configuration, repair and/or replacement of unserviceable parts or components, and complete refurbishment of each airplane.

Changes to the Airplanes which have gone through "Project High Wire" were extensive enough to require a separate set of Flight Manuals, Systems Maintenance Manuals, and Illustrated Parts Breakdown Manuals. These manuals are identifiable by the addition of the Roman numeral I in parentheses following the model designation letter in the number; i.e., T.O. 1F-100D(I)-1. The USAF designation number has not been changed; i.e., all F-100 Airplanes are still designated as F-100A, F-100C, F-100D, or F-100F Airplanes. However, to identify "Project High Wire" airplanes, the existing block numbers were advanced one digit; i.e., F-100D block 20 became F-100D block 21, F-100D block 25 became F-100D block 26, F-100F block 1 became F-100F block 2, etc.

Additional changes have been added to "Project High Wire." Since some airplanes have already been modified prior to inclusion of these changes, differences appear throughout this manual. Airplanes that went through this program before the additional changes were added will eventually be brought up to the later configuration.

SCOPE

This manual contains the necessary information for safe and efficient operation of the F-100 airplane. These instructions provide you with a general knowledge of the airplane, its characteristics, and specific normal and emergency operating procedures. Your flying experience is recognized, and therefore, basic flight principles are avoided.

SOUND JUDGMENT

This manual provides the best possible operating instructions under most circumstances, but it is a poor substitute for sound judgment. Multiple emergencies, adverse weather, terrain, etc, may require modification of the procedures.

PERMISSIBLE OPERATIONS

The Flight Manual takes a "possible approach" and normally states only what you can do. Unusual operations or configurations (such as asymmetrical loading) are prohibited unless specifically covered herein. Clearance must be obtained from SMAMA before any questionable operation is attempted which is not specifically permitted in this manual.

STANDARDIZATION AND ARRANGEMENT

Standardization assures that the scope and arrangement of all Flight Manuals are identical. The manual is divided into nine fairly independent sections to simplify reading it straight through or using it as a reference manual.

NOTE

Performance data normally included in Appendix I is contained in T.O. 1F-100C(I)-1-1 for the F-100 Series Airplanes.

The first three sections must be read thoroughly and fully understood before attempting to fly the airplane. The remaining sections provide important information for safe and efficient mission accomplishment.

HOW TO BE ASSURED OF HAVING LATEST DATA

Refer to T.O. 0-1-1-4A, which lists all current Flight Manuals, Safety Supplements, Operational Supplements, and Checklists. Its frequency of issue and brevity insures an accurate, up-to-date listing of these publications.

SYSTEM LIMITS AND TOLERANCES

In some cases, the limits and tolerances presented in the Flight Manual are not precisely identical to those presented in the System Maintenance Manuals. The numerical values in the Flight Manual are to be used as operating guides by flight personnel.

DEFINITIONS OF WORDS "SHALL," "WILL," "SHOULD," AND "MAY"

The words "shall" and "will" indicate a mandatory requirement. The word "should" indicates a non-mandatory desire or preferred method of accomplishment. The word "may" indicates an acceptable or suggested means of accomplishment.

SUPPLEMENTS

The current status of each Supplement affecting your airplane can be determined by referring to T.O. 0-1-1-4A. The title page of the Flight Manual and the title block of each Supplement should be checked to determine the effect they may have on existing Supplements. You must remain constantly aware of all Supplements – current Supplements must be complied with but there is no point in restricting your operation by complying with a replaced or rescinded Supplement. Upon receiving each Supplement, file it in the front of your Flight Manual. If existing Flight Manual information or procedures are revised, a reference to the applicable Supplement should then be written in the margin of the page opposite the affected write-up. A Safety Supplement may be replaced by an Operational Supplement or an Operational Supplement may be replaced by a Safety Supplement.

SAFETY SUPPLEMENTS. Information involving safety will be promptly forwarded to you by Safety Supplements. Supplements covering loss of life will get to you in 48 hours by TWX, and those concerning serious damage to equipment within 10 days by mail.

OPERATIONAL SUPPLEMENTS. Non-safety requirements or airplane changes affecting flight crew information that can not be timely, practically, or adequately covered in the Flight Manual at the time of a scheduled change or revision will be forwarded to you by Operational Supplements.

CHECKLISTS

The Flight Manual contains only amplified checklists. Abbreviated checklists have been issued as separate technical orders. (Refer to back of the title page for the T.O. number and date of your latest checklist.) Line items in the Flight Manual and checklists are identical with respect to arrangement and item number. Whenever a Supplement affects the abbreviated checklist, write in the applicable change on the affected checklist page. As soon as possible, a new checklist page, incorporating the supplement will be issued. This will keep handwritten entries of Supplement information in your checklist to a minimum.

HOW TO GET PERSONAL COPIES

Each pilot is entitled to his personal copy of the Flight Manual, Safety Supplements, Operational Supplements, and Checklists. The required quantities should be ordered before you need them to assure their prompt receipt. Check with your supply personnel; it is their job to fulfill your Technical Order requests. Basically, you must order the required quantities on the Publication Requirements Table (T.O. 0-1-1-4). Technical Orders 00-5-1 and 00-5-2 give detailed information for properly ordering these publications. Make sure a system is established at your base to deliver these publications to the flight crews immediately upon receipt.

FLIGHT MANUAL AND CHECKLIST BINDERS

Loose-leaf binders and sectionalized tabs are available for use with your manual. These are obtained through local purchase procedures. Binders are also available for carrying your abbreviated checklist. These binders contain plastic envelopes into which individual checklist pages are inserted. They are available in three capacities: 15, 25, and 40 envelopes. Check with your supply personnel for assistance in securing these items.

CHANGE SYMBOL

The change symbol, as illustrated by the black line in the margin of this paragraph, indicates text changes made to the current revision.

ILLUSTRATIONS CHANGES

To help you more easily find on illustrations the technical changes that otherwise might be inconspicuous, the following identifier will be used.

WARNINGS, CAUTIONS, AND NOTES

The following definitions apply to Warnings, Cautions, and Notes found throughout the manual.

WARNING

Operating procedures, techniques, etc., which will result in personal injury or loss of life if not carefully followed.

CAUTION

Operating procedures, techniques, etc., which will result in damage to equipment if not carefully followed.

NOTE

An operating procedure, technique, etc., which is considered essential to emphasize.

YOUR RESPONSIBILITY – TO LET US KNOW

Every effort is made to keep the Flight Manual current. Review conferences with operating personnel and a constant review of accident and flight test reports assure inclusion of the latest data in the manual. However, we cannot correct an error unless we know of its existence. In this regard, it is essential that you do your part. Comments, corrections and questions regarding this manual or any phase of the Flight Manual program are welcomed. AF Form 847 will be used for recommending changes to the Flight Manual in accordance with instructions in AFR 60-9 and T.O. 00-5-1. These will be forwarded through Command Headquarters to Sacramento ALC, McClellan AFB, CA 95652, ATTN: MMEAH. Technical content of the Flight Manual is the responsibility of the Flight Manual Manager (MMEAH), and all comments and questions transmitted by means other than the AF Form 874 will be submitted directly to the Flight Manual Manager, Sacramento ALC, McClellan AFB, CA 95652, ATTN: MMEAH.

SUPPLEMENT SUMMARY

Safety Supplements are numbered as follows: 1SS-1, 1SS-2, etc. Operational Supplements are numbered 1S-1, 1S-2, etc. The supplements you receive should follow in numerical sequence, and if you find you are missing one, check T.O. 0-1-1-4 to see whether the supplement was issued and, if so, is still in effect. It may have been replaced or rescinded before you received your copy. If it is still active, see your Publication Distribution Officer and get your copy. It should be noted that a supplement number will never be used more than once.

SUPPLEMENTS REPLACED BY THIS CHANGE OR RESCINDED

NUMBER	DATE	SHORT TITLE	DISPOSITION (SECTION)
S-1	15 Jun 74	LAU-3/D Rocket Launcher	V
SS-2	6 Feb 74	AAU-19 Altimeter Crosscheck	II
S-3	8 Feb 74	LAU68/A	V
S-4	25 Jul 74	Afterburner Malfunctions	II
SS-5	4 Nov 74	BAK-12 Engagement Restrictions	III
SS-6	6 Nov 74	Throttle Restriction	Rescinded
SS-9		AIMS Malfunction	II
SS-10		Flight Control Malfunction	III

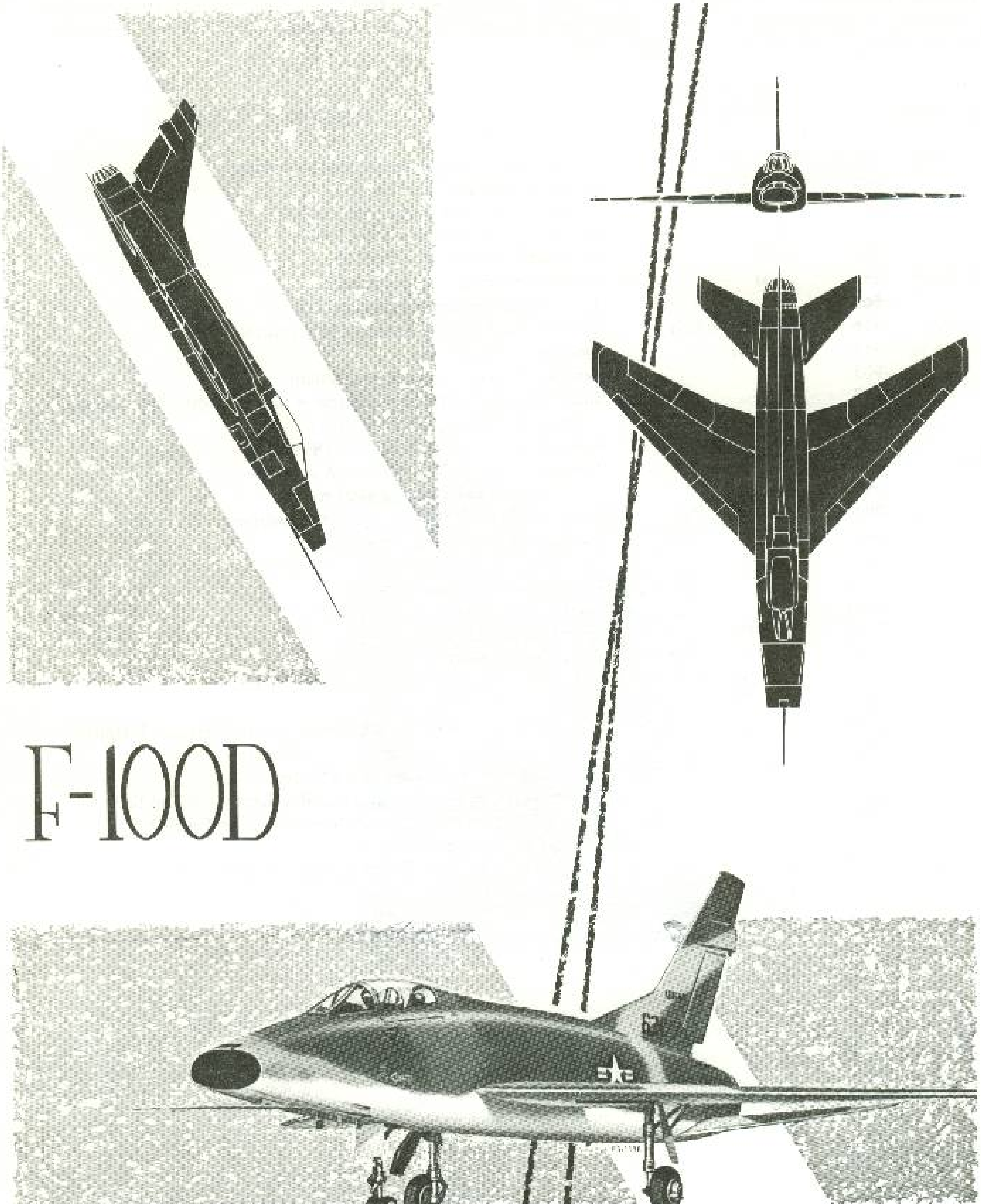
ACTIVE SUPPLEMENTS

NUMBER	DATE	SHORT TITLE

The following T.C.T.O.'s, affecting F-100D and F-100F Airplanes, are covered in this manual. This is not a complete listing, and only includes T.C.T.O.'s listed by number in this manual. Refer to the Basic Index (T.O. 0-1-1-4) for the complete listing of T.C.T.O.'s for these airplanes.

T.O. NUMBER		DISPOSITION (SECTION)	SUBJECT
1F-100D	-627	IV	Installation of combat documentation cameras
	-630	IV	Installation of seek silence system
	-632	IV, V	Modification of armament equipment
	-632D	IV	Bypass adapter and single store release
	-648	I, IV	Instrument Modification F-100D
1F-100F	-562	I, III	Installation of canopy lock handle
	-566	IV	Installation of secure speech capability
1F-100	-956	IV (Rescinded)	Installation of variable intensity light control
	-959	I, II, III	Deletion of autopilot
	-965	I	Standardization of fire warning system
	-967	I	Installation of fuel boost pump test switch and light. Two aircraft, DSN 56-3972 and FSN 58-1214
	-969	IV	Installation of AN/ARA-50 UHF DF system
	-977	IV	Installation of KA-71A or KB-18A strike camera
	-985	IV	Installation of radar beacon system
	-992	IV	Installation of RHAW system wiring provisions
	-994	IV	Installation of RHAW system components
	-1001	IV	Installation of relay in gun camera circuitry
	-1010	II, IV	Installation of exterior floodlights
	-1031	I, IV	Installation of Data Recording System
	-1040	I, II, IV	Installation of anticollision lights
	-1050	I, IV	Relocation of Sight Selector Unit
	-1056	I, II, III	Installation of DART/Snubber Ejection Seat
	-1062	I, II, IV	Installation of AIMS F-100D/F
	-1064*	I, II, III	Installation of Single Motion Ejection Initiation System, F-100D/F
	-1068	IV	Installation of External Light Dimmer Control
	-1069	I, IV	Modification of the Rocket Firing System
	-1072	I	Installation of Booster Initiator and Replacement of Lap Belt
	-1084*	I, III	Installation of Ballistic Powered Inertia Reels on F-100D/F Aircraft Ejection Seats
	-1103*	I	Installation of Ejection Seat Adjustment Limit Switch F-100D/F Aircraft

*Prime at SAMMA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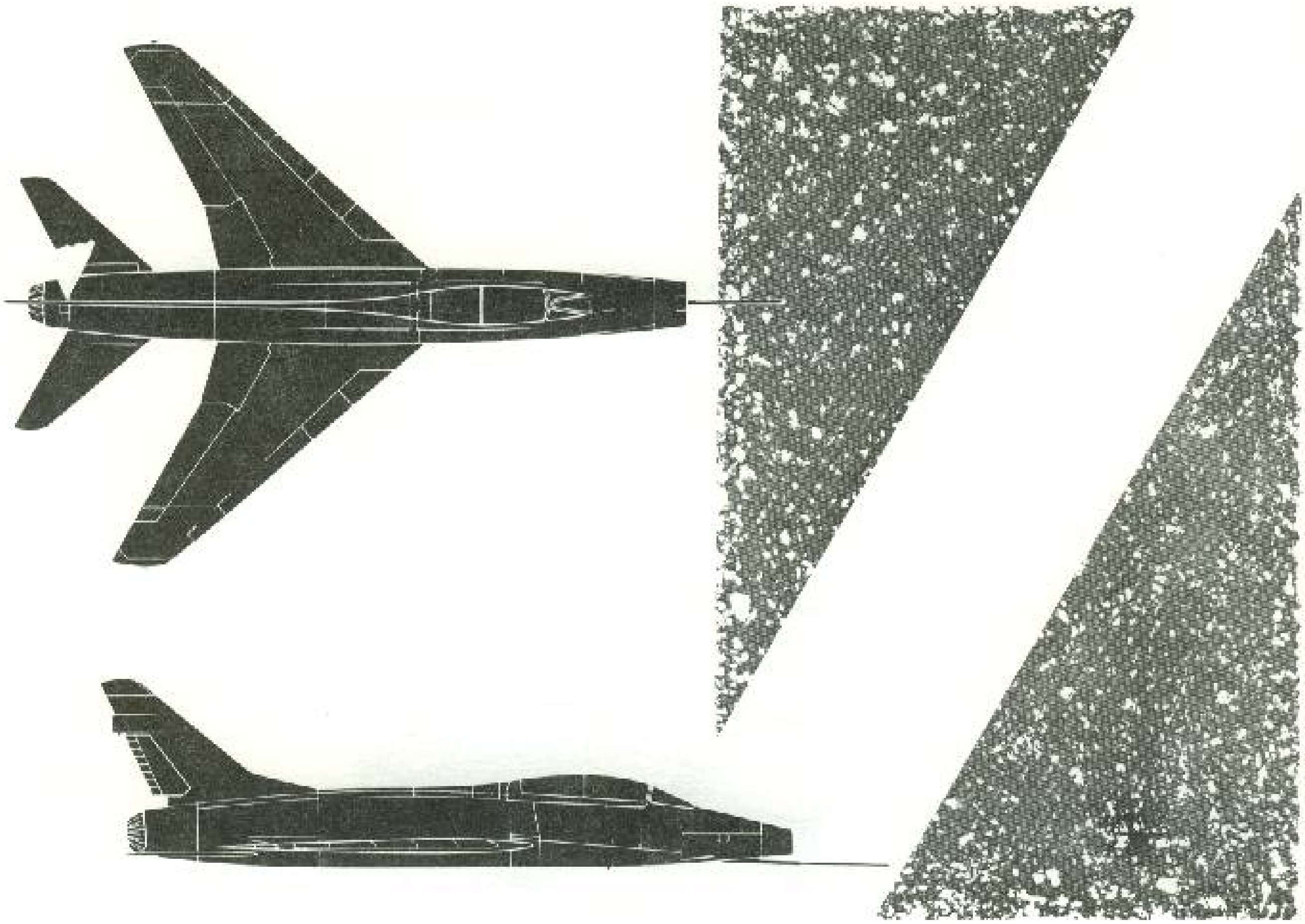

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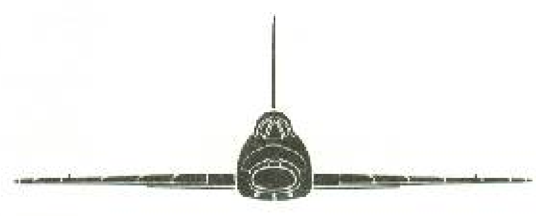

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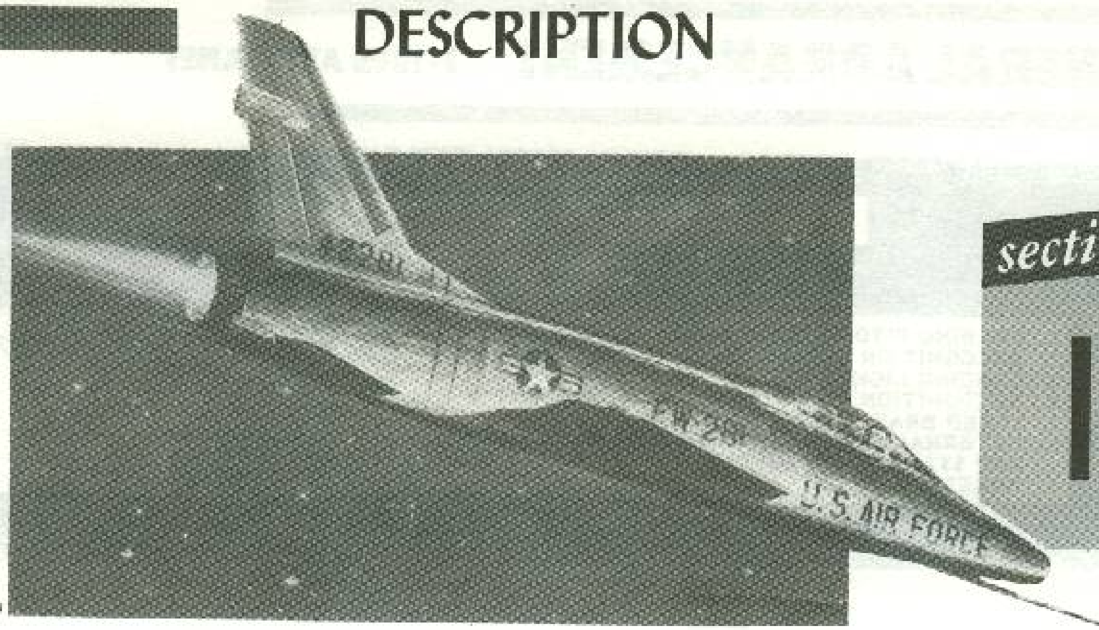

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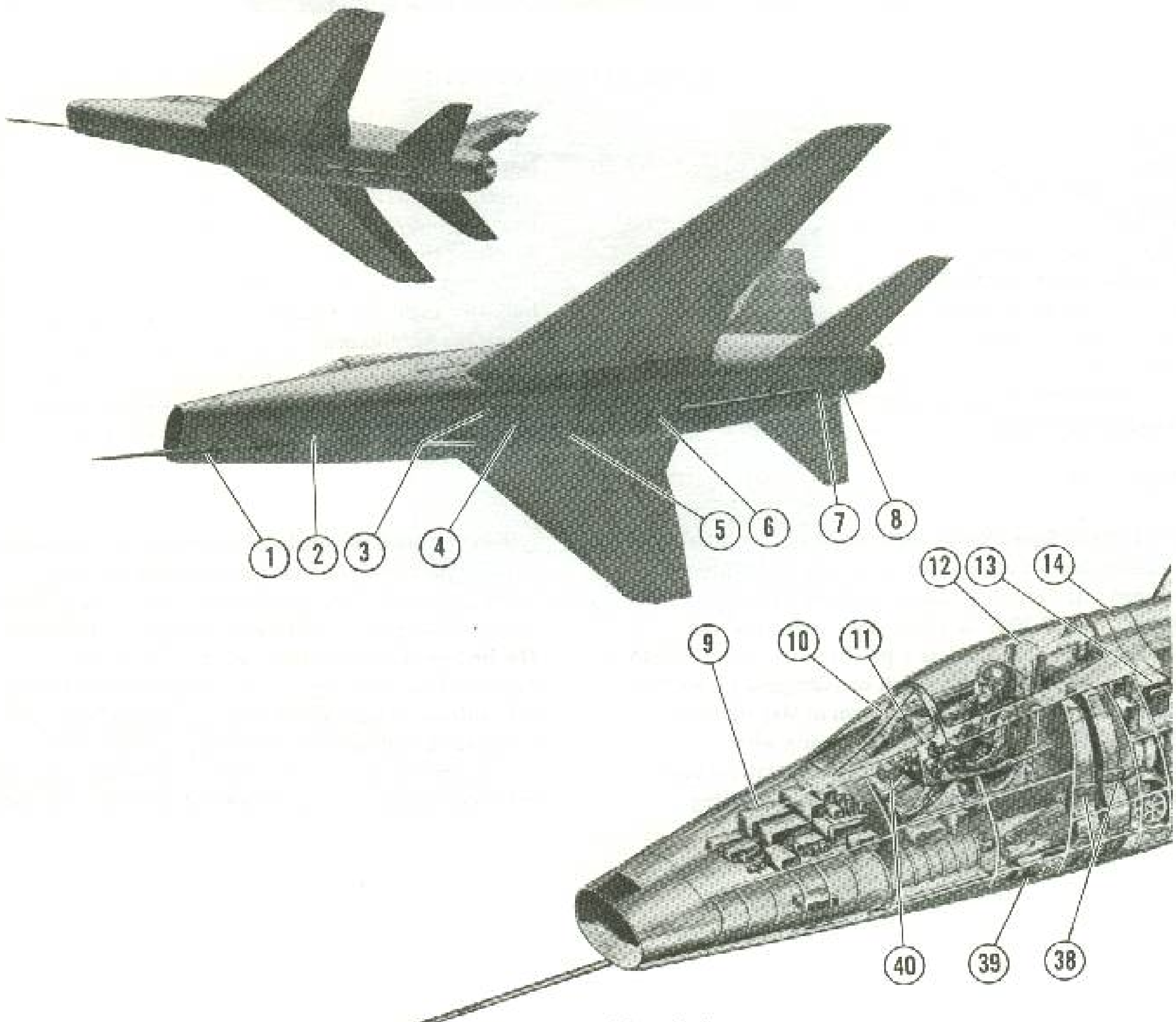
AIRPLANE.

