Description of document:	Technical Report TR-AE-63: MIG-15 (VK-1) Pilot's Operating Manual, 26 April 1955
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DEPARTMENT OF THE AIR FORCE
NATIONAL AIR & SPACE INTELLIGENCE CENTER
WRIGHT-PATTERSON AFB OHIO

FEB 05 2015

Colonel Charles Hogan
Vice Commander
National Air and Space Intelligence Center (NASIC)
4180 Watson Way
Wright-Patterson AFB OH 45433-5648

This letter is in reference to your Freedom of Information Act (FOIA) request dated 13 December 2014 for a document entitled *MIG-15 Pilot's Operating Manual dtd April 1955*. We received your request and assigned case number 2015-02054-F to it.

A search was conducted for the record you requested and one document was located. After reviewing the document it was determined that it is releasable

The FOIA provides for the collection of fees based on the costs of processing a FOIA request and your fee category. We have placed you in the "All Other" fee category, which entitles you to get the first two hours of search and the first 100 pages of duplication free. The document we are providing you contains a total of 36 pages. There will be no charge to you.

Sincerely,

Charles Hogan

CHARLES HOGAN, Colonel, USAF
Vice Commander

Attachment
Requested Document

~~CONFIDENTIAL~~

UNCLASSIFIED

TECHNICAL REPORT NO. TR-AE-63

UNCLASSIFIED

(TITLE ~~CONFIDENTIAL~~)

MIG-15 (VK-1)
PILOT'S OPERATING MANUAL

PROJECT NO. 10135

26 APRIL 1955

~~NOT RELEASABLE TO FOREIGN NATIONALS~~

~~The information contained in this document will not be disclosed to foreign nationals or their representatives.~~

Published By

AIR TECHNICAL INTELLIGENCE CENTER
WRIGHT-PATTERSON AIR FORCE BASE
OHIO

T54-4394

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UNCLASSIFIED

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS FOREIGN TECHNOLOGY DIVISION (AFSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433-6508

UNCLASSIFIED

REPLY TO ATTN OF: SD (Capt Kearns, 72858) 1 Nov 88

SUBJECT: Request for Declassification and Downgrading Authority

TO: XO
SP
IN TURN

1. (U) According to AFSC Sup 1 DOD 5200.1-R/AFR 205-1, 30 Sep 87, Section 1-602a 1(b) (AF) 2d, the Director of Plans and Operations (now Deputy for Plans and Operations) has original classification authority (OCA). Furthermore, Section 1-603.1 (Added AF) a.3 (AF) states "...AF designated OCAs may delegate declassification and downgrading authority to officials with technical knowledge of classified programs, projects, and plans."

2. (U) (C) Request the Deputy for Plans and Operations delegate declassification and downgrading authority to Mr Lary W. Wilson, SDAAF, for an Air Technical Intelligence Center (ATIC) (now FTD) produced report titled "MIG-15 (VK-1) Pilot's Operating Manual," report number TR-AE-63, Project No. 10135, dated 26 Apr 55. Classification is CONFIDENTIAL - NORFORN. This authority will be used to satisfy a request from USAF/INKT to meet the needs of a congressional request. Upon completion of this task, declassification and downgrading authority will be cancelled.

3. (U) Any questions concerning this request should be directed to Capt Kearns, 72858.

ROBERT D. GREEN, Col, USAF
Deputy Commander for Systems

3 Atch
1. INTK Ltr, 6 Sep 88 (U)
2. FTD Msg, 211230Z Sep 88 (C)
3. Technical Report, 26 Apr 55 (C)

APPROVED Lary W Wilson Col DATE 1 Nov 88

DISAPPROVED _____ DATE _____

If Atch(s) 2 & 3 is (are) withdrawn or not attached, the classification of [illegible] will be cancelled or changed on this [illegible] to [illegible] in accordance with AFR 205-1.

R&M 2000
RELIABILITY & MAINTAINABILITY

UNCLASSIFIED

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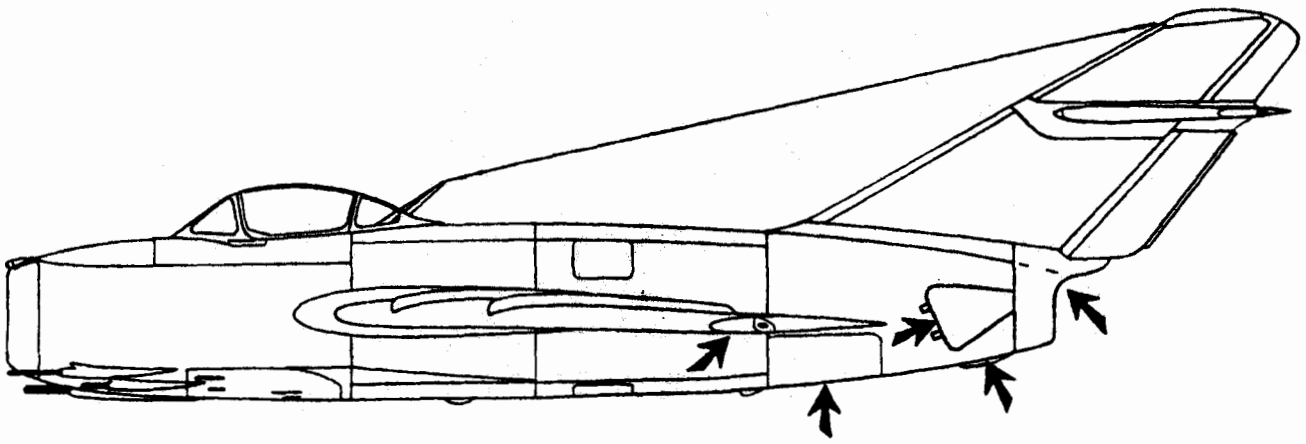
PREFACE

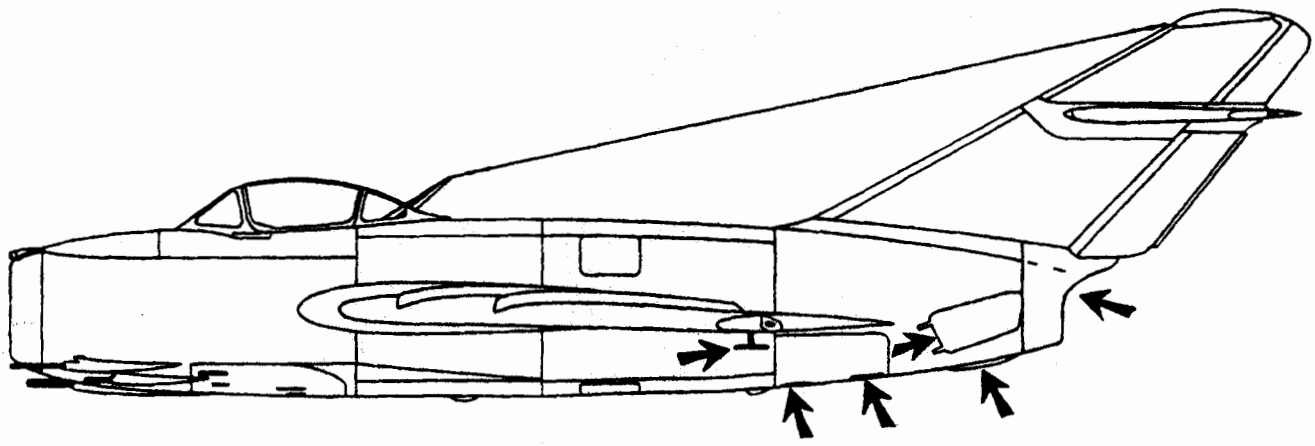
This manual has been prepared specifically for the purpose of providing USAF personnel with operating information on the MIG-15 (VK-1) to an extent that, if necessary, this airplane may be used as a means of escape from hostile territory. The operating instructions are not complete; only the information which the pilot must know is presented.

Some procedures which might be considered unorthodox for operational flying of this airplane are recommended because they represent the simplest means for assuring safe flight.

The material presente' in this manual is for the operation of the MIG-15 with the 6,000-lb. thrust engine (VK-1) shown in Figure 1. It is not valid for the earlier model MIG-15 (RD-45) with the 5,000-lb. thrust engine; however, it is believed the operating instructions are, to a large degree, valid for the MIG-17.



RD-45



VK-1

Fig. 1 Recognition Points Between MIG-15 (RD-45 and VK-1)

SECTION I

GENERAL DESCRIPTION

1. Aircraft

The aircraft is a single-seat swept-wing interceptor powered by a 6,000-lb. thrust VK-1 centrifugal flow type jet engine. The wing has a leading edge sweep of 36°, an anhedral of about 2°, and has two full chord wing fences attached to the upper surface. The ailerons are aerodynamically balanced by a sealed "beak" type of balance and have a hydraulic booster unit incorporated into their control system giving a 2.7 to 1 boost advantage. Both elevator and rudder are manually controlled. Electrically operated trimming tabs are fitted to the aileron and elevator. The rudder has a ground set tab. The vertical fin leading edge is swept back at 60°. The horizontal stabilizer is mounted about half way up on the vertical fin.

The fuselage is circular in cross section and has the engine air intake in the nose. The engine is mounted about midway along the fuselage with a straight jet pipe extending to the end of the fuselage. The cockpit is well forward with the main fuel cell between the cockpit and engine. Petal type air brakes are fitted on each side of the rear fuselage. Two small fuel tanks are located aft of the engine compartment and forward of the air brakes.