The F-100D Super Sabre, built by North American Aviation, Inc., is a single-place, supersonic fighter-bomber with secondary use as a limited air superiority fighter. The F-100F is a two-place version of the F-100D and is also used as a pilot trainer. The F-100A was the first in this series which was designed for an "air superiority" role and was first flown in May of 1953. The F-100C was a fighter-bomber version with strengthened wing, additional underwing stations and wing fuel. These features and an in-flight refueling system increased its capability from local air superiority to long range fighter-bomber penetration or escort missions. The F-100C was first flown in January 1956. The first two-place F-100 was a converted F-100C-20. The first production F-100F was first flown in August 1956. Both have a 45-degree swept-back wing with automatic slats on the leading edge, and flaps on the inboard trailing edge. Some airplanes have an aerodynamic fence on each wing that provides an increase in lateral stability at high speeds and altitudes. All control

GENERAL ARRANGEMENT F-100D AIRPLANES

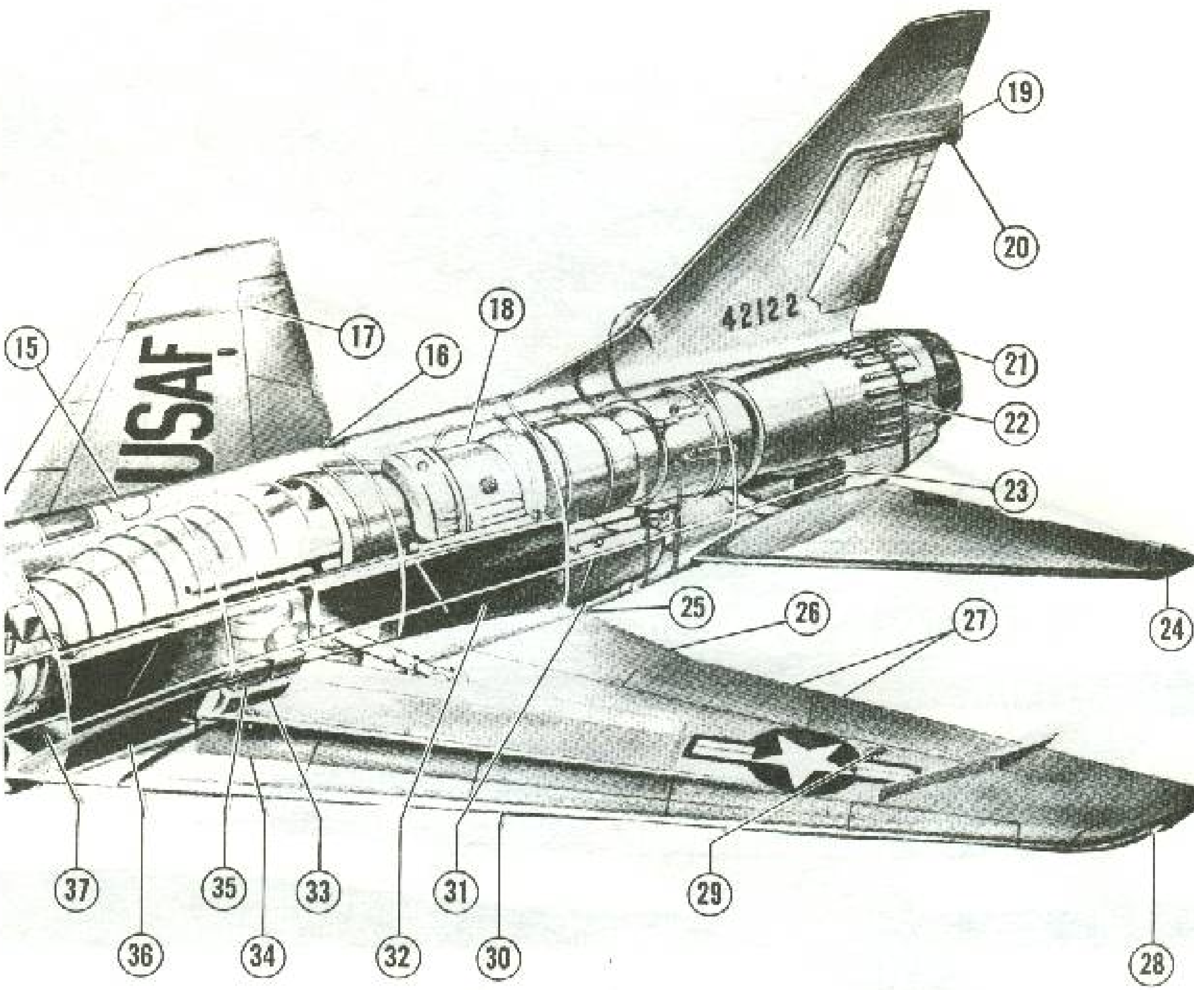
1. FOLDING PITOT-STATIC BOOM
2. RECOGNITION LIGHT*
3. LANDING LIGHTS
4. RECOGNITION LIGHT (ANTICOLLISION LIGHT*)
5. SPEED BRAKE
6. EXTERNAL POWER RECEPTACLES (ELECTRICAL AND STARTER AIR SUPPLY)
7. ARRESTING HOOK
8. RETRACTABLE TAIL SKID
9. FORWARD ELECTRONIC EQUIPMENT COMPARTMENT
10. A-4 SIGHT
11. GUN CAMERA
12. EJECTION SEAT
13. BATTERY
14. RECOGNITION LIGHT



*Some airplanes

Figure 1-1 (Sheet 1 of 2)

15. RAM-AIR TURBINE EXHAUST DOOR
16. ANTICOLLISION LIGHT*
17. WING FENCE
18. J57 ENGINE WITH AFTERBURNER
19. POSITION LIGHTS
20. FUEL VENT OUTLET
21. TWO-POSITION EXHAUST NOZZLE
22. DRAG CHUTE CABLE STOWAGE RECESS
23. DRAG CHUTE STOWAGE COMPARTMENT
24. CONTROLLABLE HORIZONTAL STABILIZER
25. SINGLE-POINT REFUELING RECEPTACLE
26. WING FLAP
27. AILERONS
28. POSITION LIGHT
29. FLOODLIGHT
30. WING SLATS
31. AFT FUEL TANK
32. INTERMEDIATE FUEL TANK
33. FORWARD FUEL TANK (LOWER CELL)
34. WING FUEL TANK
35. FORWARD FUEL TANK (CENTER CELLS)
36. FORWARD FUEL TANK (UPPER CELL)
37. AFT ELECTRONIC EQUIPMENT COMPARTMENT
38. AMMUNITION BOXES
39. M-39 20 MM GUNS
40. LIQUID OXYGEN CONVERTER



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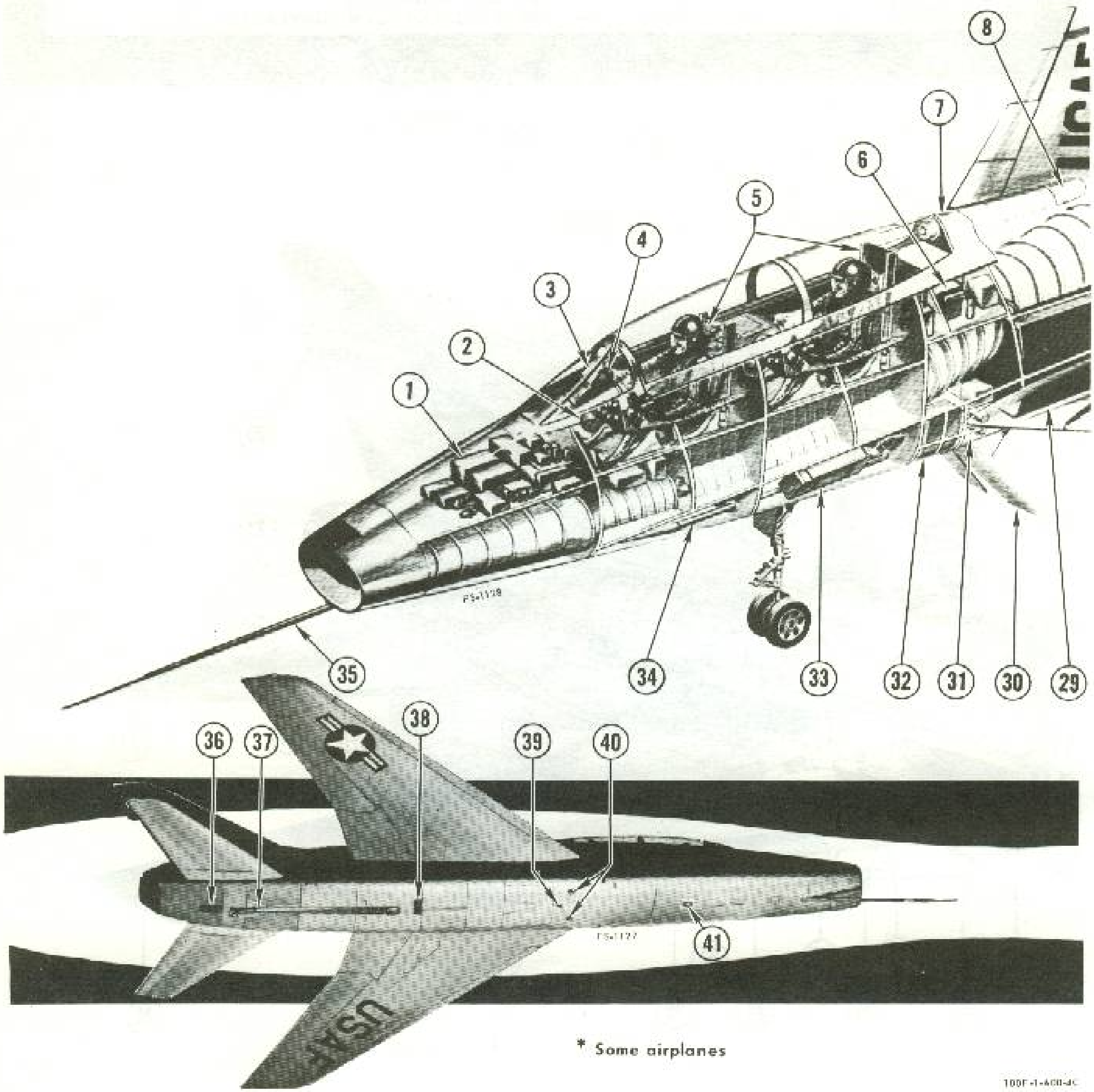
GENERAL ARRANGEMENT F-100F AIRPLANES



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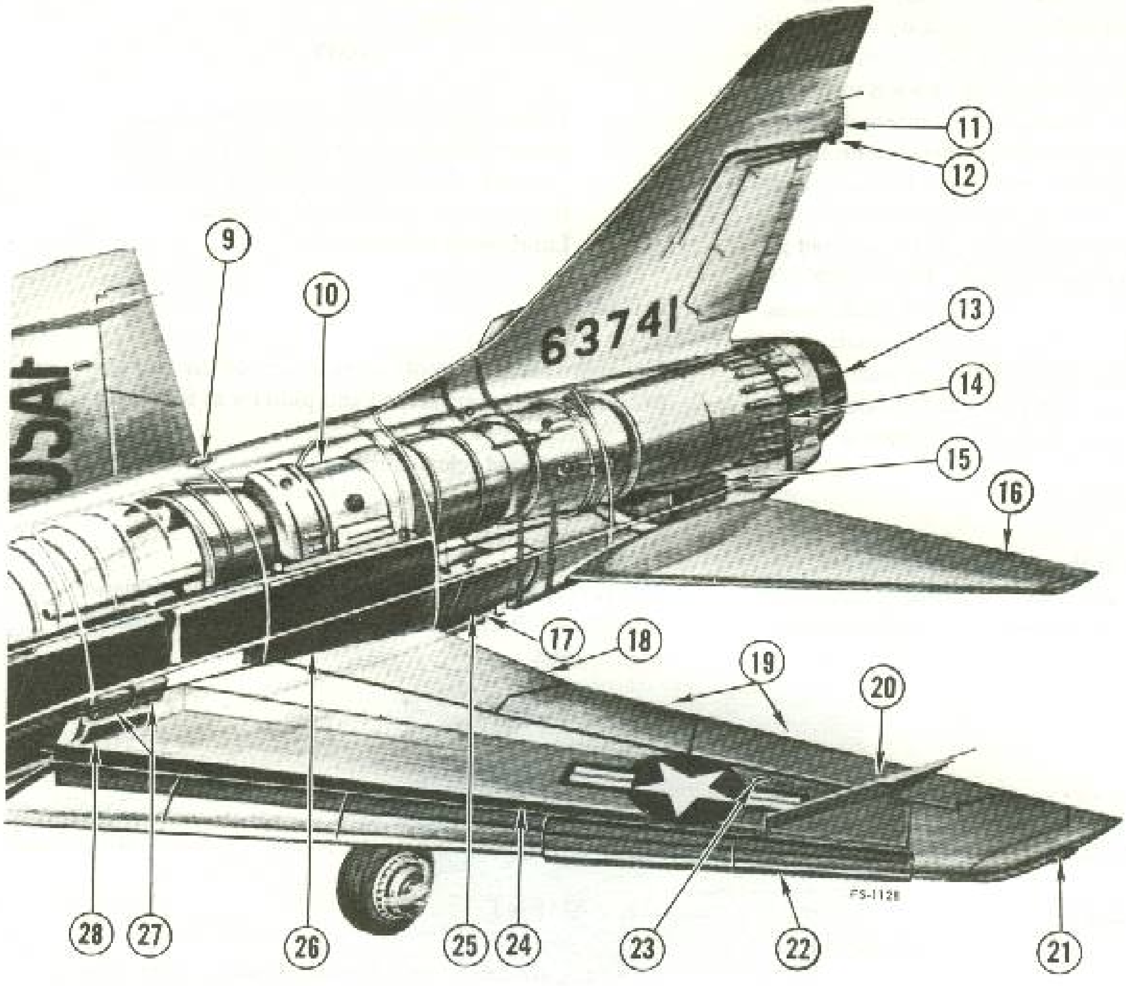

1. FORWARD ELECTRONIC EQUIPMENT COMPARTMENT
2. LIQUID OXYGEN CONVERTERS
3. A-4 SIGHT
4. GUN CAMERA
5. EJECTION SEATS
6. BATTERY
7. RECOGNITION LIGHT
8. RAM-AIR TURBINE EXHAUST DOOR
9. ANTICOLLISION LIGHT*
10. J57 ENGINE WITH AFTERBURNER
11. POSITION LIGHTS
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21. POSITION LIGHT
22. WING SLATS
23. FLOODLIGHT
24. WING FUEL TANK
25. AFT FUEL TANK
26. INTERMEDIATE FUEL TANK
27. FORWARD FUEL TANK (CENTER CELL)
28. FORWARD FUEL TANK (LOWER CELL)
29. FORWARD FUEL TANK (UPPER CELL)
30. SPEED BRAKE
31. AFT ELECTRONIC EQUIPMENT COMPARTMENT
32. LINK COMPARTMENT
33. AMMUNITION BOXES
34. M-39 20 MM GUNS
35. FOLDING PITOT-STATIC BOOM
36. RETRACTABLE TAIL SKID
37. ARRESTING HOOK
38. EXTERNAL POWER RECEPTACLES (ELECTRICAL AND STARTER AIR SUPPLY)
39. RECOGNITION LIGHT (ANTICOLLISION LIGHT*)
40. LANDING LIGHTS
41. RECOGNITION LIGHT*

Figure 1-2 (Sheet 2 of 2)

surfaces are actuated by irreversible hydraulic systems. Desired aerodynamic pilot feel is simulated by an artificial-feel system. A hydraulically actuated speed brake is on the lower surface of the fuselage and a drag chute is in the lower surface of the aft fuselage. Fuel is carried internally in the fuselage and wings. Drop tanks can be installed on the lower surface of the wings to increase the total fuel supply. The internal tanks and some drop tanks are serviced by single-point refueling, and the airplane can be refueled in flight by probe-and-drogue air refueling. The F-100F-20 airplane is essentially the same as the other F-100F series airplanes in general flight and mission characteristics. The physical differences are the ducted flaps. In addition, internal tanks and 450- and 335-gallon drop tanks can be single-point refueled without the engine operating.

AIRPLANE DIMENSIONS.

The over-all dimensions of the airplane (airplane on landing gear at normal weight and at normal ground attitude, with specified tire and gear strut inflation) are as follows:

F-100D:

Span . . . . 38 feet 9 inches

Length (pitot boom extended) . . . . . 54 feet 3 inches

Length (pitot boom folded for ground handling) . . . . 49 feet 4 inches

Height (to top of fin) . . . . 16 feet 3 inches

F-100F:

Span . . . . 38 feet 9 inches

Length (pitot boom extended) . . . . . 57 feet 2 inches

Length (pitot boom folded for ground handling) . . . . 52 feet 6 inches

Height (to top of fin) . . . . 16 feet 3 inches

NOTE

Refer to Taxiing in section II for turning radius and ground clearance dimensions.

AIRPLANE GROSS WEIGHT.

NOTE

These weights, based on JP-4 fuel, are an approximation and may be used for flight planning. For precise weight information, refer to T.O. 1-1B-40 and to Weight Limitations in section V.

F-100D:

The approximate takeoff gross weight of the airplane (including full internal load and pilot) is as follows:

No external load (clean airplane) . . . . . . 31,000 pounds

F-100F:

The approximate takeoff gross weight of the airplane (including full internal load and both crew members) is as follows:

F-100F-2 through F-100F-16 – no external load (clean airplane) . . . . 31,350 pounds

F-100F-20 – no external load (clean airplane) . . . . 31,800 pounds

ARMAMENT.

The basic armament installation consists of four 20 mm automatic guns (two only on the F-100F) mounted in the lower, forward section of the fuselage, outboard of the nose wheel well. Bombs, rockets, or missiles can be carried on jettisonable pylons on the lower surface of the wings. There is also an external store mounting station on the fuselage at the airplane centerline. An automatic lead-computing sight, coupled with a radar ranging system, is used for gun, bomb, and rocket aiming.

NOTE

Refer to Armament Equipment in section IV for complete armament information.

BLOCK NUMBERS.

Block numbers are used to identify airplanes in accordance with production changes that affect the airplane or its equipment. Airplanes within a given block number are usually identical with respect to production changes. The block numbers and Air Force serial numbers assigned to F-100D and F-100F airplanes are listed in figure 1-3.

ENGINE.

Power is supplied by a Pratt & Whitney J57-21A axial-flow gas turbine engine equipped with an afterburner. Installation of the -23 afterburner improves afterburner performance and reliability. (See figure 1-5.)

The installed sea-level static thrust of the engine is about 8,300 pounds at Military Thrust and about 13,000 pounds at Maximum Thrust (afterburning). The engine has two multistage ("two-spool") compressors, an eight-unit combustion chamber, a split, three-stage turbine, and an afterburner system with a two-position exhaust nozzle.

NOTE

Refer to Engine Afterburner System in this section for complete information on the afterburner system.

The two-spool compressor section consists of a nine-stage low-pressure unit and a seven-stage high-pressure unit. The rotor assembly of each unit is mechanically independent of the other. The high-pressure compressor rotor is driven by the first-stage turbine wheel and the low-pressure compressor rotor by the second- and third-stage turbine wheels. The low-pressure compressor rotor drives the nose section accessories. The accessories at the bottom of the engine are driven by the high-pressure compressor rotor through a bevel gear and shaft system which also serves as the input system during starting. An automatic compressor air bleed system directs part of the low-pressure compressor air overboard at low engine rpm to provide stall-free, fast engine accelerations and decelerations. An anti-icing system protects the engine guide vanes from ice formation. (Refer to Air Conditioning, Pressurization, Defrosting, Anti-icing, and Rain Removal Systems in section IV.)

ENGINE FUEL CONTROL SYSTEM.

Fuel flow to the engine is mechanically controlled by throttle movement and is delivered and regulated by the engine fuel control system. This system includes the engine-driven fuel pump unit, the hydromechanical fuel control unit, and the afterburner system. The engine fuel control system is shown schematically in figure 1-20.

Fuel Pump Unit.

The engine-driven fuel pump unit (figure 1-20) supplies the high fuel pressure required by the engine and afterburner systems. The unit has three individual pump elements and includes the afterburner system shuttle valve. All the fuel from the tanks goes through the centrifugal element and fuel discharged from the centrifugal element goes to both the engine and afterburner elements of the pump unit. When the afterburner is not engaged, the afterburner shuttle valve in the fuel pump unit is closed, and the total output of the afterburner element returns to the centrifugal element discharge. When the afterburner is selected, the shuttle valve opens to supply fuel from the afterburner element to the afterburner system. If the engine element fails, the fuel regulating transfer valve in the pump unit opens and automatically sends the afterburner element output to the engine fuel control unit, and terminates afterburner operation. If the afterburner element fails, the engine element cannot supply fuel for afterburner operation.

Engine Fuel Control Unit.

An engine-driven hydromechanical fuel control unit (figure 1-20), with both the normal and emergency fuel control systems, regulates fuel flow to the engine. During normal operation, the fuel flow is controlled by a variable-orifice main metering valve in the fuel control. The valve is positioned by control signals from a mechanical computer (also in the fuel control unit) which senses flight operating conditions and is mechanically controlled by the throttle. The computer sets the metering valve so that the fuel flow is automatically compensated for variations in flight conditions by sensing throttle position, engine speed, engine burner pressure, and compressor inlet temperature.

NORMAL FUEL CONTROL SYSTEM. The normal fuel control system adjusts the fuel flow for altitude changes and, during rapid engine accelerations, schedules the fuel flow to protect the engine from overspeed and overtemperature conditions and to prevent compressor stall or engine flameout. Excess fuel is bypassed to the discharge side of the centrifugal element of the fuel pump unit.

BLOCK NUMBERS

F-100D-21-NA
55-3502 thru -3601

F-100D-26-NA
55-3602 thru -3701

F-100D-31-NA
55-3702 thru -3814

F-100D-46-NH
55-2784 thru -2863

F-100D-51-NH
55-2864 thru -2908

F-100D-56-NH
55-2909 thru -2954

F-100D-61-NA
56-2903 thru -2962

F-100D-66-NA
56-2963 thru -3022

F-100D-71-NA
56-3023 thru -3142

F-100D-76-NA
56-3143 thru -3198

F-100D-81-NH
56-3351 thru -3378

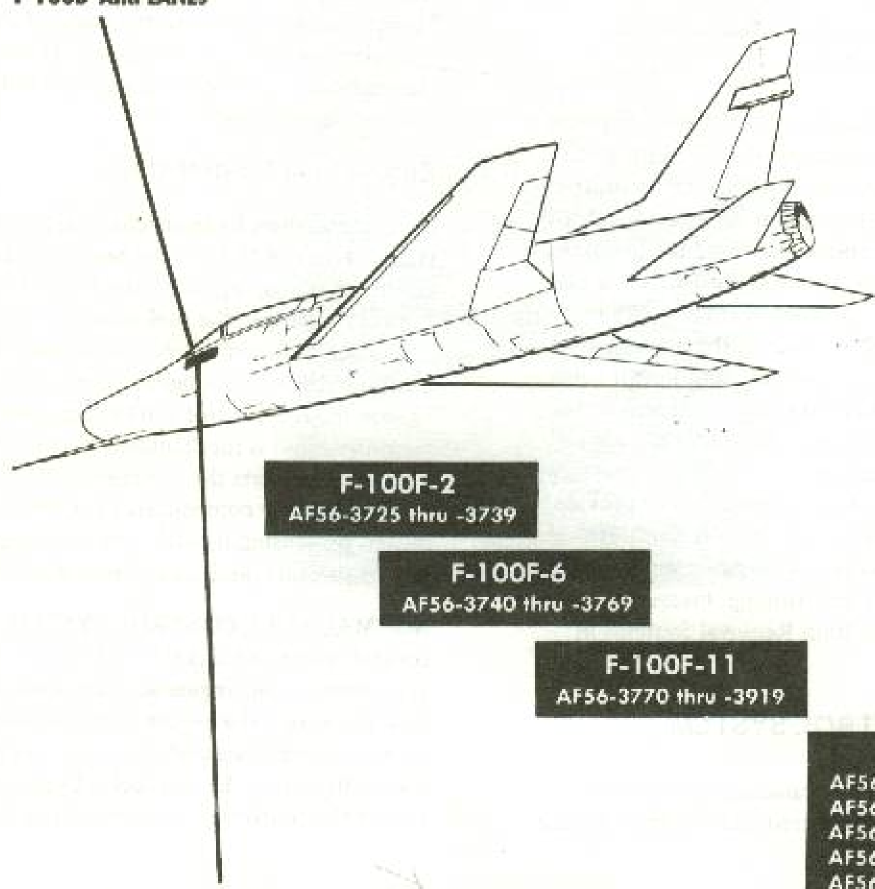
F-100D-86-NH
56-3379 thru -3463

F-100D-91-NA
56-3199 thru -3346

NOTE

- **The AF serial numbers for later block numbers may be lower than the serial numbers for an early block number. (Compare serial numbers of blocks -31 and -46.) Therefore, the airplane coding throughout this manual should be interpreted as follows: "and later airplanes" applies to all later block numbers (not necessarily later serial numbers).**
- **F-100D Airplanes with manufacturer's code letters "NA" are built by North American Aviation at Los Angeles, California.**
- **F-100D Airplanes with manufacturer's code letters "NH" are built by North American Aviation at Columbus, Ohio.**

F-100D AIRPLANES



F-100F-2
AF56-3725 thru -3739

F-100F-6
AF56-3740 thru -3769

F-100F-11
AF56-3770 thru -3919

F-100F-16
AF56-3920 thru -3934
AF56-3942 thru -3966
AF56-3970 thru -3975
AF56-3980 thru -3986
AF56-3990 thru -3996
AF56-4000 thru -4005
AF56-4010 thru -4012
AF56-4016

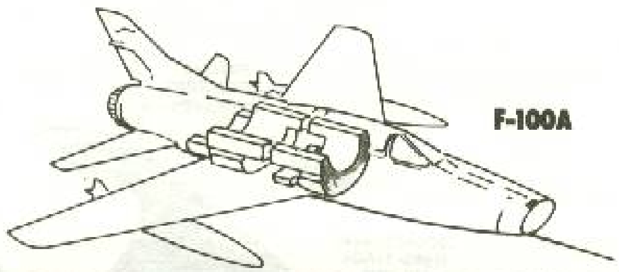
F-100F AIRPLANES

F-100F-20
AF58-1205 thru - 1233

Figure 1-3

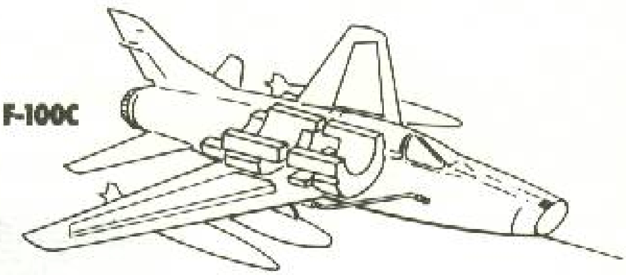
MAIN DIFFERENCES TABLE

F-100 SERIES



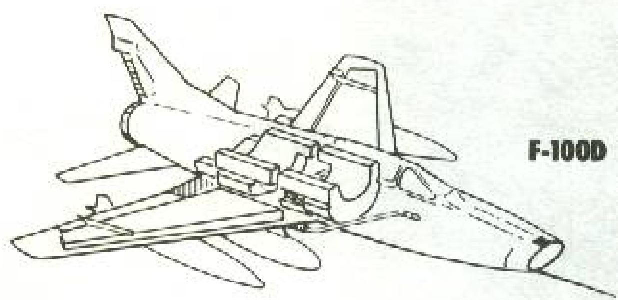
F-100A

ENGINE	J57 -21 OR -21A WITH AFTERBURNER
AC ELECTRICAL POWER SOURCE	THREE INVERTERS
ARMAMENT	FOUR GUNS AND MISSILES
STARTER	PNEUMATIC
DROP TANKS	TWO 275-GALLON
INTERNAL FUEL	FUSELAGE
REFUELING PROVISIONS	GRAVITY TANK FILLING
FLAPS	NO
OXYGEN SYSTEM	GASEOUS, WITH D-2 REGULATOR



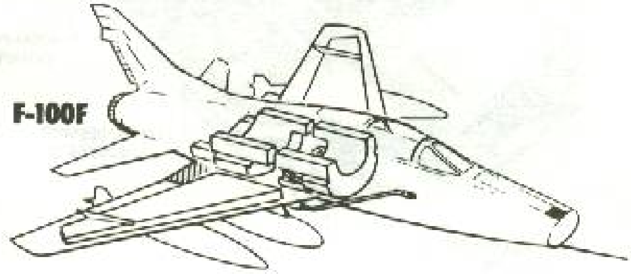
F-100C

ENGINE	J57 -21 OR -21A WITH AFTERBURNER
AC ELECTRICAL POWER SOURCE	THREE INVERTERS
ARMAMENT	FOUR GUNS AND VARIOUS COMBINATIONS OF EXTERNAL LOADS INCLUDING BOMBS, ROCKETS AND MISSILES MOUNTED ON REMOVABLE PYLONS.
STARTER	PNEUMATIC
DROP TANKS	TWO 275-GALLON AND/OR COMBINATION OF 200-GALLON (TWO 335-GALLON ON SOME AIRPLANES)
INTERNAL FUEL	FUSELAGE AND WING
REFUELING PROVISIONS	PRESSURE TYPE (SINGLE-POINT AND AIR REFUELING)
FLAPS	NO
OXYGEN SYSTEM	LIQUID, WITH D-2A REGULATOR



F-100D

ENGINE	J57-21 OR -21A WITH AFTERBURNER
AC ELECTRICAL POWER SOURCE	ONE ENGINE-DRIVEN AC GENERATOR WITH ONE STAND-BY INVERTER
ARMAMENT	FOUR GUNS AND VARIOUS COMBINATIONS OF EXTERNAL LOADS INCLUDING BOMBS, ROCKETS, AND MISSILES MOUNTED ON FORCE EJECTION PYLONS.
STARTER	CARTRIDGE - PNEUMATIC
DROP TANKS	TWO 275-GALLON, TWO 450-GALLON OR TWO 335-GALLON AND/OR COMBINATION OF 200-GALLON.
INTERNAL FUEL	FUSELAGE AND WING
REFUELING PROVISIONS	PRESSURE-TYPE (SINGLE-POINT AND AIR REFUELING)
FLAPS	YES
OXYGEN SYSTEM	LIQUID WITH MD-1 REGULATOR



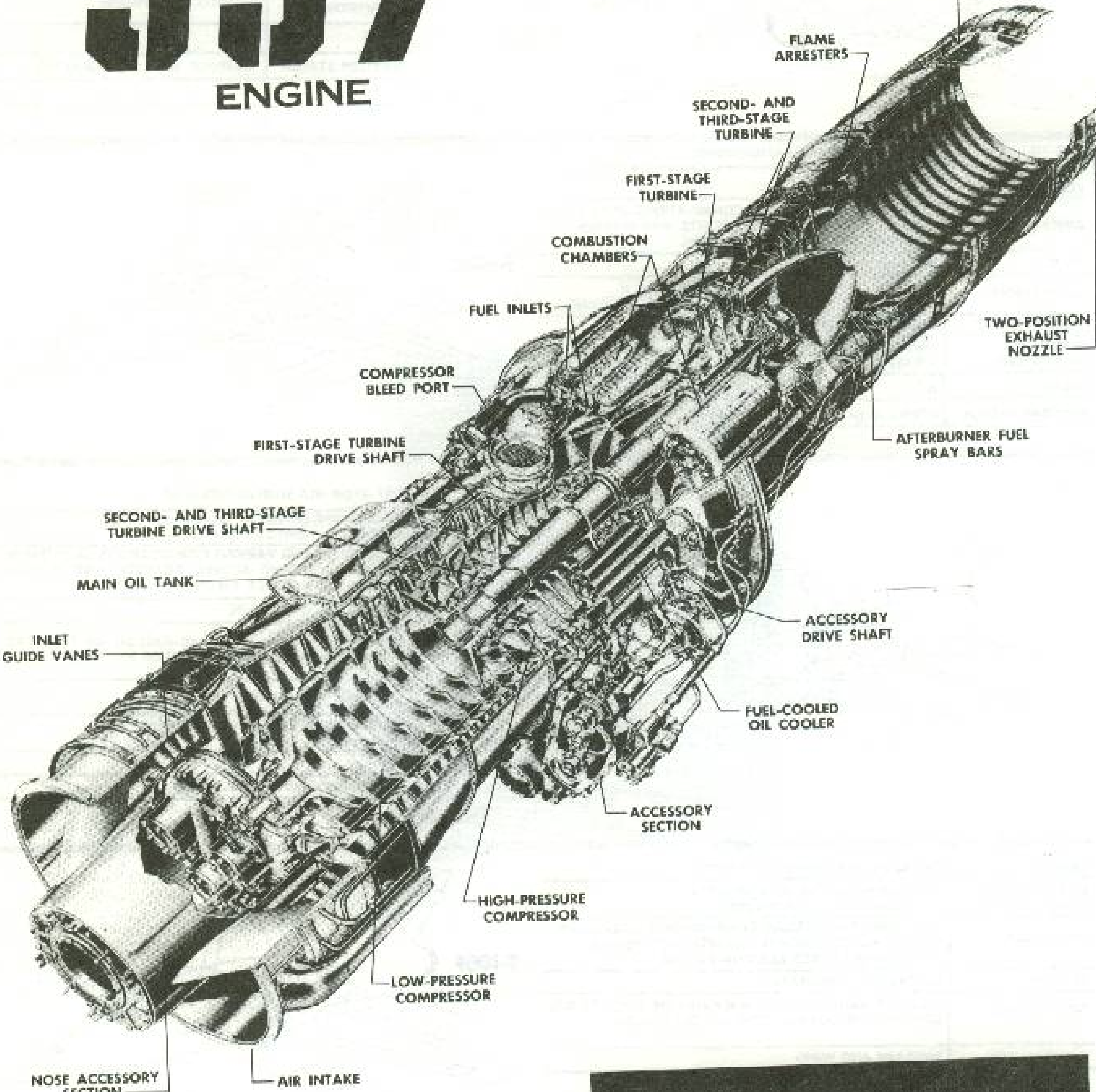
F-100F

ENGINE	J57 -21 OR -21A WITH AFTERBURNER
AC ELECTRICAL POWER SOURCE	ONE ENGINE-DRIVEN AC GENERATOR WITH ONE STAND-BY INVERTER
ARMAMENT	TWO GUNS AND VARIOUS COMBINATIONS OF EXTERNAL LOADS INCLUDING BOMBS, ROCKETS, AND MISSILES MOUNTED ON FORCE EJECTION PYLONS
STARTER	CARTRIDGE - PNEUMATIC
DROP TANKS	TWO 275-GALLON TWO 450-GALLON OR TWO 335-GALLON AND/OR COMBINATION OF 200-GALLON.
INTERNAL FUEL	FUSELAGE AND WING
REFUELING PROVISIONS	PRESSURE-TYPE (SINGLE-POINT AND AIR REFUELING)
FLAPS	YES
OXYGEN SYSTEM	LIQUID WITH MD-1 REGULATOR

100-1-33-1B

Figure 1-4

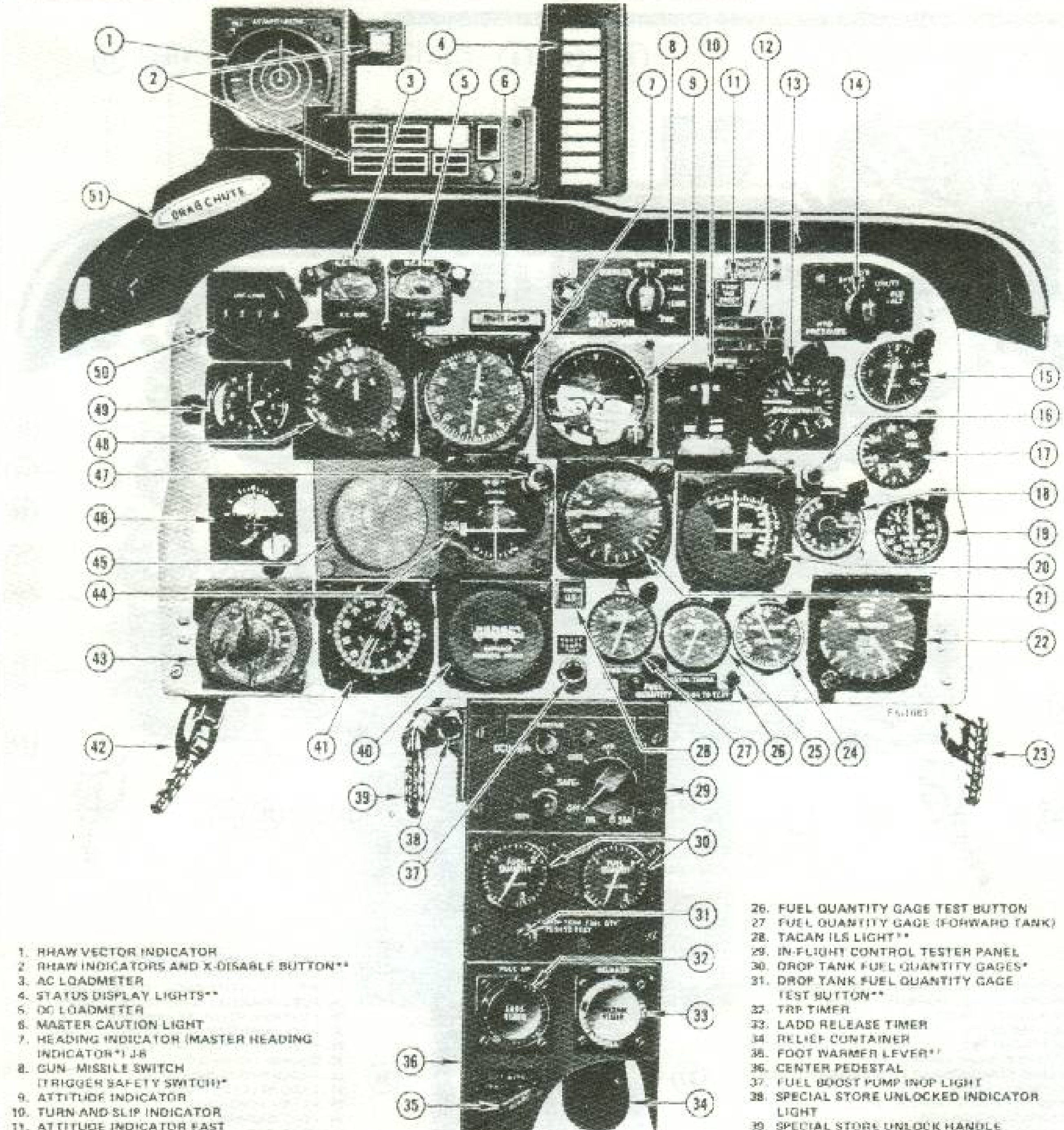
J57 ENGINE



WITH AFTERBURNER

Figure 1-5

INSTRUMENT PANEL F-100D AND FRONT COCKPIT F-100F



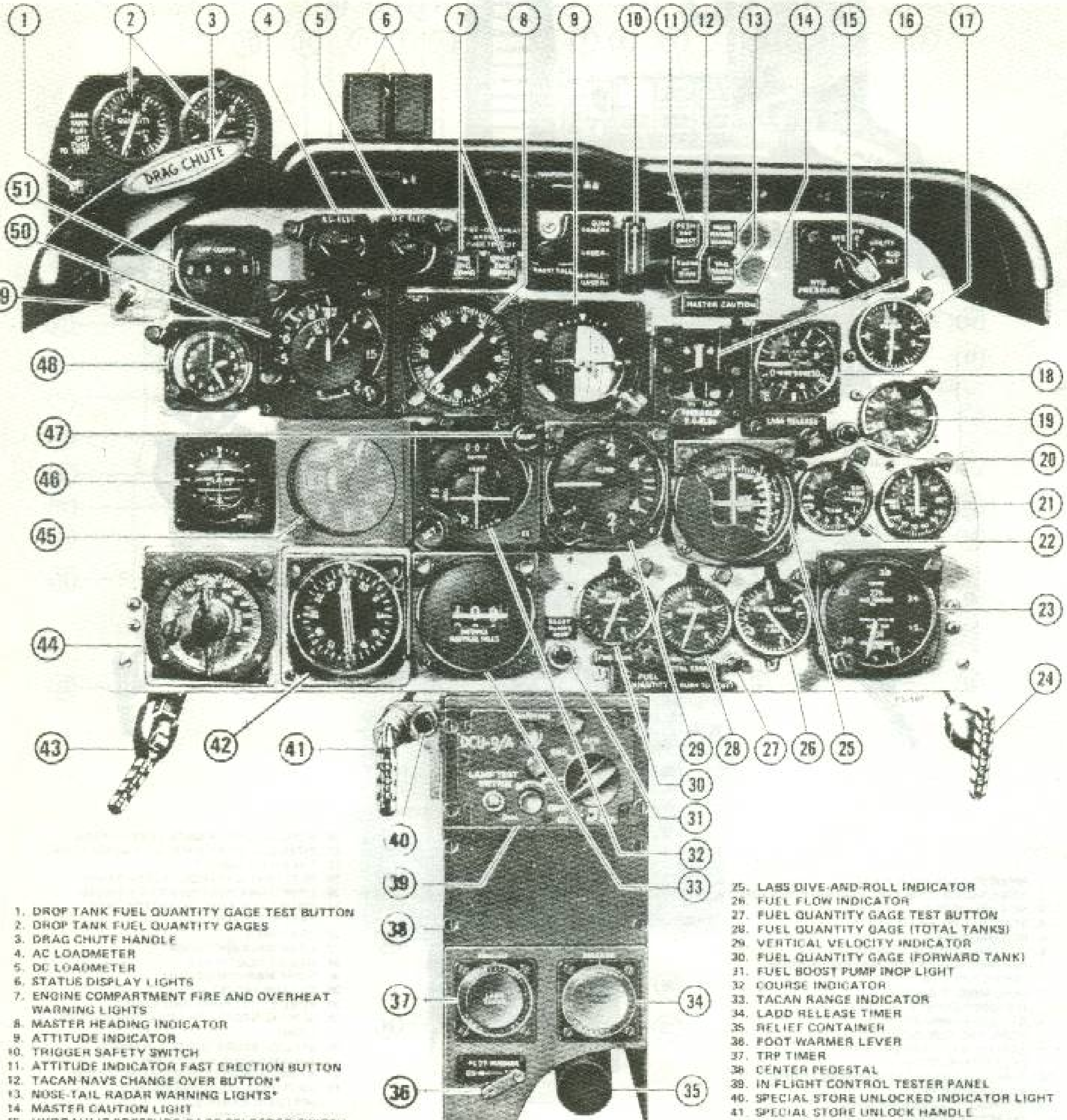
1. RHAW VECTOR INDICATOR
2. RHAW INDICATORS AND X-DISABLE BUTTON**
3. AC LOADMETER
4. STATUS DISPLAY LIGHTS**
5. DC LOADMETER
6. MASTER CAUTION LIGHT
7. HEADING INDICATOR (MASTER HEADING INDICATOR*) J-8
8. GUN- MISSILE SWITCH (TRIGGER SAFETY SWITCH)*
9. ATTITUDE INDICATOR
10. TURN AND SLIP INDICATOR
11. ATTITUDE INDICATOR FAST ERECTION BUTTON
12. FIRE AND OVERHEAT WARNING LIGHTS
13. ACCELEROMETER
14. HYDRAULIC PRESSURE GAGE SELECTOR SWITCH
15. HYDRAULIC PRESSURE GAGE
16. LABS RELEASE INDICATOR LIGHT
17. OIL PRESSURE GAGE
18. EXHAUST TEMPERATURE GAGE
19. TACHOMETER
20. LABS DIVE AND ROLL INDICATOR
21. VERTICAL VELOCITY INDICATOR
22. ENGINE PRESSURE RATIO GAGE
23. LANDING GEAR EMERGENCY LOWERING HANDLE
24. FUEL FLOW INDICATOR
25. FUEL QUANTITY GAGE (TOTAL TANKS)
26. FUEL QUANTITY GAGE TEST BUTTON
27. FUEL QUANTITY GAGE (FORWARD TANK)
28. TACAN ILS LIGHT**
29. IN-FLIGHT CONTROL TESTER PANEL
30. DROP TANK FUEL QUANTITY GAGES*
31. DROP TANK FUEL QUANTITY GAGE TEST BUTTON**
32. TRP TIMER
33. LADD RELEASE TIMER
34. RELIEF CONTAINER
35. FOOT WARMER LEVER**
36. CENTER PEDESTAL
37. FUEL BOOST PUMP INOP LIGHT
38. SPECIAL STORE UNLOCKED INDICATOR LIGHT
39. SPECIAL STORE UNLOCK HANDLE
40. TACAN RANGE INDICATOR
41. RADIO MAGNETIC INDICATOR (ID-250)
42. EXTERNAL LOAD EMERGENCY JETTISON HANDLE
43. SIGHT SELECTOR UNIT
44. COURSE INDICATOR
45. ALTIMETER
46. STAND-BY ATTITUDE INDICATOR
47. MARKER BEACON INDICATOR LIGHT**
48. AIRSPEED/MACH INDICATOR
49. CLOCK
50. COMMAND RADIO REMOTE CHANNEL INDICATOR
51. DRAG CHUTE HANDLE

*Some F-100F Airplanes

**Some Airplanes

Figure 1-6

INSTRUMENT PANEL-F-100D SOME AIRPLANES

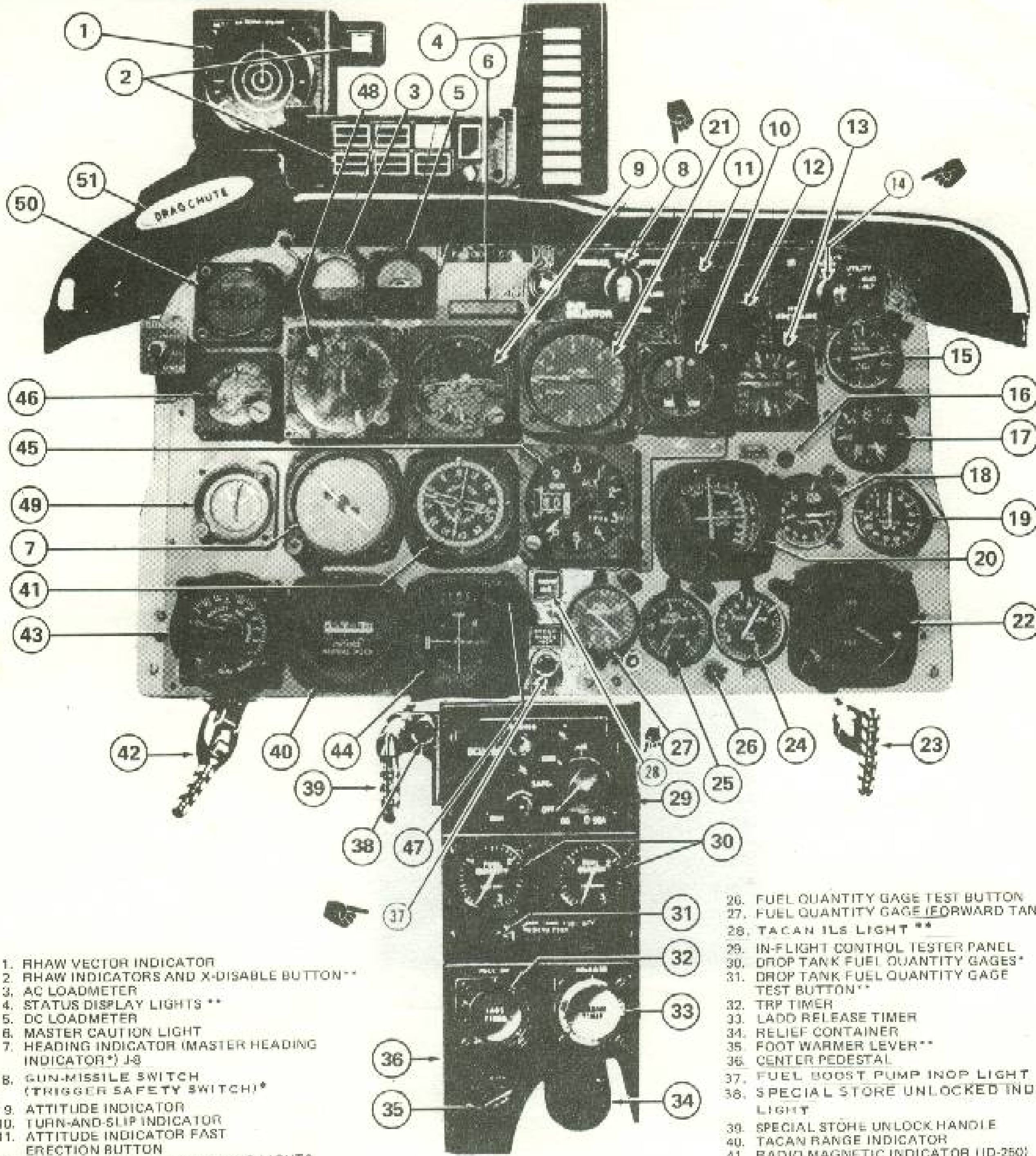


1. DROP TANK FUEL QUANTITY GAGE TEST BUTTON
2. DROP TANK FUEL QUANTITY GAGES
3. DRAG CHUTE HANDLE
4. AC LOADMETER
5. DC LOADMETER
6. STATUS DISPLAY LIGHTS
7. ENGINE COMPARTMENT FIRE AND OVERHEAT WARNING LIGHTS
8. MASTER HEADING INDICATOR
9. ATTITUDE INDICATOR
10. TRIGGER SAFETY SWITCH
11. ATTITUDE INDICATOR FAST ERECTION BUTTON
12. TACAN-NAVS CHANGE OVER BUTTON*
13. NOSE-TAIL RADAR WARNING LIGHTS*
14. MASTER CAUTION LIGHT
15. HYDRAULIC PRESSURE GAGE SELECTOR SWITCH
16. TURN-AND-SLIP INDICATOR
17. HYDRAULIC PRESSURE GAGE
18. ACCELEROMETER
19. OIL PRESSURE GAGE
20. LABS RELEASE INDICATOR LIGHT
21. TACHOMETER
22. EXHAUST TEMPERATURE GAGE
23. ENGINE PRESSURE RATIO GAGE
24. LANDING GEAR EMERGENCY LOWERING HANDLE
25. LABS DIVE-AND-ROLL INDICATOR
26. FUEL FLOW INDICATOR
27. FUEL QUANTITY GAGE TEST BUTTON
28. FUEL QUANTITY GAGE (TOTAL TANKS)
29. VERTICAL VELOCITY INDICATOR
30. FUEL QUANTITY GAGE (FORWARD TANK)
31. FUEL BOOST PUMP INOP LIGHT
32. COURSE INDICATOR
33. TACAN RANGE INDICATOR
34. LADD RELEASE TIMER
35. RELIEF CONTAINER
36. FOOT WARMER LEVER
37. TRP TIMER
38. CENTER PEDESTAL
39. IN FLIGHT CONTROL TESTER PANEL
40. SPECIAL STORE UNLOCKED INDICATOR LIGHT
41. SPECIAL STORE UNLOCK HANDLE
42. RADIO MAGNETIC INDICATOR
43. EXTERNAL LOAD EMERGENCY JETTISON HANDLE
44. SIGHT SELECTOR UNIT
45. ALTIMETER
46. STAND-BY ATTITUDE INDICATOR
47. TACAN INDICATOR LIGHT*
48. CLOCK
49. GUN SELECTOR SWITCH
50. AIRSPEED/MACH INDICATOR
51. COMMAND RADIO REMOTE CHANNEL INDICATOR