The armament consists of a 37-mm gun and two 23-mm guns mounted beneath the air intake in the front fuselage. Two drop tanks can be carried from a shackle under each wing.

2. Cockpit

The cockpit is not roomy but adequate. When the pilot is strapped in his seat he can reach all the controls, instruments, indicators, and emergency equipment with ease. Vision over the nose is 11 to 12 degrees and the side view from the canopy is good. Rearward vision is poor.

A console type control panel arrangement is on the left and right of the instrument panel. The master switches are located on the right and all of the engine switches are on the left. The gun-sight and a magnetic compass are mounted above the main instrument panel. Heating and defrosting of the cockpit are accomplished through the cabin pressurization system. The aircraft oxygen system may be a pressure demand or diluter demand type.

SECTION II

FUNCTION AND OPERATION

1. Ground Check

a. Before selecting an aircraft for flight, determine that it has been completely refueled and serviced with air and oxygen as shown in Figures 2 and 3.

b. Make certain that no external control surface locks are in place.

c. See that the airplane is not tied down, that shocks are removed, and that covers are removed from the nose inlet, tail pipe and the pitot-static head.

d. If available, attach an external power supply (battery cart) to the airplane (Figure 2) in such a manner that it can be pulled free easily after starting. It has been reported that only one start can be made with the aircraft's battery.

2. Entering the Aircraft

From the outside, the canopy can be opened from the ground, the wing, or from a ladder, and entrance to the cockpit can be gained from the wing or by using a ladder. The canopy is opened by first pushing on the aft end of a flush mounted lever (Figure 4) which is located on the lower left, forward side of the canopy. Pushing on the lever causes it to protrude in such a manner that it can be grasped by the hand. The outside portion of the lever pivots clockwise about its end, unfolding and doubling its length. The entire lever is then rotated in a clockwise direction, unlocking the canopy so that it can be moved back. The canopy locks in the rear position.

3. Canopy

Inside the aircraft, the pilot can close the canopy by grasping the closing handle (Figure 5), located on the forward edge of the canopy. Pulling forward on this handle releases the rear latch and allows the canopy to slide forward and lock in the closed position.

To open the canopy from inside the cockpit, the pilot reaches forward with both hands, grasps the knobbed handles on the left and right sides of the forward lower corners of the canopy and pulls the canopy aft. The left-hand knob will release both canopy latches (Figure 6).

Emergency release of the canopy can be accomplished in two different ways. One is used for maintenance and ground emergency; the other prior to ejection. On the ground, the canopy can be released by pushing forward on two levers (Figure 7) located on the underside of the right and left forward canopy rails. The canopy is then moved by hand, aft and up. To remove the canopy prior to ejection, the safety pin in the canopy release lever (Figure 10) is pulled and the lever is lifted and rotated forward. This action allows the canopy to rise and arms the ejection seat. The air stream will remove the canopy.