*Deactivated

Figure 1-7

INSTRUMENT PANEL F-100D AND FRONT COCKPIT F-100F (T.C.T.O. 1F-100-1132)

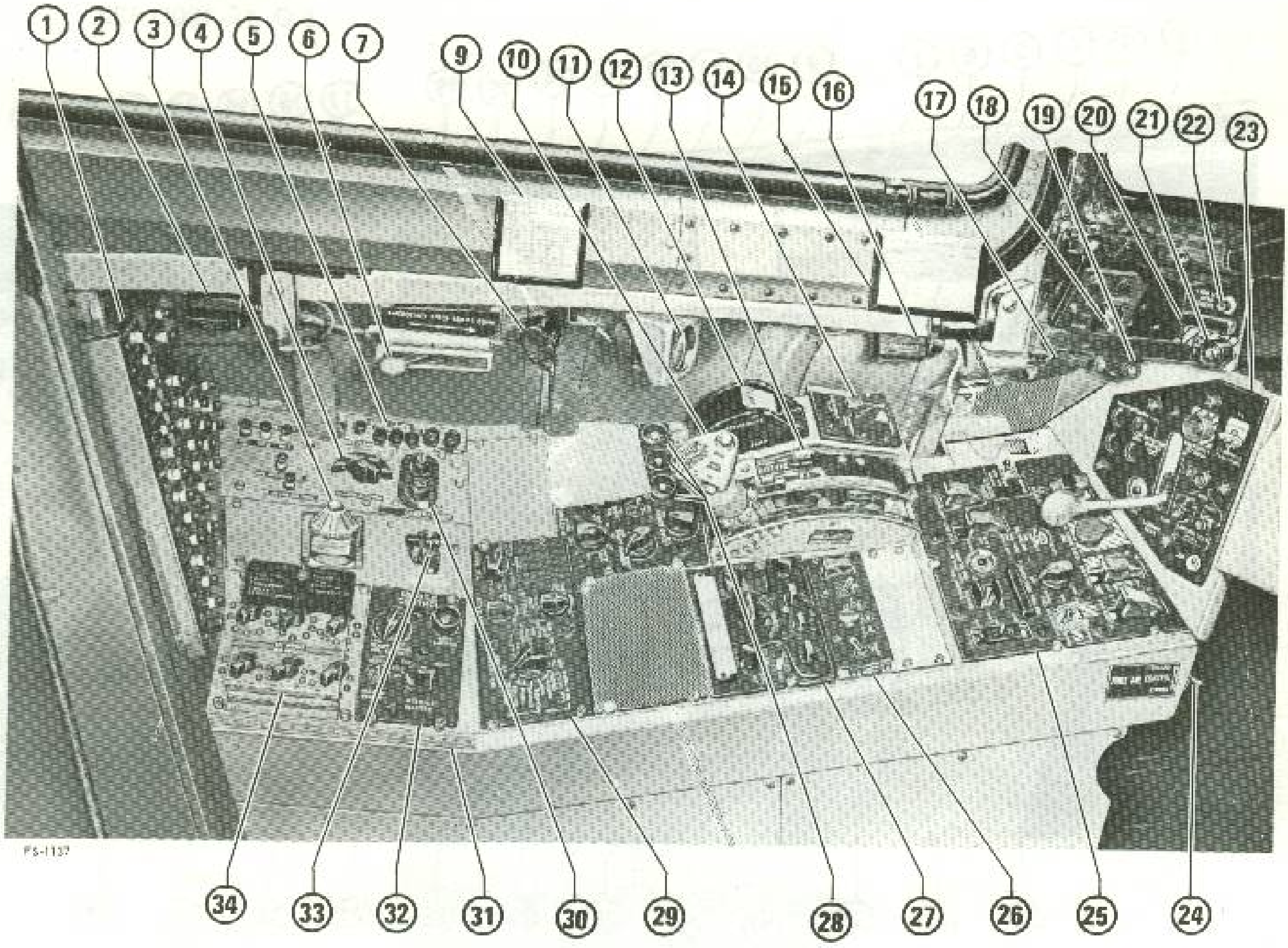


1. RHAW VECTOR INDICATOR
2. RHAW INDICATORS AND X-DISABLE BUTTON**
3. AC LOADMETER
4. STATUS DISPLAY LIGHTS **
5. DC LOADMETER
6. MASTER CAUTION LIGHT
7. HEADING INDICATOR (MASTER HEADING INDICATOR*) J-8
8. GUN-MISSILE SWITCH (TRIGGER SAFETY SWITCH)*
9. ATTITUDE INDICATOR
10. TURN-AND-SLIP INDICATOR
11. ATTITUDE INDICATOR FAST ERECTION BUTTON
12. FIRE-AND-OVERHEAT-WARNING LIGHTS
13. ACCELEROMETER
14. HYDRAULIC PRESSURE GAGE SELECTOR SWITCH
15. HYDRAULIC PRESSURE GAGE
16. LABS RELEASE INDICATOR LIGHT
17. OIL PRESSURE GAGE
18. EXHAUST TEMPERATURE GAGE
19. TACHOMETER
20. LABS DIVE-AND-ROLL INDICATOR
21. VERTICAL VELOCITY INDICATOR
22. ENGINE PRESSURE RATIO GAGE
23. LANDING GEAR EMERGENCY LOWERING HANDLE
24. FUEL FLOW INDICATOR
25. FUEL QUANTITY GAGE (TOTAL TANKS)
26. FUEL QUANTITY GAGE TEST BUTTON
27. FUEL QUANTITY GAGE (FORWARD TANK)
28. TACAN ILS LIGHT **
29. IN-FLIGHT CONTROL TESTER PANEL
30. DROP TANK FUEL QUANTITY GAGES*
31. DROP TANK FUEL QUANTITY GAGE TEST BUTTON**
32. TRP TIMER
33. LADD RELEASE TIMER
34. RELIEF CONTAINER
35. FOOT WARMER LEVER**
36. CENTER PEDESTAL
37. FUEL BOOST PUMP INOP LIGHT
38. SPECIAL STORE UNLOCKED INDICATOR LIGHT
39. SPECIAL STORE UNLOCK HANDLE
40. TACAN RANGE INDICATOR
41. RADIO MAGNETIC INDICATOR (ID-250)
42. EXTERNAL LOAD EMERGENCY JETTISON HANDLE
43. SIGHT SELECTOR UNIT
44. COURSE INDICATOR
45. ALTIMETER
46. STAND-BY ATTITUDE INDICATOR
47. MARKER BEACON INDICATOR LIGHT**
48. AIRSPEED/MACH INDICATOR
49. CLOCK
50. COMMAND RADIO REMOTE CHANNEL INDICATOR
51. DRAG CHUTE HANDLE

*Some F-100F Airplanes
**Some Airplanes

Figure 1-7A

COCKPIT — F-100D LEFT SIDE



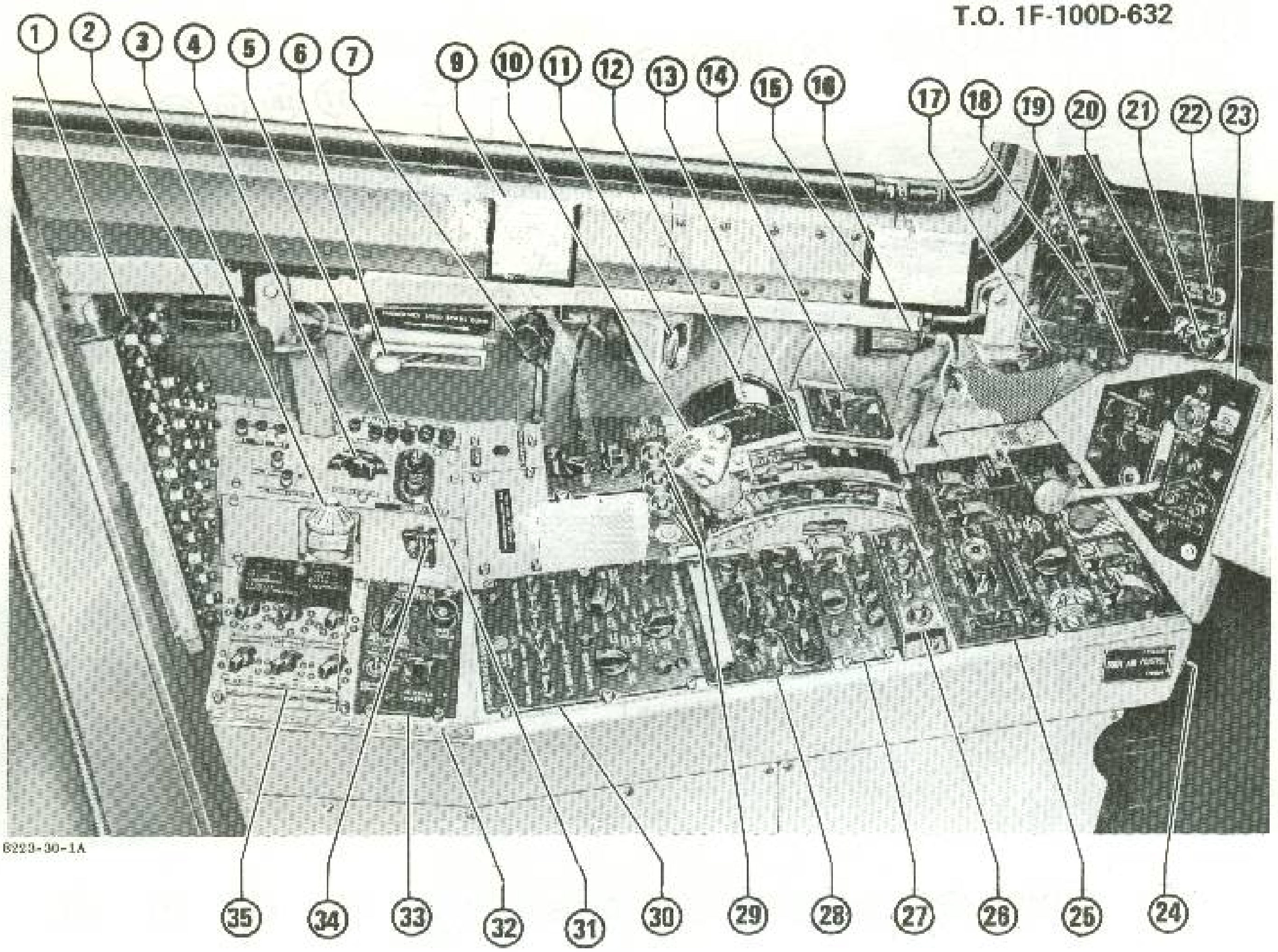
1. CIRCUIT-BREAKER PANEL
2. CONSOLE FLOODLIGHT
3. ANTI-G SUIT PRESSURE-REGULATING VALVE
4. CAMERA SHUTTER SELECTOR SWITCH
5. SPARE LAMPS
6. SPEED BRAKE EMERGENCY DUMP LEVER
7. CONSOLE FLOODLIGHT
8. DELETED
9. ALTIMETER CORRECTION CARD
10. THROTTLE
11. THUNDERSTORM LIGHT
12. WING FLAP HANDLE
13. THROTTLE FRICTION LEVER
14. FLAP EMERGENCY SWITCH
15. RADIO FREQUENCY CARD
16. CONSOLE FLOODLIGHT
17. INSTRUMENT PANEL FLOODLIGHT
18. CANOPY SWITCH
19. CONSOLE FLOODLIGHT
20. CANOPY-NOT-LOCKED CAUTION LIGHT
21. ARRESTING HOOK RELEASE BUTTON
22. LABS YAW-ROLL GYRO CHECK BUTTON
23. LANDING GEAR CONTROL PANEL
24. FOOT AIR CONTROL LEVER
25. ENGINE AND FLIGHT CONTROL PANEL
26. SEEK SILENCE CONTROL PANEL*
27. COMMAND RADIO CONTROL PANEL
28. EXTERNAL LOAD AUXILIARY RELEASE BUTTONS
29. ARMAMENT CONTROL PANEL*
30. GUN CAMERA TIMER
31. CONSOLE AIR OUTLETS
32. AIM-9B/E/J MISSILE CONTROL PANEL
33. GROUND FIRE SWITCH
34. PYLON LOADING SELECTOR SWITCHES

*Some airplanes

Figure 1-8

F-100D COCKPIT LEFT SIDE

TER AIRPLANES
MODIFIED BY
T.O. 1F-100D-632



6223-30-1A

1. CIRCUIT BREAKER PANEL
2. CONSOLE FLOODLIGHT
3. ANTI-G SUIT PRESSURE-REGULATING VALVE
4. CAMERA SHUTTER SELECTOR SWITCH
5. SPARE LAMPS
6. SPEED BRAKE EMERGENCY DUMP LEVER
7. CONSOLE FLOODLIGHT
8. DELETED
9. ALTIMETER CORRECTION CARD
10. THROTTLE
11. THUNDERSTORM LIGHT
12. WING FLAP HANDLE
13. THROTTLE FRICTION LEVER
14. FLAP EMERGENCY SWITCH
15. RADIO FREQUENCY CARD
16. CONSOLE FLOODLIGHT
17. INSTRUMENT PANEL FLOODLIGHT
18. CANOPY SWITCH
19. CONSOLE FLOODLIGHT
20. CANOPY-NOT-LOCKED CAUTION LIGHT
21. ARRESTING HOOK RELEASE BUTTON
22. LABS YAW-ROLL GYRO CHECK BUTTON
23. LANDING GEAR CONTROL PANEL
24. FOOT AIR CONTROL LEVER
25. ENGINE AND FLIGHT CONTROL PANEL
26. AWRS CONTROL PANEL
27. SEEK SILENCE CONTROL PANEL
28. COMMAND RADIO CONTROL PANEL
29. EXTERNAL LOAD AUXILIARY RELEASE BUTTONS
30. ARMAMENT CONTROL PANEL
31. GUN CAMERA TIMER
32. CONSOLE AIR OUTLETS
33. AIM-9B/E/J MISSILE CONTROL PANEL
34. GROUND FIRE SWITCH
35. PYLON LOADING CONTROL PANEL

*Some airplanes

Figure 1-9

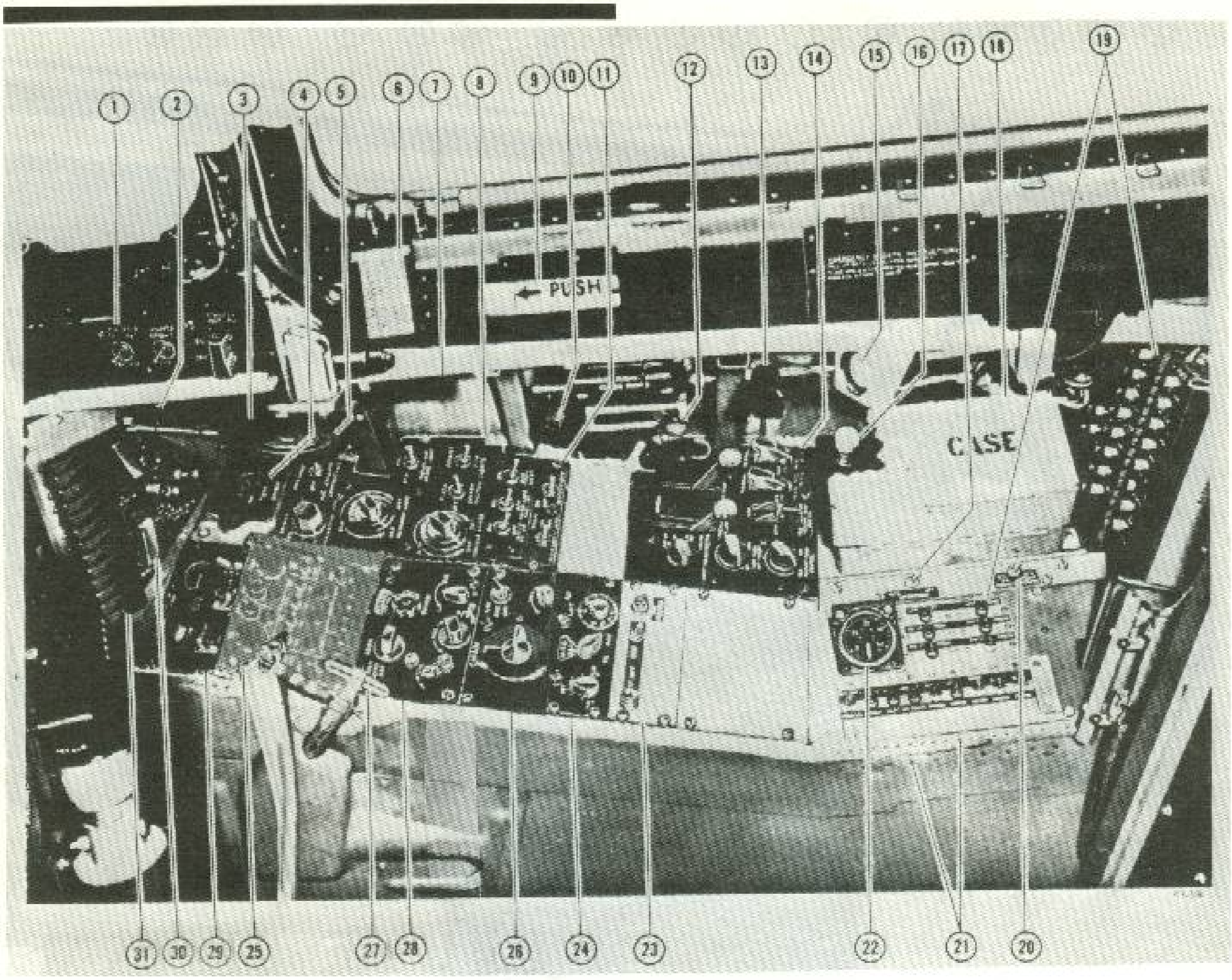
COCKPIT—F-100D RIGHT SIDE

1. STAND-BY INSTRUMENT INVERTER SWITCH
2. CONSOLE FLOODLIGHT
3. INSTRUMENT PANEL FLOODLIGHT
4. LIQUID OXYGEN QUANTITY GAGE
5. NAVIGATION COMPUTER
6. MAGNETIC COMPASS CORRECTION CARD
7. CONSOLE FLOODLIGHT
8. LIGHTING CONTROL PANEL
9. CANOPY INTERNAL MANUAL EMERGENCY RELEASE HANDLE
10. COCKPIT UTILITY LIGHT
11. FLIGHT CONTROL EMERGENCY HYDRAULIC PUMP LEVER
12. AIR CONDITIONING CONTROL PANEL
13. GUN SIGHT GROUND TEST PLUG
14. THUNDERSTORM LIGHT
15. MAP CASE
16. INTERPHONE SWITCH
17. DC FUEL BOOST PUMP TEST SWITCH*
18. CIRCUIT BREAKER PANELS
19. CONSOLE AIR OUTLETS
20. COCKPIT PRESSURE ALTITUDE INDICATOR
21. RADAR BEACON CONTROL PANEL*
22. EXTERIOR FLOODLIGHT - ANTICOLLISION LIGHT PANEL*
23. J-4 COMPASS CONTROL PANEL
24. IFF/SIF CONTROL PANEL
25. TACAN CONTROL PANEL
26. CANOPY ALTERNATE EMERGENCY JETTISON HANDLE
27. RADIO COMPASS CONTROL PANEL
28. OXYGEN REGULATOR CONTROL PANEL
29. ELECTRICAL CONTROL PANEL
30. INDICATOR AND CAUTION LIGHT PANEL