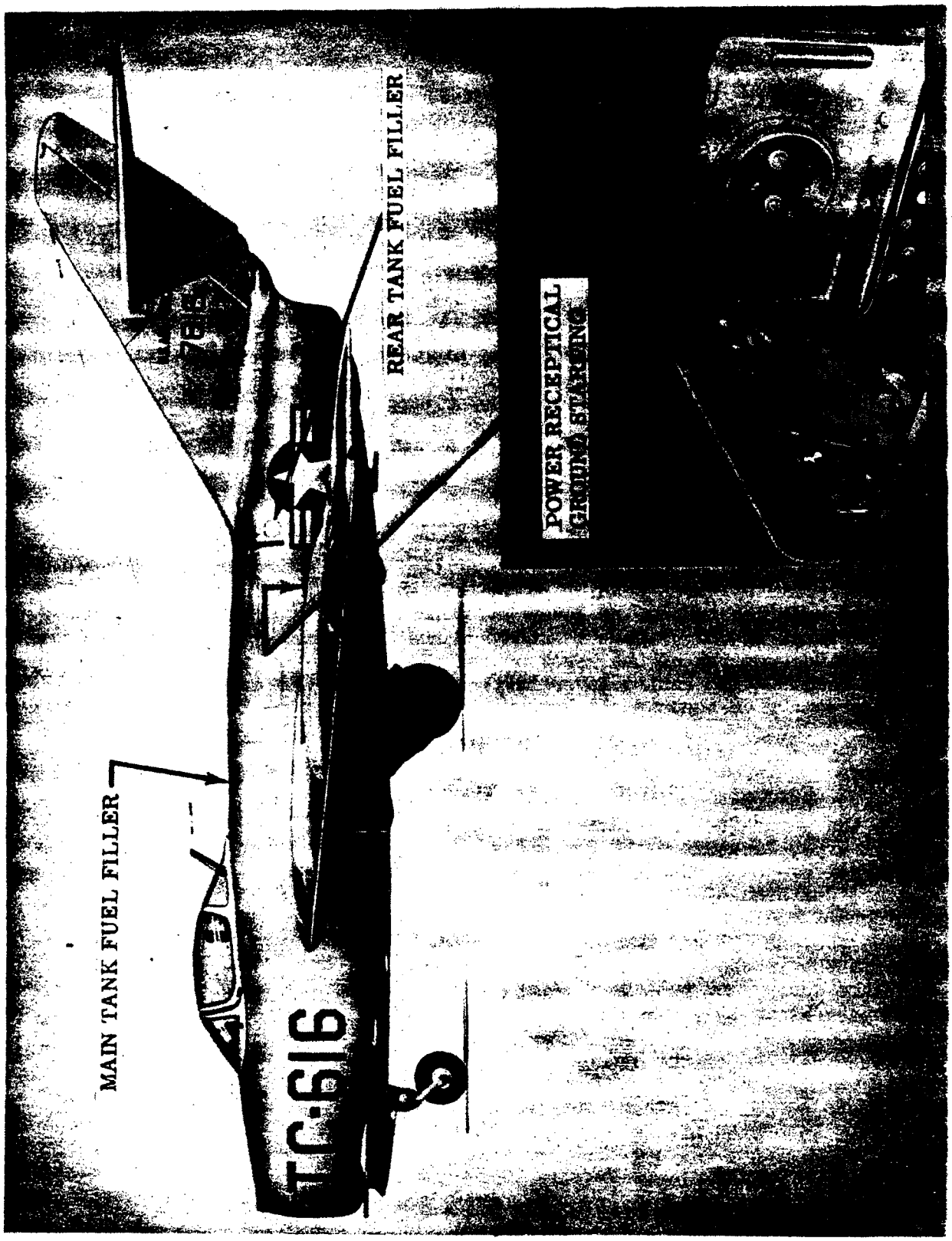


Fig. 2 MIG-15 (VK-1) - Left Side

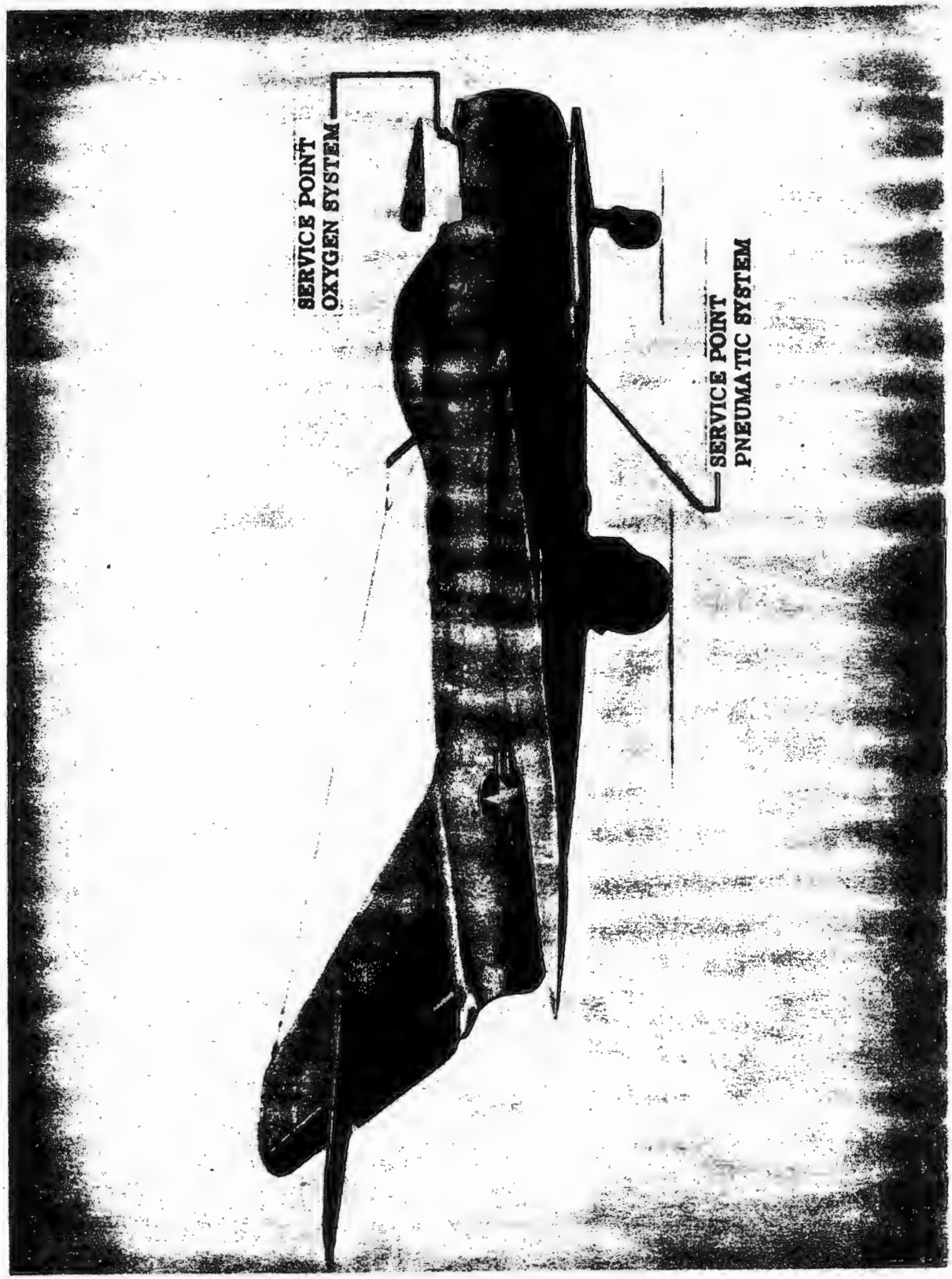


Fig. 3 MIG-15 (VK-1) - Right Side

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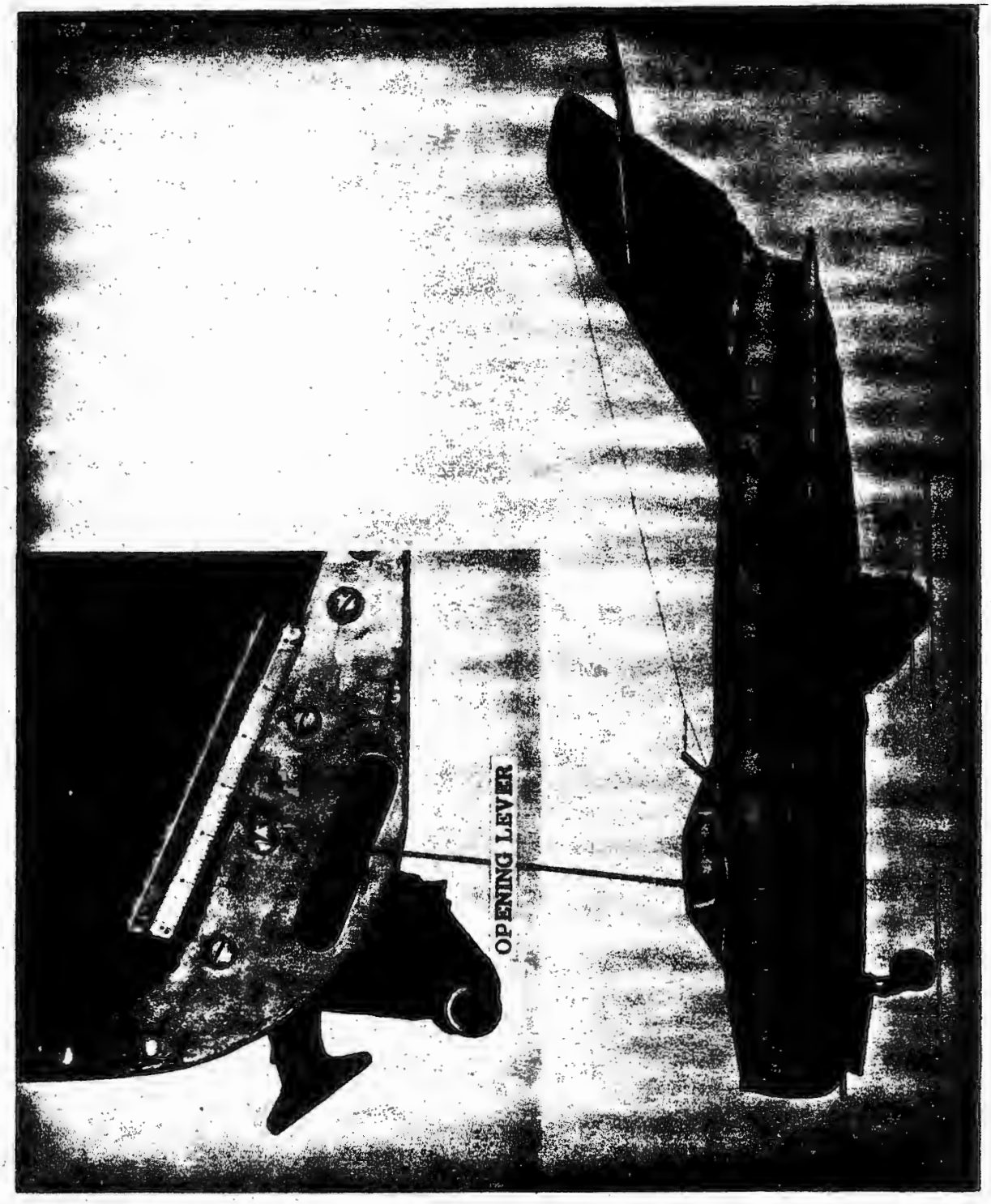