*Some airplanes

Figure 1-10

COCKPIT — F-100D SOME AIRPLANES RIGHT SIDE

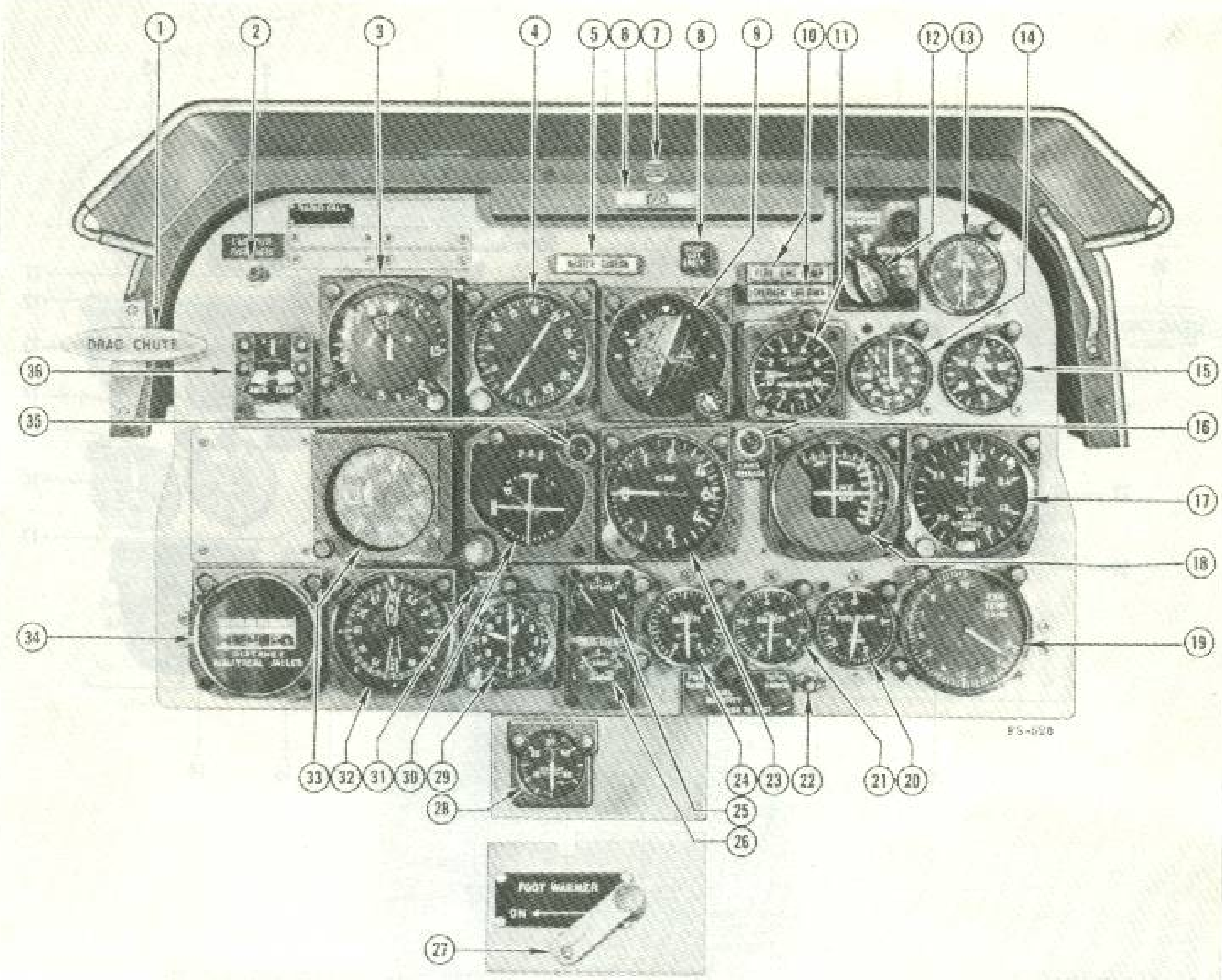


1. STAND-BY INSTRUMENT INVERTER SWITCH PANEL
2. CONSOLE FLOODLIGHT
3. INSTRUMENT PANEL FLOODLIGHT
4. LIQUID OXYGEN QUANTITY GAGE
5. NAVIGATION COMPUTER
6. MAGNETIC COMPASS CORRECTION CARD
7. CONSOLE FLOODLIGHT
8. LIGHTING CONTROL PANEL
9. CANOPY INTERNAL MANUAL EMERGENCY RELEASE HANDLE
10. COCKPIT UTILITY LIGHT
11. EXTERIOR FLOODLIGHT – ANTICOLLISION LIGHT PANEL*
12. FLIGHT CONTROL EMERGENCY HYDRAULIC PUMP LEVER
13. CONSOLE FLOODLIGHT
14. AIR CONDITIONING CONTROL PANEL
15. THUNDERSTORM LIGHT
16. GUN SIGHT GROUND TEST PLUG
17. INTERPHONE SWITCH
18. MAP CASE
19. CIRCUIT-BREAKER PANELS
20. DC FUEL BOOST PUMP TEST SWITCH*
21. CONSOLE AIR OUTLETS
22. COCKPIT PRESSURE ALTITUDE INDICATOR
23. RADAR BEACON CONTROL PANEL
24. J-4 COMPASS CONTROL PANEL
25. IFF/SIF CONTROL PANEL
26. TACAN CONTROL PANEL
27. CANOPY ALTERNATE EMERGENCY JETTISON HANDLE
28. RADIO COMPASS CONTROL PANEL
29. OXYGEN REGULATOR CONTROL PANEL
30. ELECTRICAL CONTROL PANEL
31. INDICATOR AND CAUTION LIGHT PANEL

*Some airplanes

Figure 1-11

INSTRUMENT PANEL—F-100F REAR COCKPIT

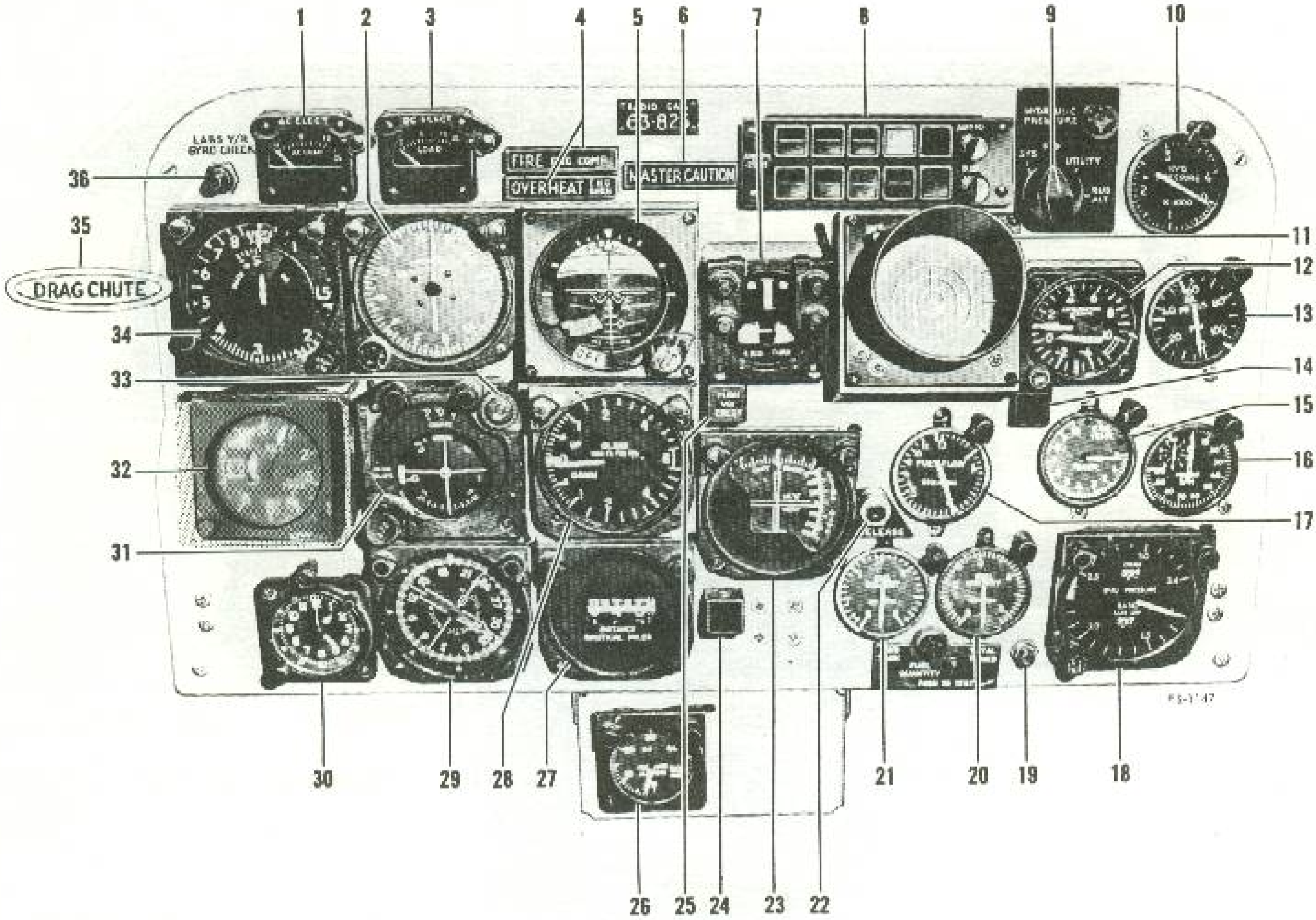


1. DRAG CHUTE HANDLE
2. LABS YAW-ROLL GYRO CHECK BUTTON
3. AIRSPEED/MACH INDICATOR
4. HEADING INDICATOR (MASTER HEADING INDICATOR*)
5. MASTER CAUTION LIGHT
6. SPECIAL STORE INDICATOR LIGHT
7. WINDSCREEN MANUAL EMERGENCY RELEASE KNOB
8. ATTITUDE INDICATOR FAST-ERECTION BUTTON
9. ATTITUDE INDICATOR
10. FIRE- AND OVERHEAT-WARNING LIGHTS
11. ACCELEROMETER
12. HYDRAULIC PRESSURE GAGE SELECTOR SWITCH
13. HYDRAULIC PRESSURE GAGE
14. TACHOMETER
15. OIL PRESSURE GAGE
16. LABS RELEASE INDICATOR LIGHT
17. ENGINE PRESSURE RATIO GAGE
18. LABS DIVE-AND-ROLL INDICATOR
19. EXHAUST TEMPERATURE GAGE
20. FUEL FLOW INDICATOR
21. FUEL QUANTITY GAGE (TOTAL TANKS
22. FUEL QUANTITY GAGE TEST BUTTON
23. VERTICAL VELOCITY INDICATOR
24. FUEL QUANTITY GAGE (FORWARD TANK)
25. AC LOADMETER
26. DC LOADMETER
27. FOOT WARMER LEVER*
28. COCKPIT PRESSURE ALTITUDE INDICATOR
29. CLOCK
30. COURSE INDICATOR
31. TACAN ILS LIGHT
32. RADIO MAGNETIC INDICATOR
33. ALTIMETER
34. TACAN RANGE INDICATOR
35. MARKER BEACON INDICATOR LIGHT
36. TURN-AND-SLIP INDICATOR

*Some airplanes

Figure 1-12

INSTRUMENT PANEL — F-100F RHAW AIRPLANES REAR COCKPIT

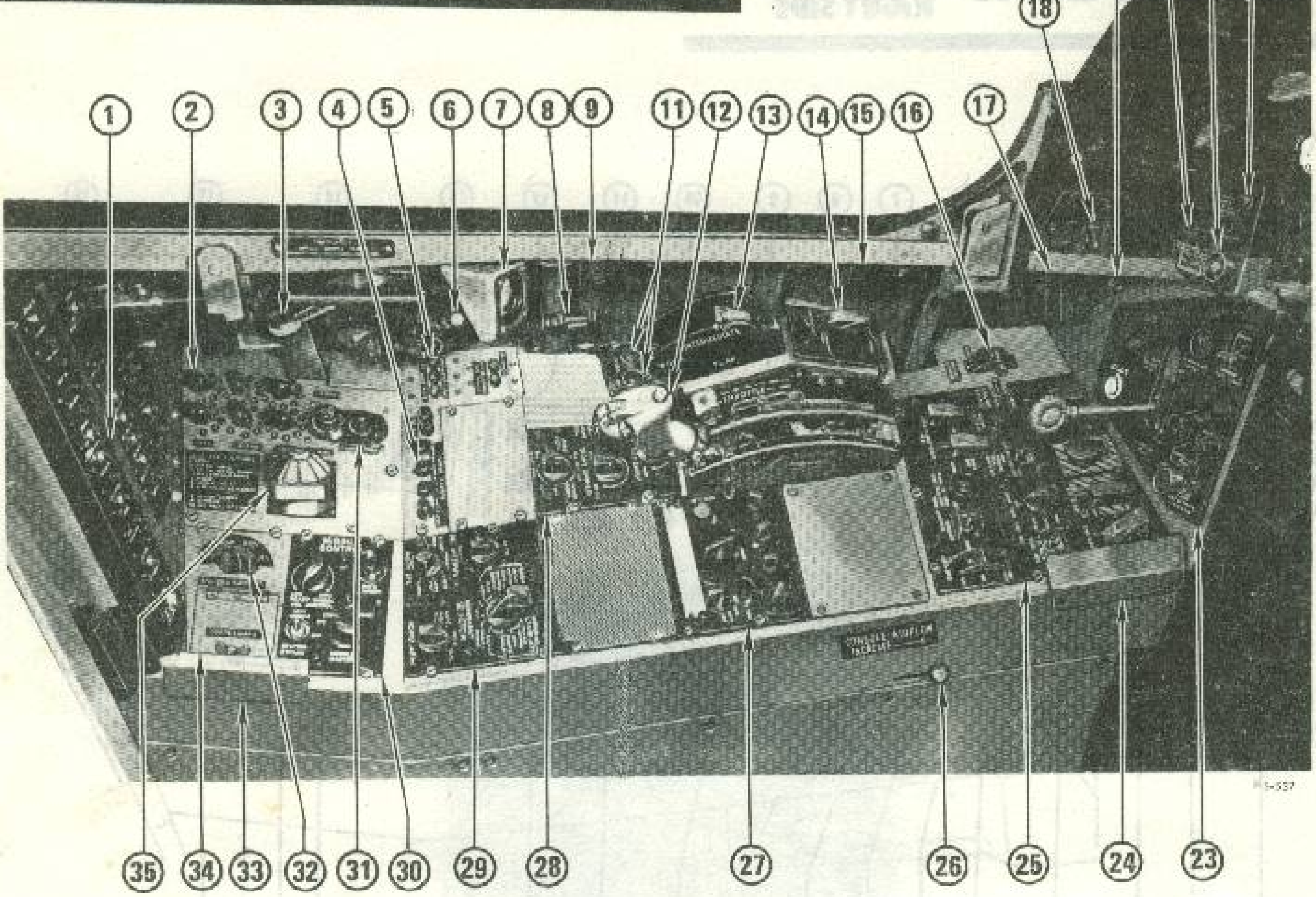


1. AC LOADMETER
2. HEADING INDICATOR
3. DC LOADMETER
4. FIRE-AND-OVERHEAT WARNING LIGHTS
5. ATTITUDE INDICATOR
6. MASTER CAUTION LIGHT
7. TURN-AND-SLIP INDICATOR
8. RHAW INDICATORS
9. HYDRAULIC PRESSURE GAGE SELECTOR SWITCH
10. HYDRAULIC PRESSURE GAGE
11. RHAW VECTOR INDICATOR
12. ACCELEROMETER
13. OIL PRESSURE GAGE
14. RHAW X-DISABLE BUTTON
15. EXHAUST TEMPERATURE GAGE
16. TACHOMETER
17. FUEL FLOW INDICATOR
18. ENGINE PRESSURE RATIO GAGE
19. FUEL QUANTITY GAGE TEST BUTTON
20. FUEL QUANTITY GAGE (TOTAL TANKS)
21. FUEL QUANTITY GAGE (FORWARD TANK)
22. LABS RELEASE INDICATOR LIGHT
23. LABS DIVE-AND-ROLL INDICATOR
24. TACAN ILS LIGHT
25. ATTITUDE INDICATOR FAST ERECTION BUTTON
26. COCKPIT PRESSURE ALTITUDE INDICATOR
27. TACAN RANGE INDICATOR
28. VERTICAL VELOCITY INDICATOR
29. RADIO MAGNETIC INDICATOR
30. CLOCK
31. COURSE INDICATOR
32. ALTIMETER
33. MARKER BEACON INDICATOR LIGHT
34. AIRSPEED/MACH INDICATOR
35. DRAG CHUTE HANDLE
36. LABS YAW-ROLL GYRO CHECK BUTTON

100F-1-A00-29

Figure 1-13

FRONT COCKPIT — F-100F LEFT SIDE

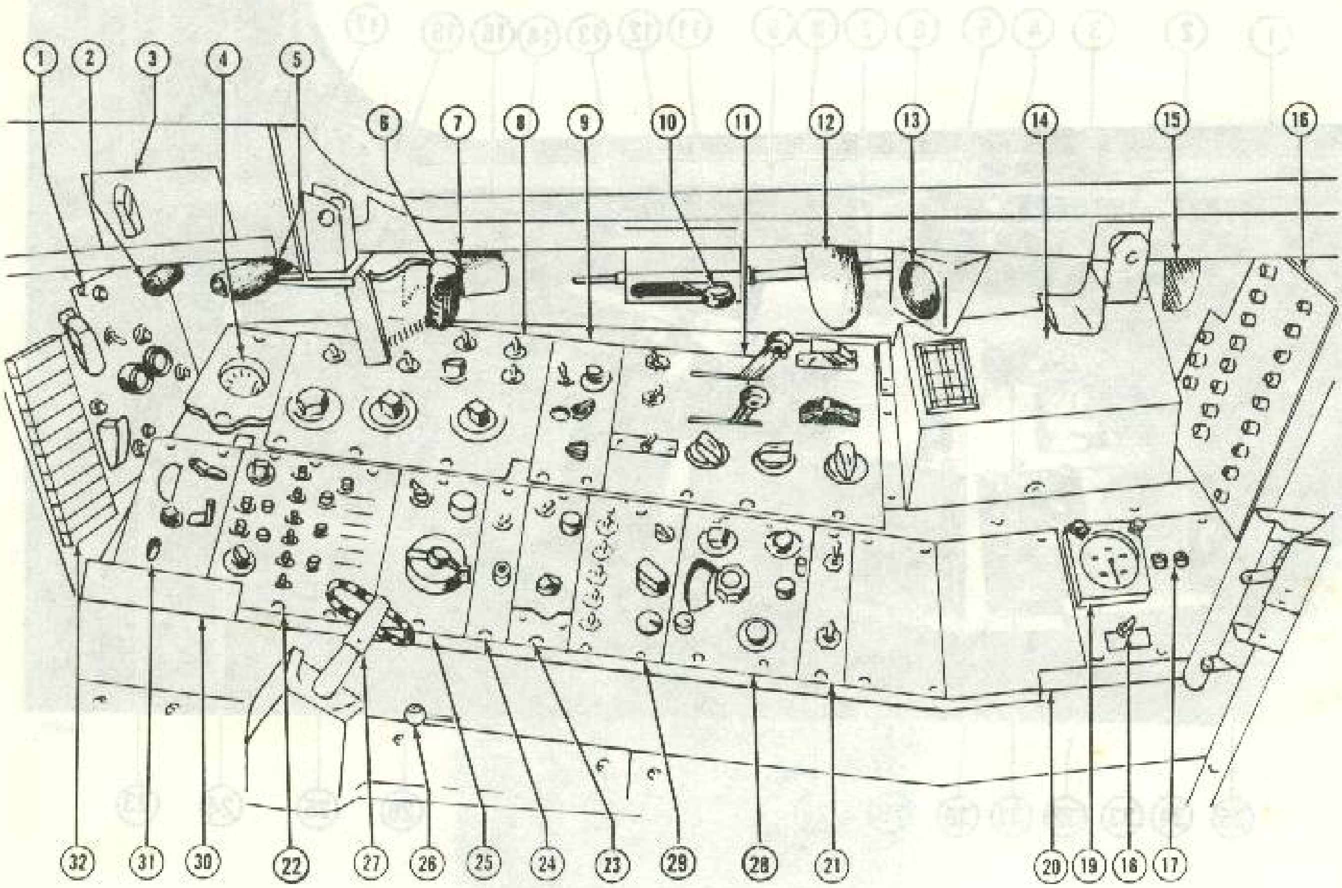


1. CIRCUIT-BREAKER PANEL
2. PYLON LOADING SELECTOR SWITCHES
3. SPEED BRAKE EMERGENCY DUMP LEVER
4. SPARE LAMP PANEL
5. SPECIAL STORE CIRCUIT-BREAKER PANEL
6. EMERGENCY RAM-AIR LEVER
7. THUNDERSTORM LIGHT
8. SIGHT SELECTOR UNIT FLOODLIGHT
9. CONSOLE FLOODLIGHT
10. DELETED
11. EXTERNAL LOAD AUXILIARY RELEASE BUTTONS
12. THROTTLE
13. WING FLAP HANDLE
14. WING FLAP EMERGENCY SWITCH
15. CONSOLE FLOODLIGHT
16. GROUND FIRE SWITCH
17. INSTRUMENT PANEL FLOODLIGHT
18. CANOPY SWITCH
19. CONSOLE FLOODLIGHT
20. CANOPY-NOT-LOCKED WARNING LIGHT
21. ARRESTING HOOK RELEASE BUTTON
22. LABS YAW-ROLL GYRO CHECK BUTTON
23. LANDING GEAR CONTROL PANEL
24. CONSOLE AIR DEFLECTOR
25. ENGINE AND FLIGHT CONTROL PANEL
26. CONSOLE AIRFLOW KNOB*
27. COMMAND RADIO CONTROL PANEL
28. SIGHT AND AUXILIARY RELEASE PANEL
29. ARMAMENT CONTROL PANEL
30. AIM-9B/E/J MISSILE CONTROL PANEL
31. GUN CAMERA TIMER
32. CAMERA SHUTTER SELECTOR SWITCH
33. CONSOLE AIR DEFLECTOR
34. SPARE LAMP CONTAINER
35. ANTI-G SUIT PRESSURE-REGULATING VALVE

*Some airplanes

Figure 1-14

FRONT COCKPIT F-100F-2 THROUGH -16 RIGHT SIDE

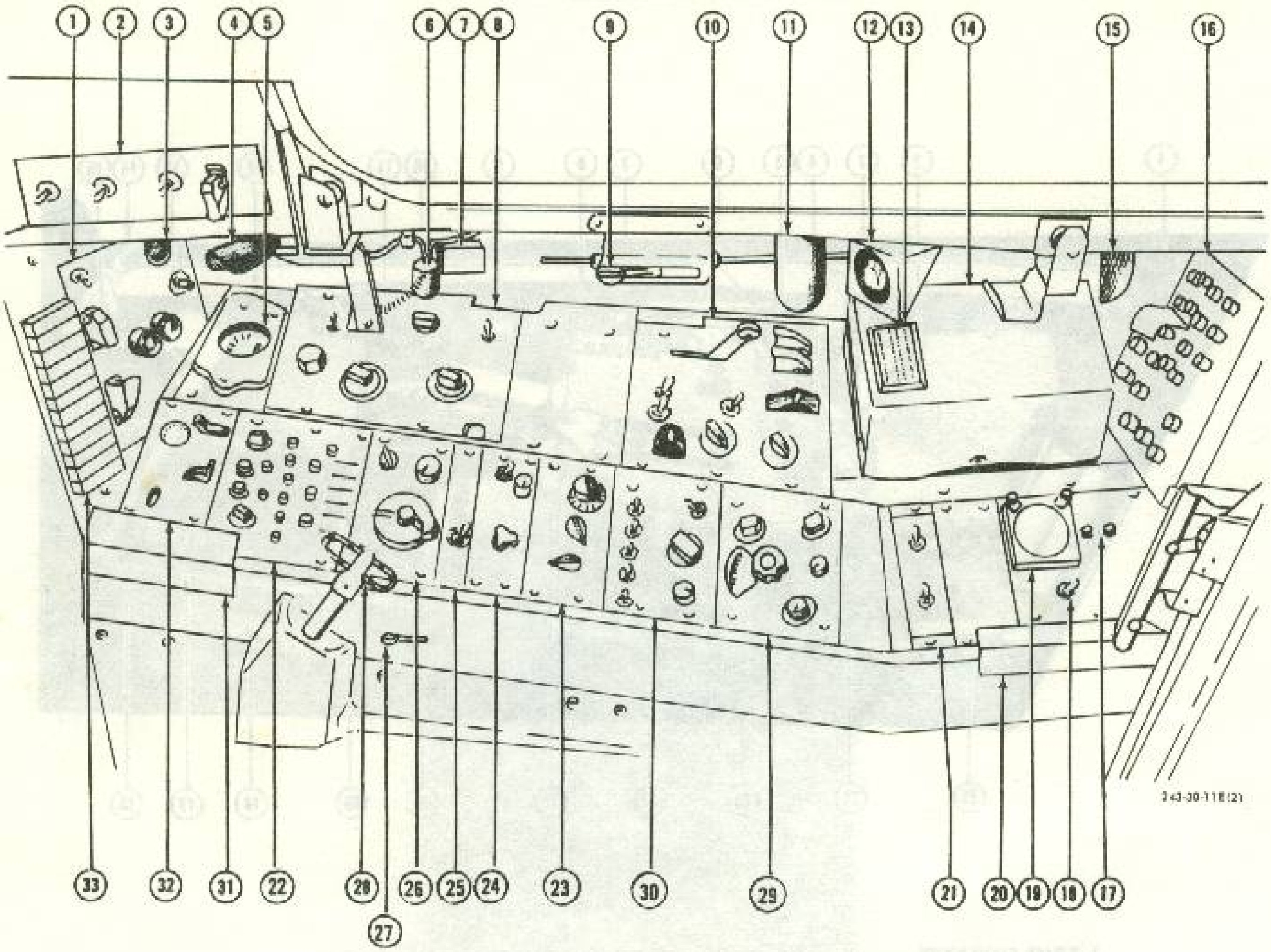


1. ELECTRICAL CONTROL PANEL
2. ELECTRICAL CONTROL PANEL FLOODLIGHT
3. STAND-BY INSTRUMENT INVERTER SWITCH
4. LIQUID OXYGEN QUANTITY GAGE
5. INSTRUMENT PANEL FLOODLIGHT
6. COCKPIT UTILITY LIGHT
7. CONSOLE FLOODLIGHT
8. LIGHTING CONTROL PANEL
9. J-4 COMPASS CONTROL PANEL
10. FLIGHT CONTROL EMERGENCY HYDRAULIC PUMP LEVER
11. AIR CONDITIONING CONTROL PANEL
12. CONSOLE FLOODLIGHT
13. THUNDERSTORM LIGHT
14. MAP CASE
15. CONSOLE FLOODLIGHT
16. CIRCUIT-BREAKER PANEL
17. CIRCUIT-BREAKER PANEL
18. FUEL BOOST PUMP TEST SWITCH*
19. COCKPIT PRESSURE ALTITUDE INDICATOR
20. CONSOLE AIR DEFLECTOR
21. EXTERIOR FLOODLIGHT PANEL*
22. IFF/SIF CONTROL PANEL
23. ILS CONTROL PANEL
24. RADIO CONTROL TRANSFER PANEL
25. TACAN CONTROL PANEL
26. CONSOLE AIRFLOW KNOB*
27. CANOPY ALTERNATE EMERGENCY JETTISON HANDLE
28. RADIO COMPASS CONTROL PANEL
29. COMMUNICATION AMPLIFIER CONTROL PANEL
30. CONSOLE AIR DEFLECTOR
31. OXYGEN REGULATOR CONTROL PANEL
32. INDICATOR AND CAUTION LIGHT PANEL