Fig. 4 Canopy Opening Lever

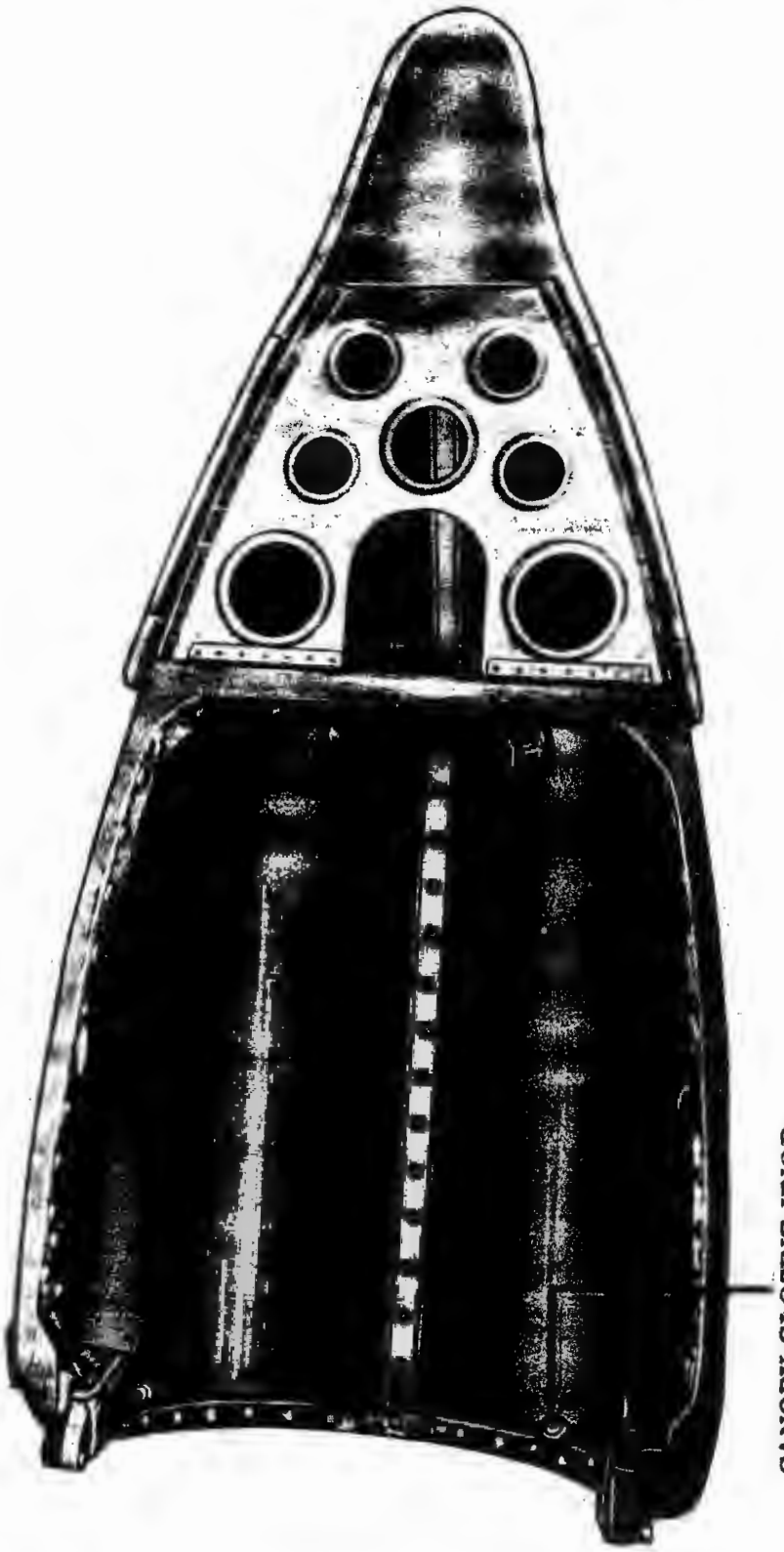


Fig. 5 Canopy Closing Lever

4. Ejection Seat

The pilot's ejectionable bucket seat is built to accommodate a seat type parachute pack and the seat is not readily adjustable. The lever (Figure 10) on the left arm of the seat is for shoulder harness tension adjustment. The lever on the right arm is for canopy jettison and the large "D" ring under the right arm is raised for seat ejection. There is a safety pin through the ejection tube at the top rear of the seat. This pin should be removed prior to flight.