*Some airplanes

Figure 1-15

FRONT COCKPIT — F-100F-20 RIGHT SIDE

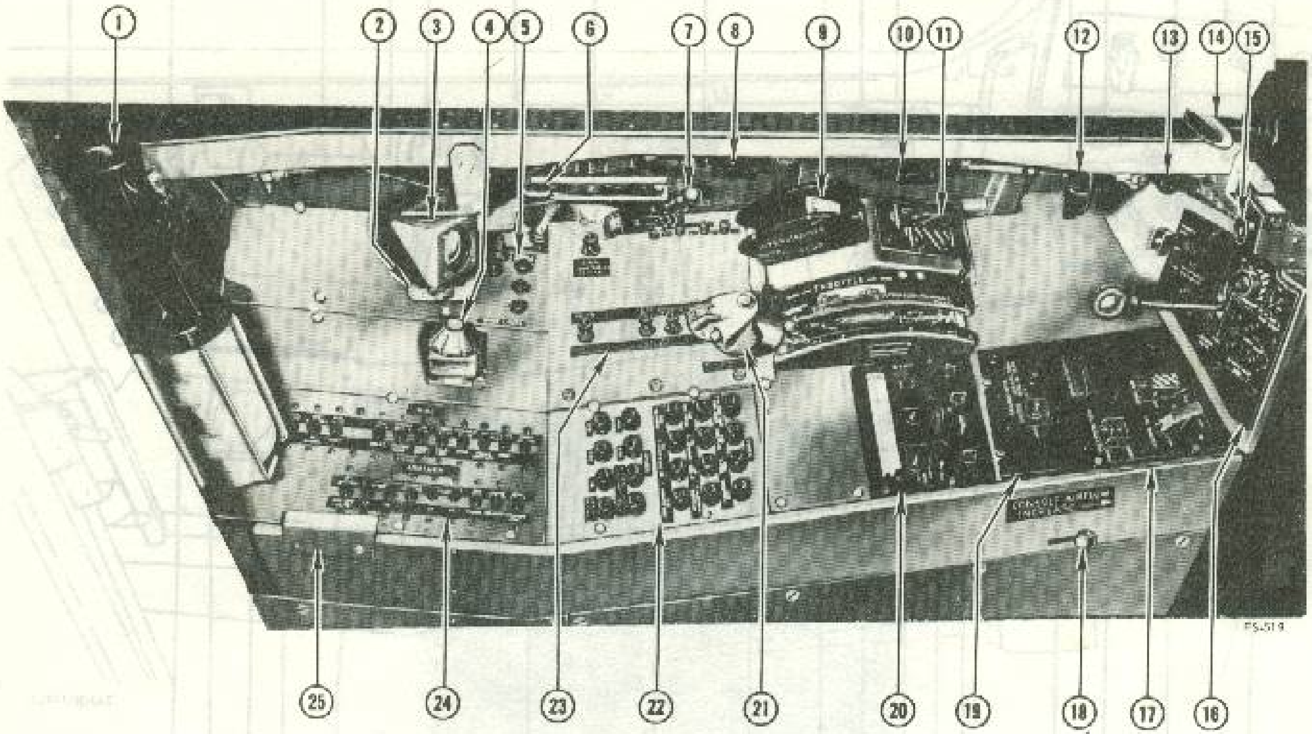


1. ELECTRICAL CONTROL PANEL
2. STAND-BY INSTRUMENT INVERTER PANEL
3. ELECTRICAL CONTROL PANEL FLOODLIGHT
4. INSTRUMENT PANEL FLOODLIGHT
5. LIQUID OXYGEN QUANTITY GAGE
6. COCKPIT UTILITY LIGHT
7. CONSOLE FLOODLIGHT
8. LIGHTING CONTROL PANEL
9. FLIGHT CONTROL EMERGENCY HYDRAULIC PUMP LEVER
10. AIR CONDITIONING CONTROL PANEL
11. CONSOLE FLOODLIGHT
12. THUNDERSTORM LIGHT
13. ENGINE PRESSURE RATIO CARD
14. MAP CASE
15. CONSOLE FLOODLIGHT
16. CIRCUIT-BREAKER PANEL
17. CIRCUIT-BREAKER PANEL
18. DC FUEL BOOST PUMP TEST SWITCH*
19. COCKPIT PRESSURE ALTITUDE INDICATOR
20. CONSOLE AIR DEFLECTOR
21. EXTERIOR FLOODLIGHT - ANTICOLLISION LIGHT PANEL*
22. IFF/SIF CONTROL PANEL
23. J-4 COMPASS CONTROL PANEL
24. ILS CONTROL PANEL
25. TACAN-ILS CHANGE-OVER PANEL
26. TACAN CONTROL PANEL
27. CONSOLE AIRFLOW KNOB
28. CANOPY ALTERNATE EMERGENCY JETTISON HANDLE
29. RADIO COMPASS CONTROL PANEL
30. COMMUNICATION AMPLIFIER CONTROL PANEL
31. CONSOLE AIR DEFLECTOR
32. OXYGEN REGULATOR CONTROL PANEL
33. INDICATOR AND CAUTION LIGHT PANEL

*Some airplanes

Figure 1-16

REAR COCKPIT — F-100F LEFT SIDE

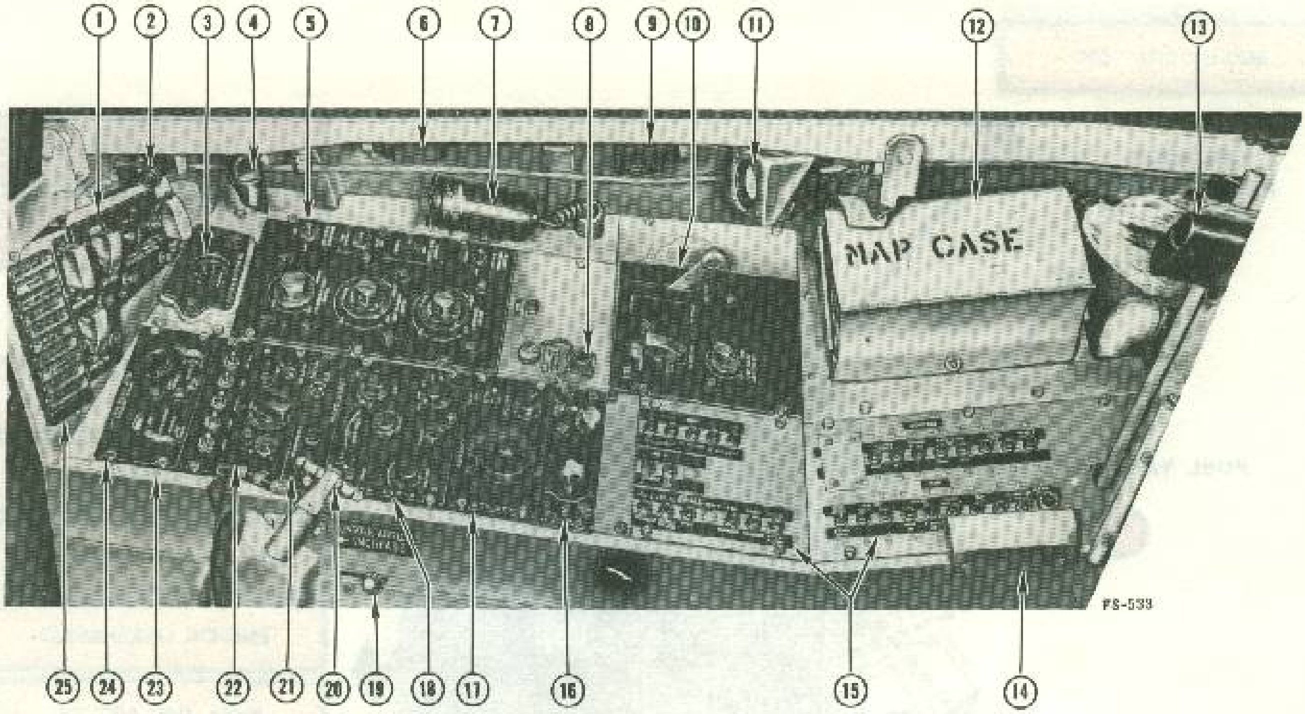


1. RELIEF CONTAINER
2. SPARE LAMP CONTAINER
3. THUNDERSTORM LIGHT
4. ANTI-G SUIT PRESSURE-REGULATING VALVE
5. SPARE LAMP PANEL
6. SPEED BREAK EMERGENCY DUMP LEVER
7. EMERGENCY RAM-AIR LEVER
8. CONSOLE FLOODLIGHT
9. WING FLAP HANDLE
10. CONSOLE FLOODLIGHT
11. WING FLAP EMERGENCY SWITCH
12. INSTRUMENT PANEL FLOODLIGHT
13. LANDING GEAR CONTROL PANEL FLOODLIGHT
14. DRAG CHUTE HANDLE
15. ARRESTING HOOK RELEASE BUTTON
16. LANDING GEAR CONTROL PANEL
17. CONSOLE AIR OUTLETS
18. CONSOLE AIRFLOW KNOB*
19. ENGINE AND FLIGHT CONTROL PANEL
20. COMMAND RADIO CONTROL PANEL
21. THROTTLE
22. FUSE PANEL
23. CIRCUIT-BREAKER PANEL*
24. CIRCUIT-BREAKER PANEL
25. CONSOLE AIR DEFLECTOR

* Some airplanes

Figure 1-17

REAR COCKPIT—F-100F RIGHT SIDE



1. ELECTRICAL CONTROL PANEL
2. ELECTRICAL CONTROL PANEL FLOODLIGHT
3. LIQUID OXYGEN QUANTITY GAGE
4. INSTRUMENT PANEL FLOODLIGHT
5. LIGHTING CONTROL PANEL
6. CONSOLE FLOODLIGHT
7. COCKPIT UTILITY LIGHT
8. AUXILIARY CAMERA RECEPTACLE
9. CONSOLE FLOODLIGHT
10. AIR CONDITIONING CONTROL PANEL
11. THUNDERSTORM LIGHT
12. MAP CASE
13. CONSOLE FLOODLIGHT
14. CONSOLE AIR DEFLECTOR
15. CIRCUIT-BREAKER PANELS
16. ILS CONTROL PANEL
17. TACAN CONTROL PANEL
18. RADIO COMPASS CONTROL PANEL
19. CONSOLE AIRFLOW KNOB *
20. CANOPY ALTERNATE EMERGENCY JETTISON HANDLE
21. RADIO CONTROL TRANSFER PANEL
22. COMMUNICATION AMPLIFIER CONTROL PANEL
23. CONSOLE AIR OUTLETS
24. OXYGEN REGULATOR CONTROL PANEL
25. INDICATOR AND CAUTION LIGHT PANEL

* Some airplanes.

Figure 1-18

F-100D/F FRONT COCKPIT INDICATOR, CAUTION, AND

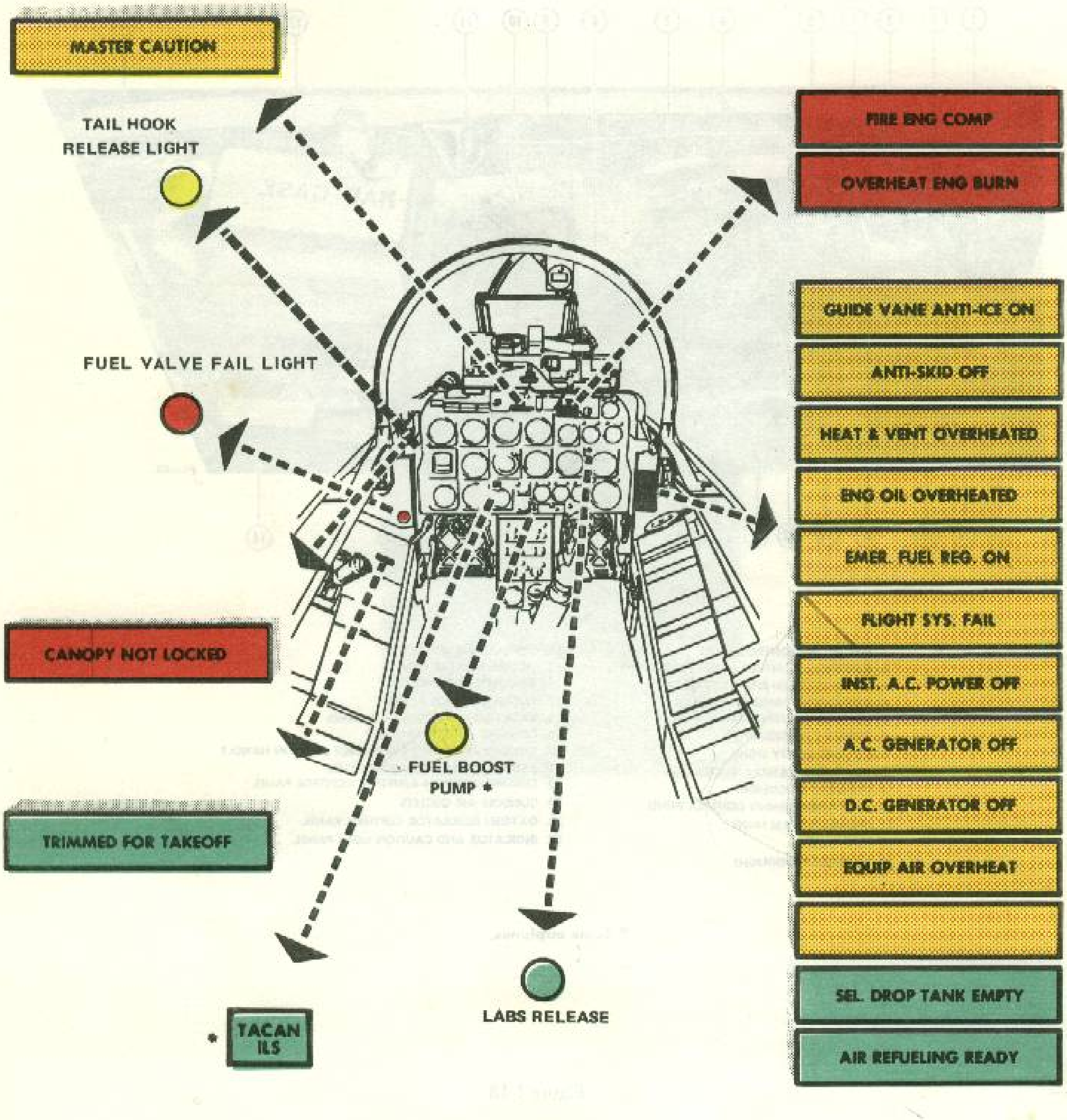


Figure 1-19 (Sheet 1 of 2)

WARNING LIGHTS F-100F REAR COCKPIT

NOTE

Lights shown on for information only.

* SOME AIRPLANES

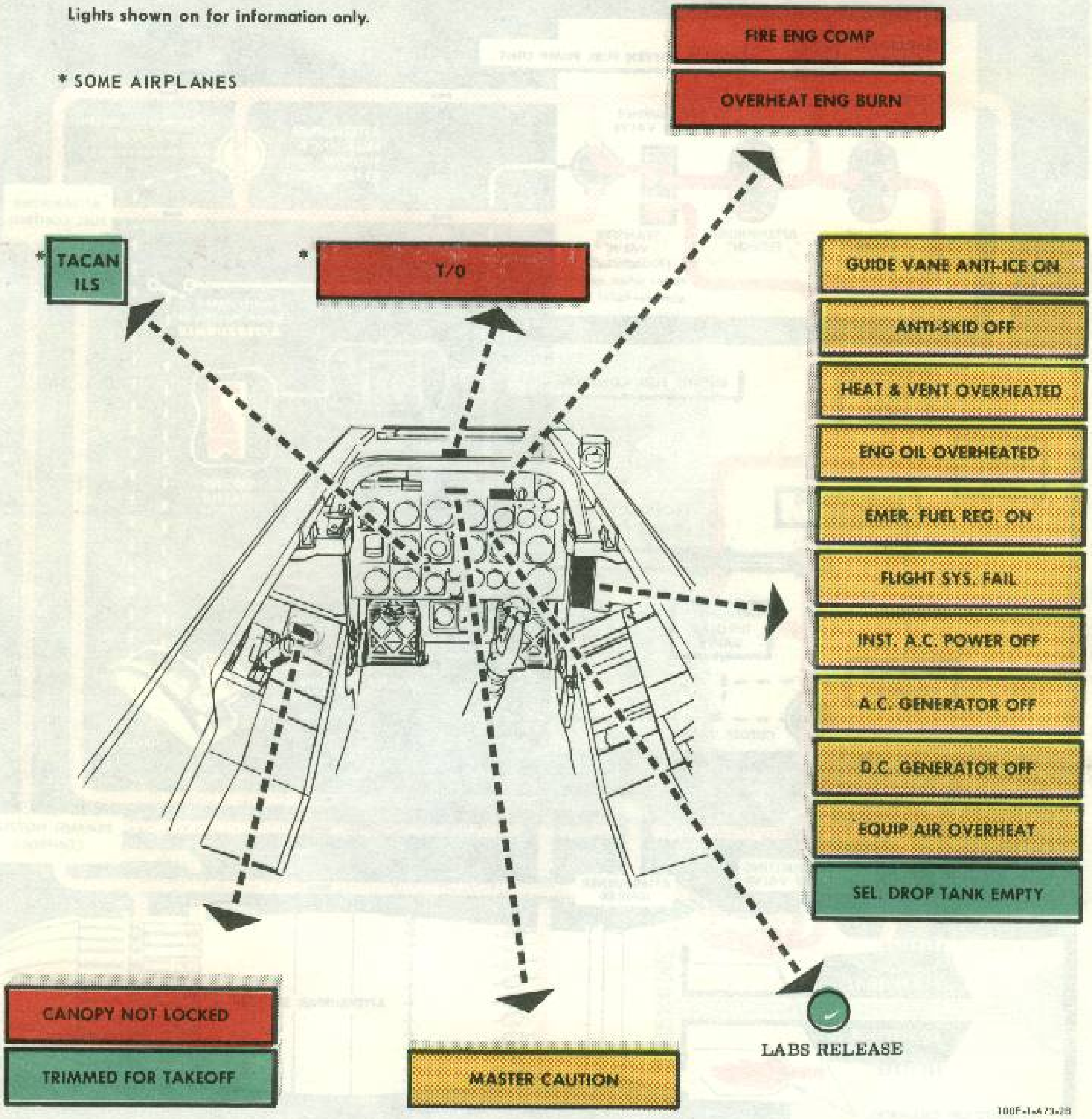


Figure 1-19 (Sheet 2 of 2)

ENGINE FUEL CONTROL SYSTEM

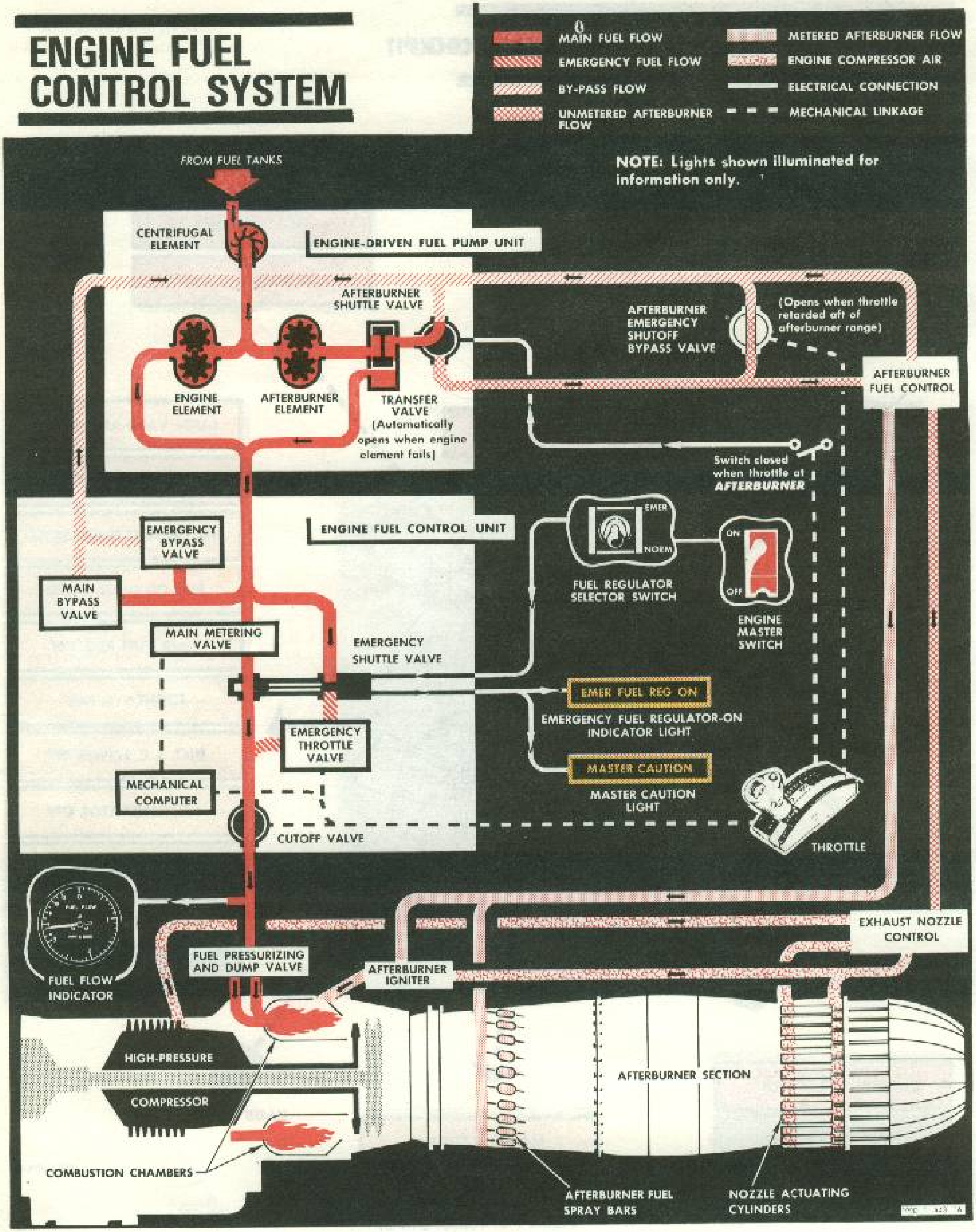


Figure 1-20

EMERGENCY FUEL CONTROL SYSTEM. The emergency fuel control system must be selected by the pilot, to regulate fuel flow to the engine if the normal system fails. When the emergency system is engaged, the normal system is disengaged. Fuel flow is then metered by the emergency throttle valve in the fuel control unit that is mechanically connected to the throttle. The emergency system is compensated for airspeed changes and for altitude changes up to about 30,000 feet. At higher altitudes, the throttle must be successively retarded to prevent engine overspeed and overtemperature. The emergency bypass valve routes excess fuel back to the discharge of the centrifugal element of the fuel pump unit.

BURNER PRESSURE LIMITER. The burner pressure limiter in the engine fuel control unit automatically reduces fuel flow when burner pressure approaches the maximum safe limit, based on engine case strength. Limiter action occurs only at low altitude and produces a slight rpm loss which may be accompanied by an engine surge. This surge, which should not be confused with a compressor stall, is not harmful and can be eliminated by a slight reduction in engine rpm or airspeed. Under extreme cold-weather conditions, limiter action may occur just after takeoff and before initial climb. At outside air temperatures of 60°F and above, the limiter will operate at about 0.80 to 0.85 Mach at sea level. (Refer to Compressor Stall in section VII.)

FUEL CUTOFF VALVE. A cutoff valve in the fuel control unit is closed mechanically when the throttle is retarded to OFF, shutting off all fuel to the engine.

Fuel Pressurizing and Dump Valve.

The engine fuel pressurizing and dump valve (figure 1-20) automatically directs fuel to one or both fuel manifolds, depending on engine operating conditions. During engine shutdown, when the fuel cutoff valve is closed, the dump valve opens to permit fuel remaining in both manifolds to drain overboard.

ENGINE CONTROLS.

Throttle.

Engine thrust is controlled by a throttle (figure 1-21), which is mechanically linked to the fuel control unit for regulating engine output. The throttles on F-100F airplanes are interconnected by cables, and any movement of one throttle is duplicated by the other; however, each is independent in outboard-inboard travel. The throttle in the rear cockpit cannot be moved to OFF (stop-cocked). If necessary, in an emergency, the rear cockpit occupant can shut down the engine by retarding the throttle to IDLE (to prevent damage to fuel lines) and moving the fuel system shutoff switch to OFF.

The throttle also controls various engine and fuel system units. When the engine master switch is ON, the first outboard and forward movement of the throttle from OFF (stopcock) starts the forward fuselage tank-mounted, electrical fuel booster pumps, partially opens the fuel cutoff valve, and sets up the power circuit to the float-controlled wing tank scavenge pumps. In addition, if the starter and ignition button has been pressed, this initial throttle movement energizes the engine ignition circuit. Additional forward and inboard movement of the throttle to IDLE fully opens the fuel cutoff valve, and the fuel control system then automatically meters fuel to the engine according to throttle setting.

When the throttle is moved outboard in the forward part of the quadrant from MILITARY to AFTERBURNER, the afterburner system is actuated. (Refer to Engine Afterburner System in this section.) An override spring prevents the throttle from being moved inadvertently into the afterburner range and holds the throttle outboard in the quadrant when the afterburner has been selected. When the throttle is moved inboard, the afterburner is shut down. About 9 pounds of force is normally required to move the throttle into afterburner, and about 18 pounds to come out.

NOTE

On F-100F airplanes, when the throttle (that was moved outboard to initiate afterburning) is moved inboard, the afterburner is shut down. (The throttle that was not used to initiate afterburning cannot be used to shut down the afterburner except by being moved aft. This requires a firm pull aft, to force the other throttle against a cam to move it inboard out of afterburning. The afterburner in the F-100D may also be shut down in the same manner.)

When the throttle is retarded to OFF, the fuel booster pumps are de-energized, the wing tank scavenge pump

THROTTLES

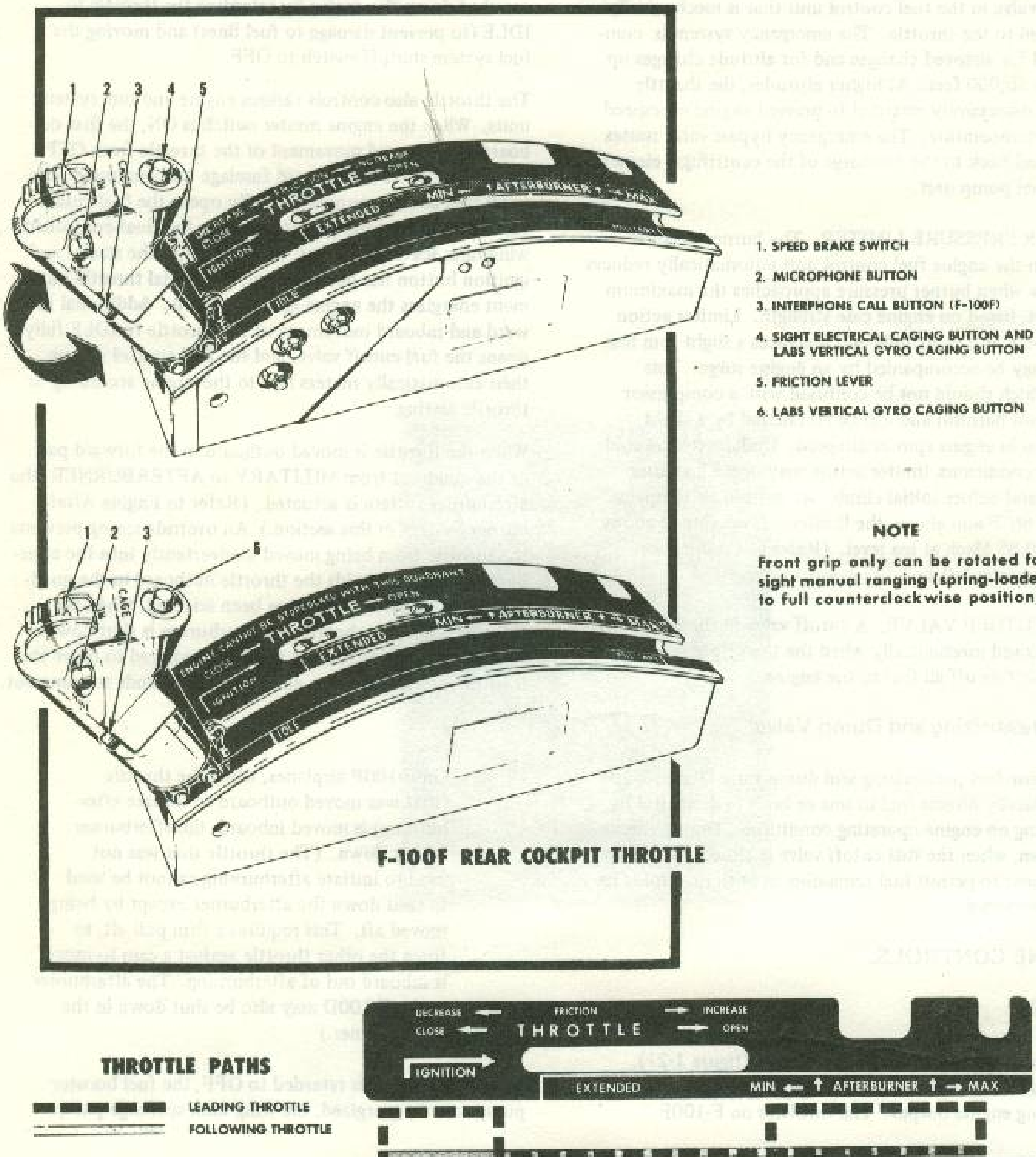


Figure 1-21

circuit is opened, and the fuel cutoff valve is closed. Also, the ac generator is taken "off the line" when the throttle is OFF.

NOTE

> To stopcock the throttle, it is necessary to move the throttle outboard to clear the IDLE stop, then straight back to the limit of rearward motion, and then inboard to OFF.

The throttle grip contains various switches. Rotating the grip clockwise supplies manual range data to the gun sight. (On F-100F airplanes, the front throttle grip only supplies manual range data to the gun sight.)

THROTTLE FRICTION LEVER. Adjustment of throttle travel friction is controlled by a lever. (See figure 1-21.) Moving the lever forward increases the friction on throttle travel. On F-100F airplanes, the rear throttle friction lever is preset and nonadjustable.

Engine Master Switch.

The engine master switch (figure 1-22) controls (by primary bus power) electrical power for various engine and fuel system units.

NOTE

> On F-100F airplanes, both engine master switches must be ON for the circuits controlled by the master switch to be operable.

- The attitude indicating systems are inoperative until the engine master switch is ON.

When the switch is ON, the tank-mounted fuel transfer pumps are actuated if main ac bus power is available. Moving the master switch to ON also completes the circuits to the starter and ignition button, to the fuel regulator selector switch, and to the throttle-actuated limit switch, so that the tank-mounted fuel booster pumps will operate when the throttle is moved from OFF. The power circuit to the wing tank scavenge pumps is also completed when the engine master switch is ON (if the throttle is not OFF) to permit these pumps to function when actuated by float switches in the fuselage forward tank. When the engine master switch is moved to OFF (switch guard raised), the fuel booster, transfer, and scavenge pumps are shut off, and the ignition circuit is interrupted.

Fuel Regulator Selector Switch.

The primary-bus-powered fuel regulator selector switch (figure 1-22) positions the emergency shuttle valve in the fuel control unit, to select either the normal or the emergency fuel control system and is effective only when the engine master switch is ON. When the switch is at NORM, the shuttle valve is positioned so that fuel flow is controlled by the normal fuel control system. (On F-100F Airplanes, the fuel regulator switches in both cockpits must be at NORM to permit normal operations of the fuel control system.) If the normal fuel control fails or does not function properly, moving the switch to EMER positions the valve so that fuel flow is regulated by the emergency fuel control system. (The normal fuel control system is inoperative when the emergency system is engaged.) An indicator light in the cockpit comes on when the fuel regulator selector switch is at EMER.

Emergency Fuel Regulator-On Indicator Light.

The placard-type emergency fuel regulator-on indicator light (figure 1-19) comes on when the emergency fuel control system is engaged by the fuel regulator selector switch. The light is powered by the primary bus, and operation of the bulbs in the light may be tested by the indicator light test circuit.

ENGINE INDICATORS.

Engine Pressure Ratio Gage.

The engine pressure ratio gage (22, figure 1-6; 23, figure 1-7; 17, figure 1-12; 18, figure 1-13) shows the ratio of engine turbine discharge pressure to pitot pressure. The gage is used to determine whether engine thrust at full throttle is acceptable for takeoff. (Refer to Thrust-RPM Relationship in section VII.) Windows in the dial face show the takeoff pressure ratio and the cruise pressure ratio, which are adjustable by the index marker adjustment knob. Pushing in and turning the knob sets the takeoff pressure ratio (figure 2-5) and moves the takeoff index marker to the dial setting that corresponds to the figures in the TAKEOFF window.

ENGINE AND FLIGHT CONTROL PANEL

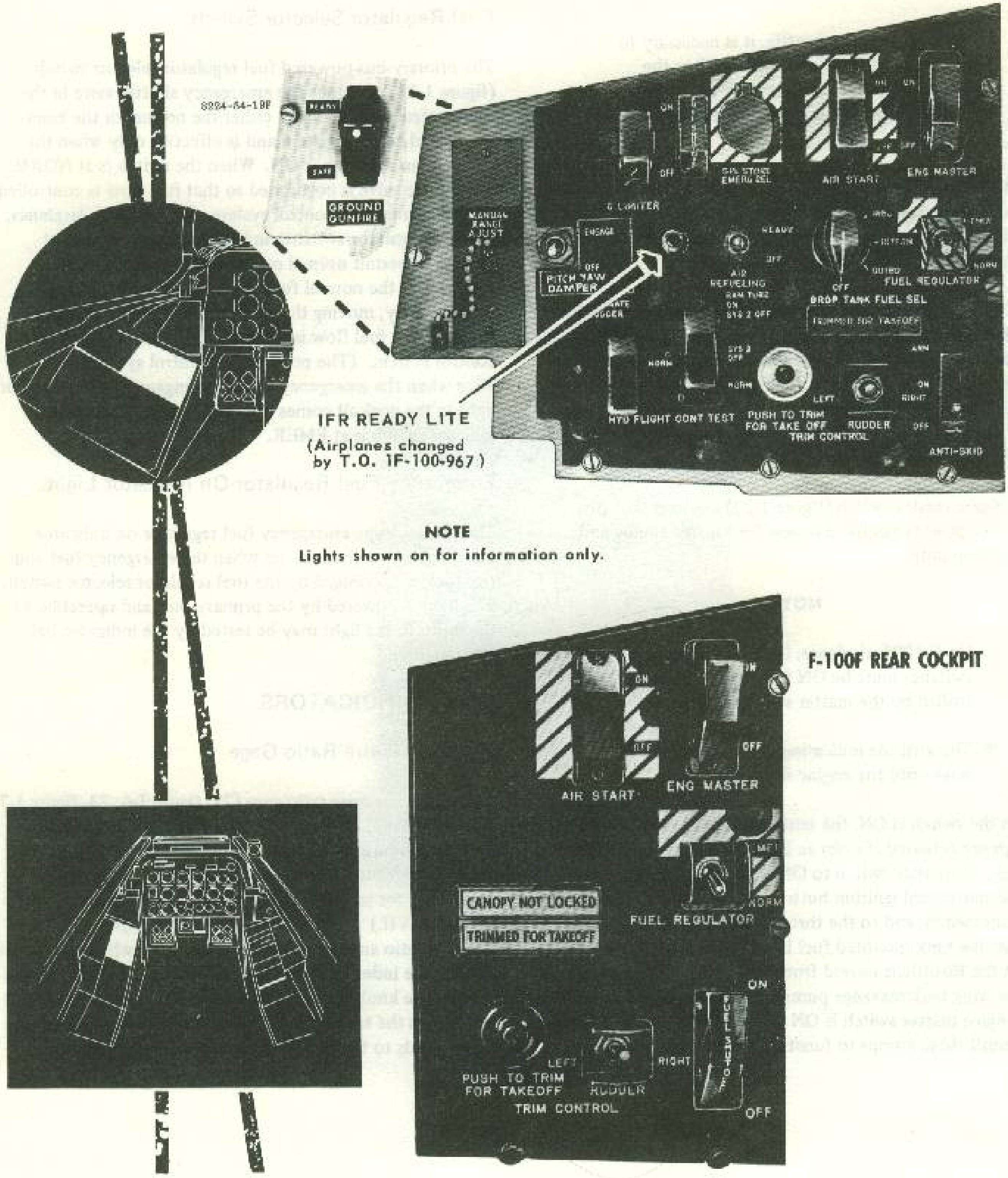


Figure 1-22

Pulling out and turning the knob sets the cruise pressure ratio and moves the cruise index marker to correspond with the figures in the CRUISE window. Because of the lag in the instrument, the indicating pointer may be slow to respond to throttle movements and is not satisfactory for cruise use. The pressure ratio gage is powered by single-phase power from the main ac bus.

NOTE

If main ac bus power fails, the gage becomes inoperative and the indicating pointer may remain fixed at the setting prevailing at the time of power failure.

Exhaust Temperature Gage.

The exhaust temperature gage (18, figure 1-6; 22, figure 1-7; 19, figure 1-12; 15, figure 1-13) shows engine exhaust temperature in degrees centigrade. Gage indications are received from the thermocouples in the tail pipe. The temperature indicator system is of the self-generating type and, therefore, does not require power from the airplane electrical system.

Oil Pressure Gage.

The engine oil pressure gage (17, figure 1-6; 19, figure 1-7; 15, figure 1-12; 13, figure 1-13) indicates oil pump discharge pressure above the gear case pressure in pounds per square inch. The gage is electrically operated and is powered by the single-phase ac instrument bus. (Refer to Oil Pressure in section VII.)

NOTE

Oil pressure will have a tendency to follow the throttle. This condition is normal provided pressure stabilizes between minimum and maximum limits.

Tachometer.

The tachometer (19, figure 1-6; 21, figure 1-7; 14, figure 1-12; 16, figure 1-13) registers engine speed in percentage of the approximate maximum rpm (9980) of the high-speed compressor rotor. The tachometer receives its power from a tachometer generator that is geared to the engine accessory section driven by the high-speed compressor rotor, and is therefore independent of the airplane electrical system.

NOTE

Refer to Thrust-RPM Relationship in section VII.

Fuel Flow Indicator.

The fuel flow indicator (24, figure 1-6; 26, figure 1-7; 20, figure 1-12; 17, figure 1-13) shows the rate of fuel flow from the fuel control unit to the engine in pounds per hour. The flow indicator is electrically operated by power from the single-phase ac instrument bus.

NOTE

The flow indicator does not show fuel flow to the afterburner system.

- The fuel flow indicator indicates approximate fuel flow and should not be used for exact in-flight planning.

ENGINE STARTER AND IGNITION SYSTEMS.

Cartridge-Pneumatic Starter System.

When the cartridge mode is used, the cartridge-pneumatic, turbine-type starter is a self-contained unit that requires no ground support equipment.

The starter turbine is driven by hot high-pressure gases from a replaceable cartridge with a slow-burning propellant that is electrically fired when the starter and ignition button is pressed. (On F-100D Airplanes, a spare cartridge is carried behind the left expended link bay.) The cartridge starter loading breech is within an access panel near the external air receptacle. (See figure 1-41.) Near the breech is a warning light to indicate electrical power to the cartridge firing circuit. If a cartridge start is not required, a normal pneumatic start can be accomplished using an external source of compressed air. (The receptacle for connecting the air supply line is within an access door on the lower surface of the fuselage, behind the main gear wheel wells.) A switch, actuated by the external air source hose, makes the cartridge firing circuit inoperative when the hose is connected for a pneumatic start.

WARNING

When a misfire or hangfire occurs the cartridge must be removed before a pneumatic start is attempted. The engine must not be started nor the aircraft flown with a live cartridge remaining in the Starter Breech.

NOTE

Before a pneumatic start is made, the cartridge must be removed from the starter breech and stored.

- For cartridge malfunctions, refer to Engine Starter Cartridge Malfunctions in section VII.
- Cartridge starts should be made as required. Perform one pneumatic start for every four cartridge starts to assist in removing residue from the starter.

CARTRIDGE POWER-ON WARNING LIGHT. The cartridge power-on warning light (figure 1-41), in the cartridge starter bay, is powered by the primary bus and comes on to warn that the firing circuit is energized. This red push-to-test light should always be checked and/or tested before a cartridge is inserted or removed.

Ignition System.

The engine ignition system is used only during engine starting, because combustion is continuous after the engine is operating. The system has two high-frequency ignition units (which convert dc power from the primary bus to high-tension ac) and two igniter plugs. If the engine fails to start and the starter is shut off, the ignition circuit is de-energized at the same time. A separate switch permits the ignition circuit to be engaged for air starts.

Engine Starter and Ignition System Controls and Indicators.

STARTER AND IGNITION BUTTON. The starter and ignition button (figure 1-29), not in the rear cockpit, controls pneumatic and cartridge ground starts. Momentarily pressing the button (when the engine master switch is ON) supplies primary bus power to fire the cartridge. When the throttle is moved outboard from OFF, after the button is pressed, primary bus power energizes the engine ignition circuit. (If the engine master switch is ON and the throttle is OFF, pressing the starter and ignition button fires the cartridge.) The starter control relay keeps the starter and ignition circuits energized until engine rpm reaches about 50%. Both circuits are then opened automatically by centrifugal switches. An engine ignition-on indicator light is in the cap of the starter and ignition button.

AIR START SWITCH. The two-position air start switch (figure 1-22) is used to energize the ignition circuit for in-flight engine starts. Moving the switch to ON, when the engine master and battery switches are ON and the throttle is moved from OFF, directs primary bus power to the ignition units. While the air start switch is ON, the dc generator is automatically cut out of the electrical system and the power source for the ac instrument busses is transferred from the ac generator to the standby instrument inverter. DC generator output is automatically restored when the air start switch is moved to OFF.

STARTER AND IGNITION STOP BUTTON. The starter and ignition stop button (figure 1-29) is used during ground starting to shut off the starter and ignition circuits if the engine fails to start, or whenever it is necessary to abort a ground start. Pressing the button cuts off primary bus power to the ignition and starter control circuits so that the ignition circuit is de-energized. It is not necessary to use the button after normal starts or after an air start.

ENGINE IGNITION-ON INDICATOR LIGHT. The ignition-on indicator light (figure 1-29) in the cap of the starter and ignition button, is illuminated by primary bus power whenever the engine ignition circuit is energized. The bulb in the ignition-on light may be tested for operation by the indicator light test circuit. On F-100F airplanes, the rear cockpit light is a separate push-to-test type.

ENGINE AFTERBURNER SYSTEM.

Afterburning increases exhaust temperature, which increases the exhaust velocity for additional thrust. Because of its high fuel consumption, the afterburner is intended to be operated for short operational periods only. Afterburner operation is controlled by inboard and outboard movement of the throttle.

NOTE

Afterburner operation cannot be obtained if the engine element of the engine-driven fuel pump fails.

AFTERBURNER FUEL CONTROL.

Fuel flow to the afterburner system is controlled and regulated by the afterburner fuel control. (See figure 1-20.) When the throttle is moved outboard, the afterburner shuttle valve in the engine-driven fuel pump unit is opened electrically to send fuel from the afterburner element of the pump to the afterburner fuel control. The control supplies metered fuel to the afterburner igniter, and the afterburner fuel spray bars. Unmetered fuel from the control actuates the exhaust nozzle control unit to open the nozzle.

Fuel flow from the afterburner fuel control is controlled by compressor discharge pressure. Because this pressure is governed by airspeed, altitude, and engine speed, the pilot has no direct control over afterburner fuel flow. However, during afterburner operation, a thrust variation, ranging between the maximum available thrust and the equivalent of about 50 percent afterburning, can be obtained by advancing or retarding the throttle (in the AFTERBURNER range) to change engine speed. The afterburner range extends from Military Thrust to about 7 percent below Military Thrust rpm. When the throttle is moved inboard, the afterburner shuttle valve shuts off all fuel flow to the afterburner fuel control. The control assumes a full bypass condition so that afterburner fuel pressure drops enough to shut down the afterburner system and close the exhaust nozzle.

EXHAUST NOZZLE.

-21 Afterburner.

The two-position, multiple-segment type exhaust nozzle, at the end of the tail pipe provides the proper exhaust nozzle area for either normal (minimum nozzle area) or afterburner engine operation (fully opened). Positioning of the nozzle segments is done automatically by the exhaust nozzle control unit. A series of short-iris nozzle seal fingers, between the afterburner nozzle and the tail pipe, prevents the leakage of exhaust gases into the aft fuselage area. If five or more seal fingers are broken or missing, or if two are broken or missing which are adjacent, the airplane should not be flown.

-23 Afterburner.

The two-position exhaust nozzle is opened or closed to provide the proper exhaust area for either normal or afterburner engine operation. The nozzle flaps are moved to the full open position during afterburner operation and returned to the minimum nozzle opening area when the afterburner is not in use. Position of the nozzle flaps is accomplished automatically by means of the exhaust nozzle control unit. No emergency override control is included.

Exhaust Nozzle Control Unit.

The exhaust nozzle position is controlled by pressure of the unmetered fuel from the afterburner fuel control through the exhaust nozzle control unit. (See figure 1-20.) This pressure, in turn, moves a valve in the nozzle control which directs compressor discharge air pressure to the nozzle actuators to open and close the nozzle segments.

AFTERBURNER IGNITER.

Metered fuel from the afterburner fuel control fills the igniter unit discharge chamber and is injected into one burner can of the engine. (See figure 1-20.) This excessively rich fuel-air mixture forms a longer than normal flame front which continues to burn past the turbines. The extended flame provides "hot-streak" ignition to ignite the fuel being discharged from the afterburner fuel spray bars. The igniter is actuated only when full pressure is built up in the afterburner manifold. A recirculating-type afterburner igniter and associated afterburner improvements ensure satisfactory afterburner ignition above 45,000 feet, and blowout-free operation up to the service ceiling of the airplane. No repeater mechanism is incorporated in the igniter, and the unit does not recycle until the afterburner fuel pressure is shut off and then restored (throttle moved inboard, then outboard).

AFTERBURNER EMERGENCY SHUTOFF.

The afterburner is shut off mechanically by the throttle, if the normal electrical control fails. This shutoff also permits selection of in-flight cruise thrust settings that offer low fuel consumption in case of an afterburner electrical shutoff failure. The emergency shutoff shuts down the afterburner indirectly by a bypass valve that is positioned mechanically by the throttle. (See figure 1-9.) When the throttle has been moved inboard and then retarded to approximately 82%, the bypass valve opens. If the afterburner is shut down non-electrically, the open bypass valve will bypass all fuel entering the afterburner system and return it to the discharge of the centrifugal element of the engine-driven fuel pump. This shuts down afterburner operation and closes the exhaust nozzle. Following emergency shutoff, the throttle may be readvanced to approximately 89% rpm without re-engaging the afterburner. If the afterburner is shut off normally the bypass valve has no effect on the system.

OIL SYSTEM.