5. Fuel System

The MIG-15 has an internal capacity of 372 US gals. This fuel is contained in two tanks: The main tank, located just behind the pilot, has a capacity of 330 US gals. and a rear tank which has a capacity of 42 US gals. The filler points for these tanks are shown in Figure 2.

Fuel from the rear tank is transferred to the main tank by an electrically driven transfer pump, controlled by a switch (Figure 12, No. 32). A light (71) indicates when the rear tank is empty. The fuel quantity gauge (72) reads up to 277 gallons (1050 liters) and does not indicate other than full, until all but 277 gallons of fuel have been exhausted. When the fuel level in the main tank goes below 79 gallons (300 liters) light (55) comes on.

In addition to the internal fuel the MIG-15 can carry 66 gallons of fuel in each of two droppable wing tanks. This fuel is automatically used first. When the tanks are empty, light (2) indicates that the tanks may be dropped. The button (7), located at the bottom of the instrument panel, is depressed to drop the tanks.

6. Engine Starting

Normally the MIG-15 (VK-1) is started with the aid of a battery cart which is plugged in on the left side of the fuselage at the trailing edge of the wing (Figure 2).

The switches for engine operation are located on the left console (Figures 8 and 12); the aircraft system switches on the right console (Figures 9 and 12).

Before starting is attempted, all switches should be turned off (aft), the throttle (16) closed, (the engine cannot be started unless the throttle is in the full aft position), and the high-pressure fuel valve (11) closed (up).

To start the engine the following procedure is used:

a. Turn the following switches "on" (forward):

(1) Engine instruments (29)

(2) Ignition isolator (28)

(3) Rear tank transfer pump (32)

(4) Start and booster pump (30)