The dry-sump, recirculating, pressure-type engine oil system is supplied from a tank on the left side of the engine compressor section. (The total oil capacity is 5.5 US gallons with an additional 1.6-gallon expansion space in the tank.) Oil flows from the tank to a gear-type pump which supplies oil under pressure to lubricate and cool bearings and gears within the engine. (A separate, independent oil system supplies oil for the ac generator constant-speed drive unit.) Scavenged oil is picked up by six gear-type pumps and sent through a fuel-cooled oil cooler and is then returned to the tank to repeat the oil flow cycle. The fuel-cooled oil cooler has a conventional regulator valve that allows the oil to bypass or go through the cooler, depending on oil temperature. (See figure 1-41 for oil specification.)

OIL OVERHEAT CAUTION LIGHT.

The placard-type oil overheat caution light (figure 1-19) comes on by primary bus power when engine oil temperature is higher than about 127°C (260°F), and may indicate an engine malfunction as well as a malfunction of the oil cooling system. Bulbs in the light can be checked by the indicator light test circuit.

AIRPLANE FUEL SYSTEM.

The airplane fuel system includes three tanks in the fuselage and a tank in each wing. Drop tanks may be installed on the underside of the wings. All internal fuel is sequenced automatically by gravity and electrical fuel transfer pumps to maintain the fuel distribution within the CG limits of the airplane. Fuel is transferred from all internal tanks and drop tanks to the forward fuselage tank. (Refer to Fuel Transfer in section VII.) All fuel to the engine passes through an inverted-flight tank in the right cell of the intermediate tank. The inverted-flight tank retains about 1.6 gallons, for brief periods of flight at negative-G. The internal tanks are serviced by single-point pressure refueling and can be refueled in flight by the probe-and-drogue method. (Refer to Pressure Refueling System in section IV.) Fuel tank capacities are listed in figure 1-23; fuel specifications are given in figure 1-41.

FUEL TANK VENTING.

The fuselage tanks are vented by manifold lines through the vent outlet, above the rudder. The integral wing tanks are climb-vented through the fuselage forward tank and are dive-vented through inlet valves in the lower surface of each wing.

DROP TANKS.

Each wing has three drop tank mounting stations: inboard, intermediate, and outboard. Each inboard and outboard station can carry a 200-gallon drop tank; the intermediate drop tank station, however, has two individual mounting locations, one for a 200-gallon drop tank and the other for a 275- or 335-gallon drop tank. A 450-gallon drop tank can be hung on the 200-gallon drop tank intermediate mounting station.

FUEL QUANTITY DATA

POUNDS AND US GALLONS

BASED ON: CALIBRATED DATA
DATA AS OF: FEBRUARY 1958

NOTE

Weights given are for JP-4 based on a Standard Day fuel weight of 6.5 pounds per gallon.

- These values are based on optimum airplane attitude, including strut inflation. Under operational conditions, usable fuel totals will be somewhat less.

	USABLE FUEL IN LEVEL FLIGHT POUNDS	USABLE FUEL IN LEVEL FLIGHT GALLONS	FULLY SERVICED POUNDS	FULLY SERVICED GALLONS
FORWARD FUSELAGE TANK	2912	448	2932	451
INTERMEDIATE FUSELAGE TANK	1391	214	1424	219
AFT FUSELAGE TANK	702	108	715	110
INTEGRAL WING TANKS	2723	419	2750	423
DROP TANKS (450 GAL EACH)	2925	450	2938	452
DROP TANKS (335 GAL EACH)	2178	335	2197	338
DROP TANKS (275 GAL EACH)	1787	275	1800	277
DROP TANKS (200 GAL EACH)	1300	200	1313	202

TOTAL USABLE FUEL

WITHOUT DROP TANKS	7728 POUNDS	1189 GALLONS
WITH TWO 275-GALLON DROP TANKS	11,302 POUNDS	1739 GALLONS
WITH TWO 335-GALLON DROP TANKS	12,084 POUNDS	1859 GALLONS
WITH TWO 450-GALLON DROP TANKS	13,578 POUNDS	2089 GALLONS
WITH TWO 275-GALLON AND TWO 200-GALLON DROP TANKS	13,902 POUNDS	2139 GALLONS

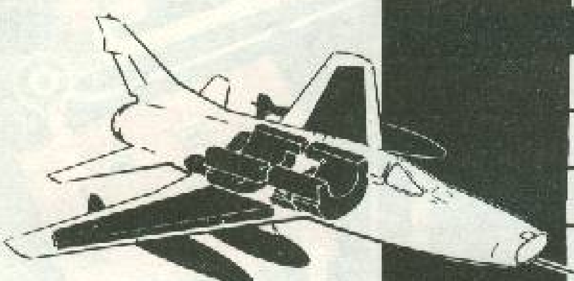


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Figure 1-23

NOTE

Because of tank structural differences, drop tanks are classified in one of four types: Type I, II, III, or IV. Types II and IV drop tanks are limited-service tanks which are generally identified by stencil markings that can be seen from the cockpit. Because of their construction, these tanks (Type II and IV) have lower operating limitations than the Type I and III tanks of corresponding size.

The 200-gallon and 450-gallon drop tanks are hung on jettisonable pylons; the 275- or 335-gallon drop tanks have integral-type mounting pylons which are released with the tanks. (Refer to section V for approved drop tank installations.) When drop tank fuel supply is selected, engine compressor air pressurizes the selected drop tanks and forces fuel into the forward fuselage tank upper cell. Drop tank fuel transfer is controlled automatically by a fuel level control valve in the forward tank. The 200- or 275-gallon drop tanks must be filled individually through their conventional filler openings. The 450- and 335-gallon drop tanks can be filled on the ground by single-point pressure refueling and in flight by the probe-and-drogue method. (Refer to Pressure Refueling System in section IV.) Electrical and mechanical jettison systems are provided for drop tank release.

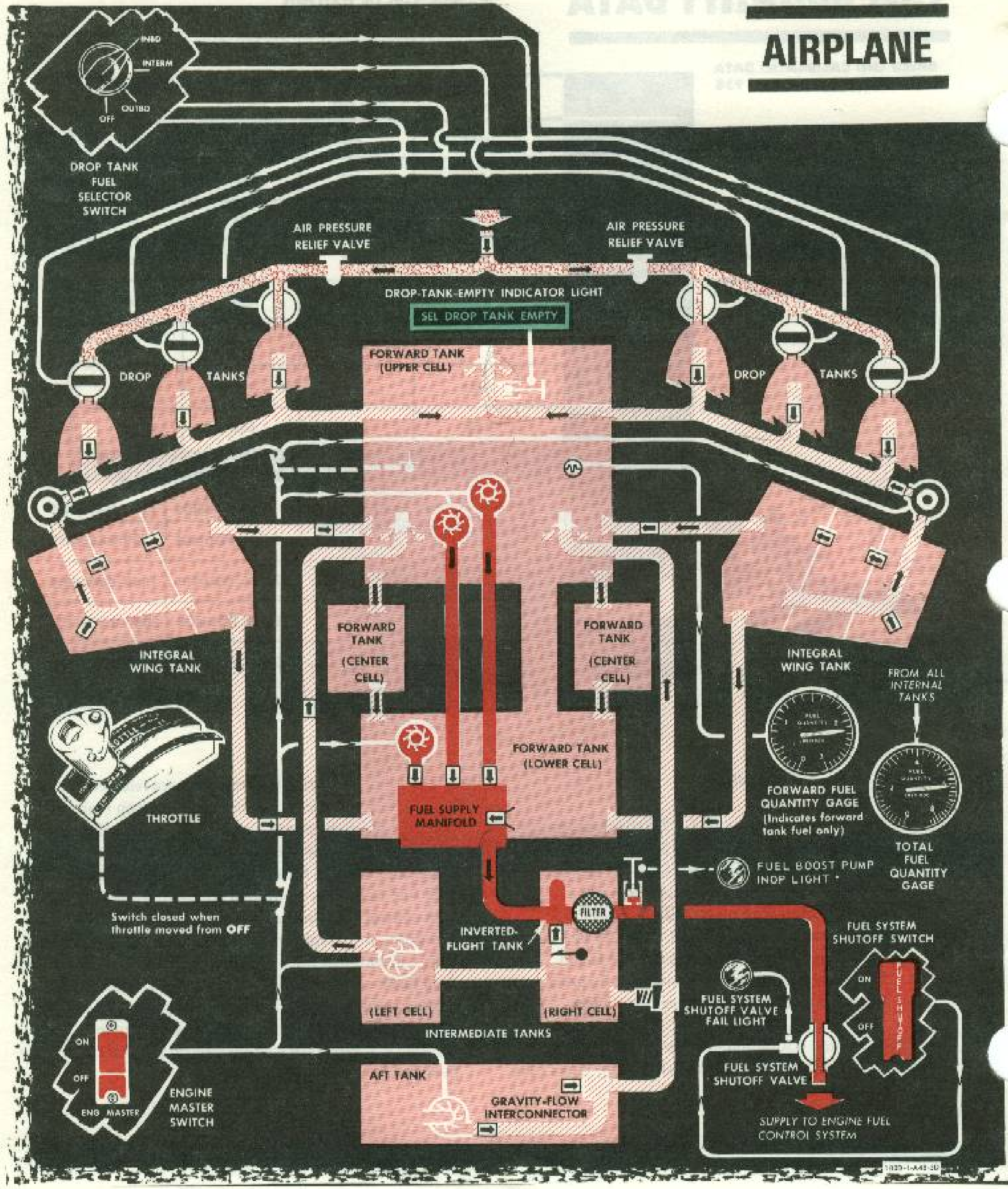

Figure 1-24 (Sheet 1 of 2)

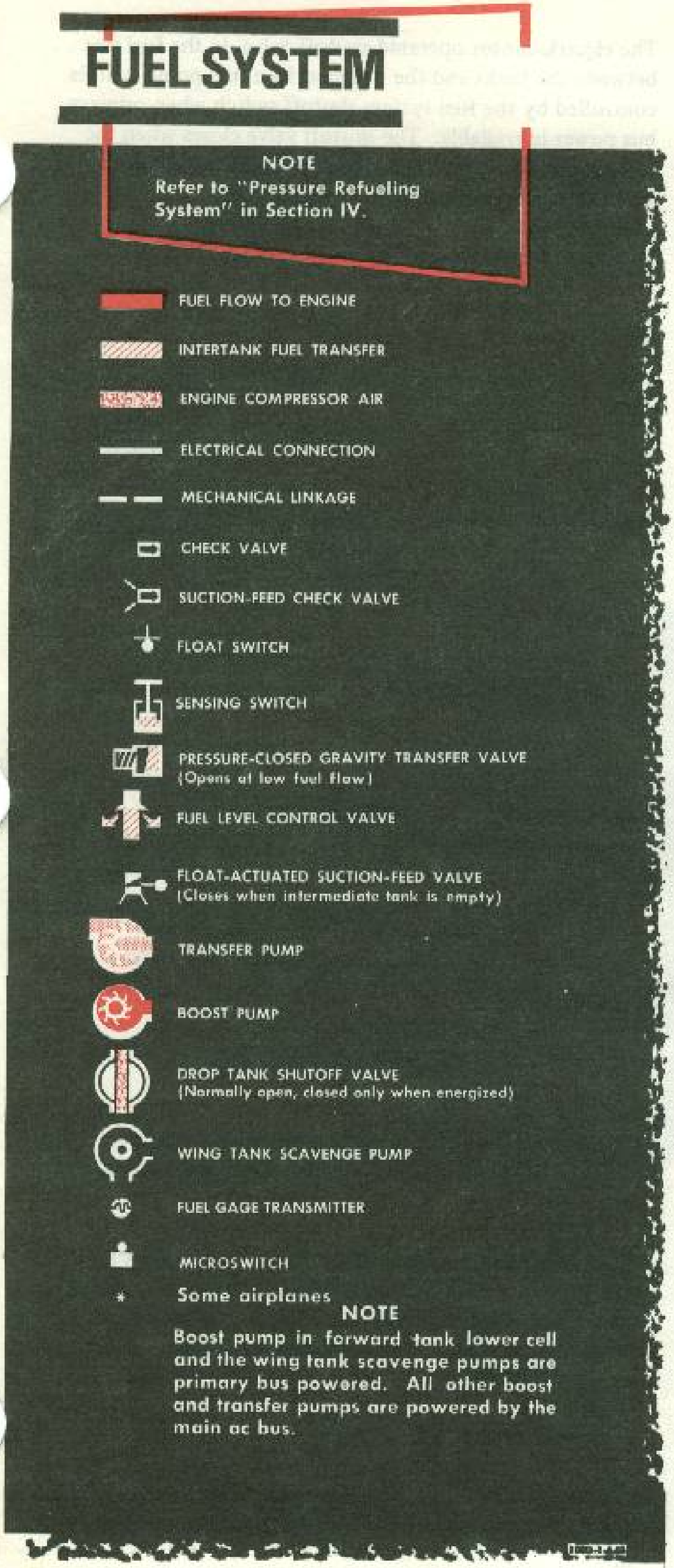

Figure 1-24 (Sheet 2 of 2)

FUEL TRANSFER PUMPS.

Fuel is transferred from the aft and intermediate fuselage tanks into the fuselage forward tank by two main ac bus-powered, tank-mounted pumps. (One transfer pump is in the aft tank, and one is in the left cell of the intermediate tank.) The transfer pumps run continuously, when the engine master switch is ON and main ac bus power is available, but do not transfer fuel until the fuselage forward tank fuel level control valves open and admit fuel.

NOTE

- If the aft transfer pump fails, fuel from this tank is transferred to the intermediate tank by gravity flow.
- If the intermediate tank transfer pump fails, suction feed of the engine-driven fuel pump opens the suction-feed valve in the inverted flight tank to supply fuel to the engine from the intermediate tank.

FUEL BOOSTER PUMPS.

Fuel is supplied, under pressure, from the fuselage forward tank through the fuel manifold and inverted-flight tank to the engine by three electrically driven, tank-mounted booster pumps in the forward tank (two in the upper cell and one in the lower cell). Operation of these pumps is continuous when the engine master switch is ON and the throttle is moved from OFF. The two booster pumps in the upper cell of the fuselage forward tank are powered by the main ac bus. The booster pump in the forward tank lower cell is energized by dc power from the primary bus.

DC Fuel Boost Pump Test Switch — Airplanes Changed by T.O. 1F-100-1009.

The fuel boost pumps can be checked for operation (on the ground only) through a two-position switch decaled "DC PUMP BOOST PUMP TEST" (17, figure 1-10; 20, figure 1-11; 18, figure 1-15; 18, figure 1-16) on the right console of the front cockpit. The switch is spring-loaded to the ON position. With the engine running and with the ac generator switch OFF (to disable the ac powered boost pumps), moving the fuel boost pump test switch to OFF shuts down the dc-powered boost pump and turns on a fuel boost pump inop light in the cockpit. The switch is powered by the primary bus.

Fuel Boost Pump Inop Light — Airplanes Changed by T.O. 1F-100-1009.

This amber, dimmable, press-to-test light, placarded "BOOST PUMP INOP" (37, figure 1-6; 31, figure 1-7) on the instrument panel of the front cockpit, provides a fuel boost pump failure warning indication during flight, and is used as an indicator for the fuel boost pump ground test operation. When power is first applied to the airplane, the light is on. The light goes out almost immediately (when boost pump pressure, sensed by a pressure switch on the main fuel manifold, rises above 10 psi). During flight, the light comes on if boost pump pressure, sensed by the same pressure switch, falls below 5 psi. In the preflight fuel boost pump check, the light comes on when ac power is removed from the airplane (to disable the ac-powered boost pumps) and the fuel boost pump test switch is moved to OFF. The light is powered by the primary bus. Refer to Airplane Fuel System Failure in section III.

NOTE

If booster pump failure occurs, the check valves in the fuel manifold and in the inverted-flight tank permit the engine-driven fuel pump to supply fuel to the engine by suction feed.

WING TANK FUEL SCAVENGE PUMPS.

Fuel that does not transfer from the integral wing tanks to the fuselage forward tank upper cell by gravity flow is transferred by two electrically driven fuel scavenge pumps, one in each wing. Both scavenge pumps are powered and controlled by dc power from the primary bus. The pumps are energized (if the engine master switch is ON and the throttle is moved from OFF) by float switches in the forward tank upper cell, and are operated by the lowering of the fuel level in this cell. If the control power for the scavenge pumps is not available, the pumps are energized regardless of the fuel level, when primary bus power is available.

NOTE

Operation of the scavenge pumps can be checked on the ground by a test switch in the left main gear wheel well.

FUEL SYSTEM SHUTOFF VALVE.

The electric-motor-operated shutoff valve, in the fuel line between the tanks and the engine-driven fuel pump unit, is controlled by the fuel system shutoff switch when primary bus power is available. The shutoff valve closes when the fuel system shutoff switch is moved to OFF, and opens when the fuel system shutoff switch is ON.

AIRPLANE FUEL SYSTEM CONTROLS AND INDICATORS.

Fuel System Shutoff Switch.

Moving the fuel system shutoff switch (figure 1-22) to ON opens the fuel system shutoff valve. Moving the switch to OFF closes the fuel system shutoff valve. The switch is safetied in the ON position, and should remain ON during normal engine operation. On F-100F airplanes, the switch in the rear cockpit must be ON to control shutoff valve operation from the front cockpit. Moving the switch from OFF to ON momentarily turns on the fuel system shutoff valve fail light. The fuel system shutoff switch is powered by the primary bus. If the fuel system shutoff switch is used in an emergency to shut down the engine, the effective thrust decreases rapidly. However, the time required for thrust to decrease to idle at sea level varies between 13 seconds from Military Thrust and 10 seconds from 70% thrust. The use of the fuel system shutoff switch is not comparable to throttle action.

NOTE

When using the fuel shutoff switch to shut down the engine, thrust decrease will occur more rapidly as altitude increases.

Fuel System Shutoff Valve Fail Light.

This red button-type light (figure 1-35), not in rear cockpit, comes on, if the primary bus is energized, when the fuel system shutoff valve is in any position other than full open, a fault exists in the valve or light system circuitry, or a component failure or a fault in the circuitry. It is a press-to-test light and is not included on the indicator light test circuit. Flickering of the light indicates an impending component failure or a fault in the circuitry.

Drop Tank Fuel Selector Switch.

Drop tank fuel is controlled by a four-position selector switch (not in the rear cockpit). (See figure 1-22.) When the switch is OFF, tertiary bus power closes all the normally open solenoid-operated shutoff valves that control airflow from the engine compressor to the drop tanks. When a drop tank station is selected, the shutoff valves for the selected drop tanks are de-energized and open to allow engine compressor air to pressurize these tanks and force fuel into the fuselage forward tank.

NOTE

> If tertiary bus power fails, all drop tank shutoff valves open and fuel is transferred from all drop tanks simultaneously.

External Load Emergency Jettison Button.

Refer to Jettison of External Loads in section III. Refer to Bombing Equipment Controls in section IV.

External Load Auxiliary Release Buttons.

Refer to Jettison of External Loads in section III. Refer to Bombing Equipment Controls in section IV.

External Load Emergency Jettison Handle.

Refer to Jettison of External Loads in section III. Refer to Bombing Equipment Controls in section IV.

Fuel Quantity Gages.

The fuel quantity gages (25, figure 1-6; 28, figure 1-7; 21, figure 1-12; 20, figure 1-13) indicate the total internal fuel supply. In addition to the total quantity gage, the airplane has a fuel quantity gage (27, figure 1-6; 30, figure 1-7; 24, figure 1-12; 21, figure 1-13) that indicates the amount of fuel in the forward fuselage tank. Because all fuel is transferred to the forward fuselage tank, this gage gives an indication of the proper operation of the fuel transfer system. It also prevents possible misinterpretation, based solely on the total quantity gage reading, of fuel available to the engine. (Refer to Fuel Quantity Gages in section VII.) The fuel quantity indicating system, powered by the 3-phase ac instrument bus, is of the capacitor type. The system automatically compensates for changes in fuel density so that the quantity gage readings indicate the actual number of pounds of fuel, regardless of the type of fuel used or regardless of fuel expansion or contraction caused by temperature changes.

NOTE

> When drop tank fuel is used before internal fuel, the fuel quantity gage shows a continuous decrease in fuel supply only after the drop tanks have been emptied and the engine begins to use fuel from the internal tanks.
>
> - Because of the high rate of fuel flow to the engine during afterburner operation at low altitudes, the transfer rate of fuel from the drop tanks will not be sufficient to maintain a constant fuel level in the internal tanks, and use of internal fuel may occur before drop tank fuel is exhausted.

Drop Tank Fuel Quantity Gages.

Refer to Pressure Refueling System in section IV.

Fuel Quantity Gage Test Button.

Operation of the total and forward tank fuel quantity gages can be checked by a test button. (See 26 and 31, figure 1-6; 27, figure 1-7.) When the test button is held down the pointers of both gages move counterclockwise toward "0". When the button is released, the pointers should return to their former positions. If either pointer fails to move or does not return to its previous setting, the fuel quantity gage or gage system is faulty.

NOTE

> Rate of pointer movement does not indicate proper operation of the gage or gage system.

Drop Tank Fuel Quantity Gage Test Button.

Refer to Pressure Refueling System in section IV.

Drop-tank-empty Indicator Light.

A tertiary-bus-powered placard-type light (figure 1-19) comes on when the selected drop tanks become empty. The drop-tank-empty indicator light is inoperative when the drop tank fuel selector is OFF. Bulbs within the light can be checked by the indicator light test circuit.

ELECTRICAL POWER SUPPLY SYSTEM.

The 28-volt dc system is powered by an engine-driven generator, and has a 24-volt, 24-ampere-hour battery for a standby power source. Power for the ac system is furnished by an engine-driven ac generator with a standby inverter. A transformer-rectifier permits the ac generator to power part of the dc system if the dc generator fails. During ground operation, ac and dc power can also be supplied by an external source.

DC ELECTRICAL POWER DISTRIBUTION.

Direct-current power is distributed from the four electrical busses: battery, primary, secondary, and tertiary. (See figures 1-25 and 1-26.)

Battery Bus.

The battery bus is connected directly to the battery, so that the essential equipment powered by this bus is operable as long as battery power is available, regardless of the battery switch position. The battery bus can also be powered by the primary bus or a dc external power source when the battery switch is ON (if enough battery power is available to energize the bus tie-in relay that joins the battery bus to the primary bus).

Primary Bus.

The primary bus is powered directly by the dc generator or dc external power source, and can be energized by the battery when the battery switch is ON. If the dc generator fails, the primary bus becomes energized automatically by dc power supplied by the ac generator through the transformer-rectifier.

Secondary Bus.

The secondary bus is powered by the primary bus, when dc generator power, transformer-rectifier power, or dc external power is available to energize the secondary bus tie-in relay.

Tertiary Bus.

The tertiary bus is energized by the primary bus, when dc generator power or external dc power is available to energize the tertiary bus tie-in relay. There is no emergency means of energizing the tertiary bus.

Transformer-Rectifier.

The transformer-rectifier, powered by the main 3-phase ac bus, permits dc power to be supplied to the primary and secondary busses by the ac generator, if power is not available from the dc generator. The unit is engaged automatically only upon failure of dc generator power, provided the ac generator is still operating and regardless of the position of the dc generator switch. The transformer-rectifier reduces the voltage of the main 3-phase ac bus and converts it to dc power. The dc output of the transformer-rectifier is shown on the dc loadmeter. The transformer-rectifier is de-energized when ac external power is connected.

NOTE

A transformer-rectifier lockout relay disconnects ac power to the transformer-rectifier whenever the dc busses are energized by the dc generator. This prevents the transformer-rectifier from supplying dc power when dc generator output is available.

AC ELECTRICAL POWER DISTRIBUTION.

AC electrical power is normally supplied by an engine-driven ac generator. The ac generator supplies power to the 115/200-volt, 400-cycle, 3-phase main ac bus, and is driven by a constant-speed unit. The 3-phase 115-volt instrument ac bus is normally powered by the main ac bus through an instrument power transformer. A single-phase 26-volt instrument ac bus for ac instruments (and a single-phase, 36-volt radio instrument ac bus on F-100F Airplanes only) is powered through a step-down transformer by one phase of the 3-phase instrument bus. If the ac generator or instrument power transformer fails, the 3-phase ac instrument bus can be energized by the primary dc bus-powered standby instrument inverter. (See figures 1-25 and 1-26.)

AC Generator Constant-speed Drive Unit.

The ac generator constant-speed drive (CSD) unit drives the ac generator at a constant speed to maintain a steady