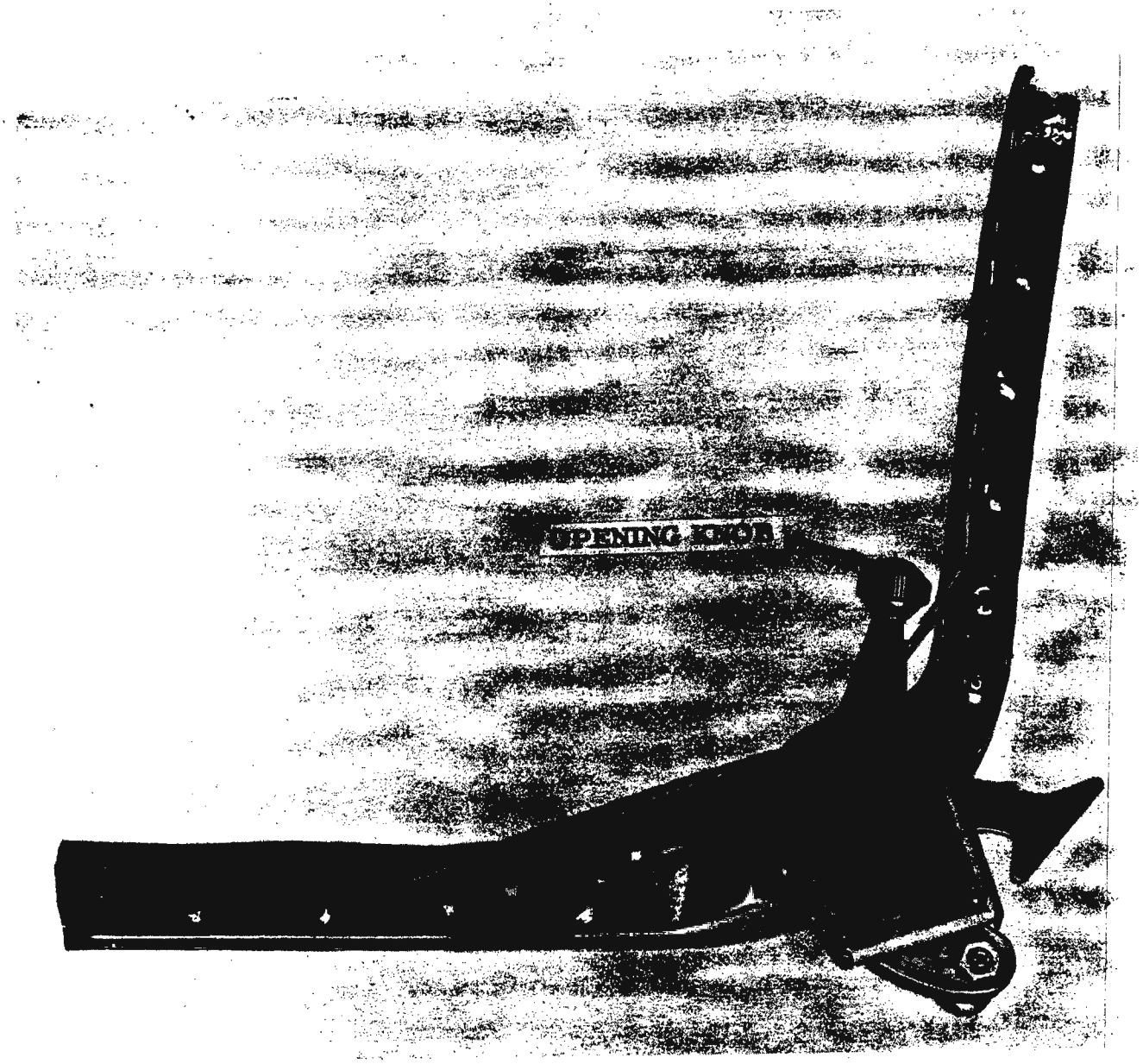


Fig. 6 Canopy Opening Knob - Left Hand

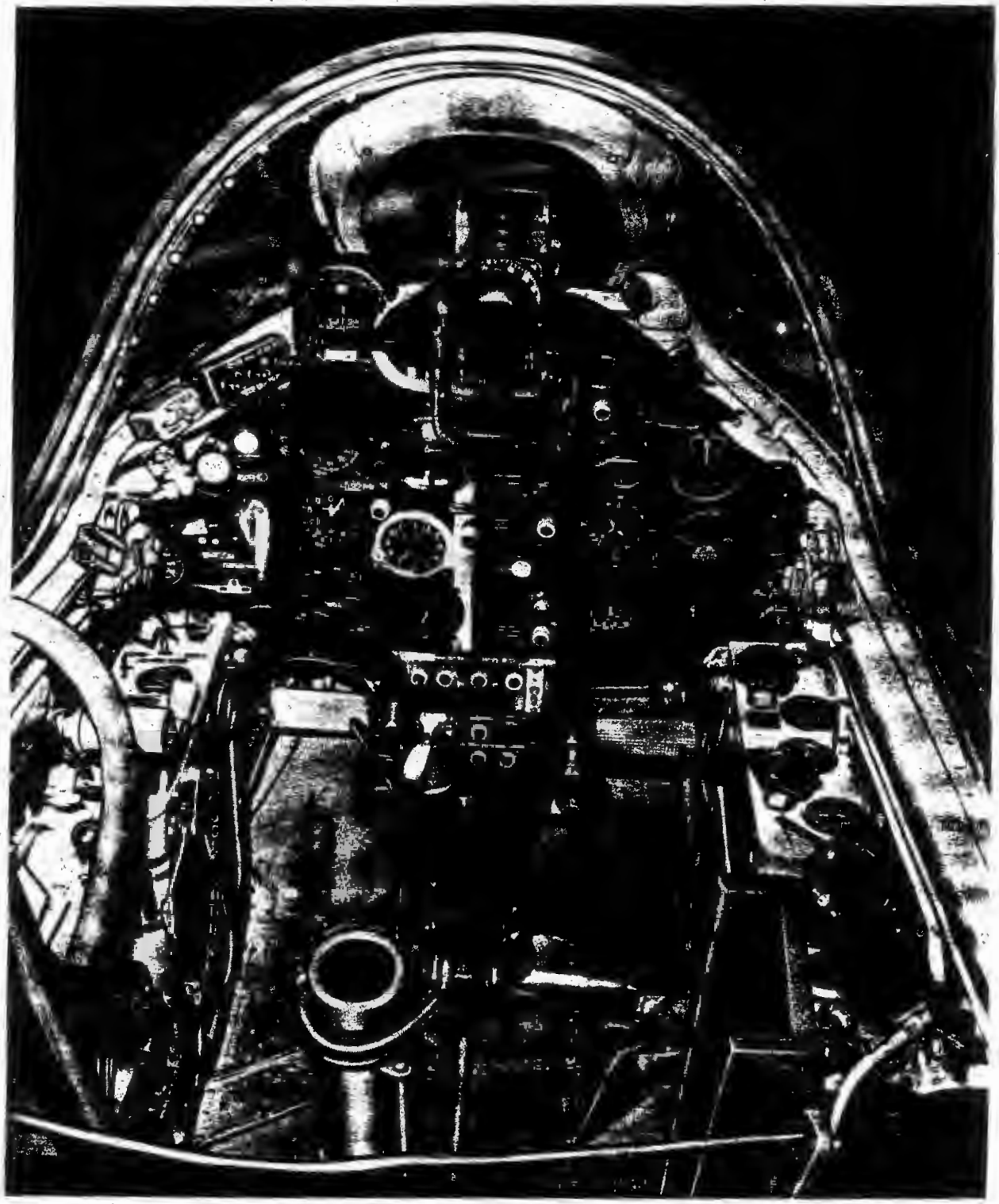


Fig. 7 MIG-15 Cabin

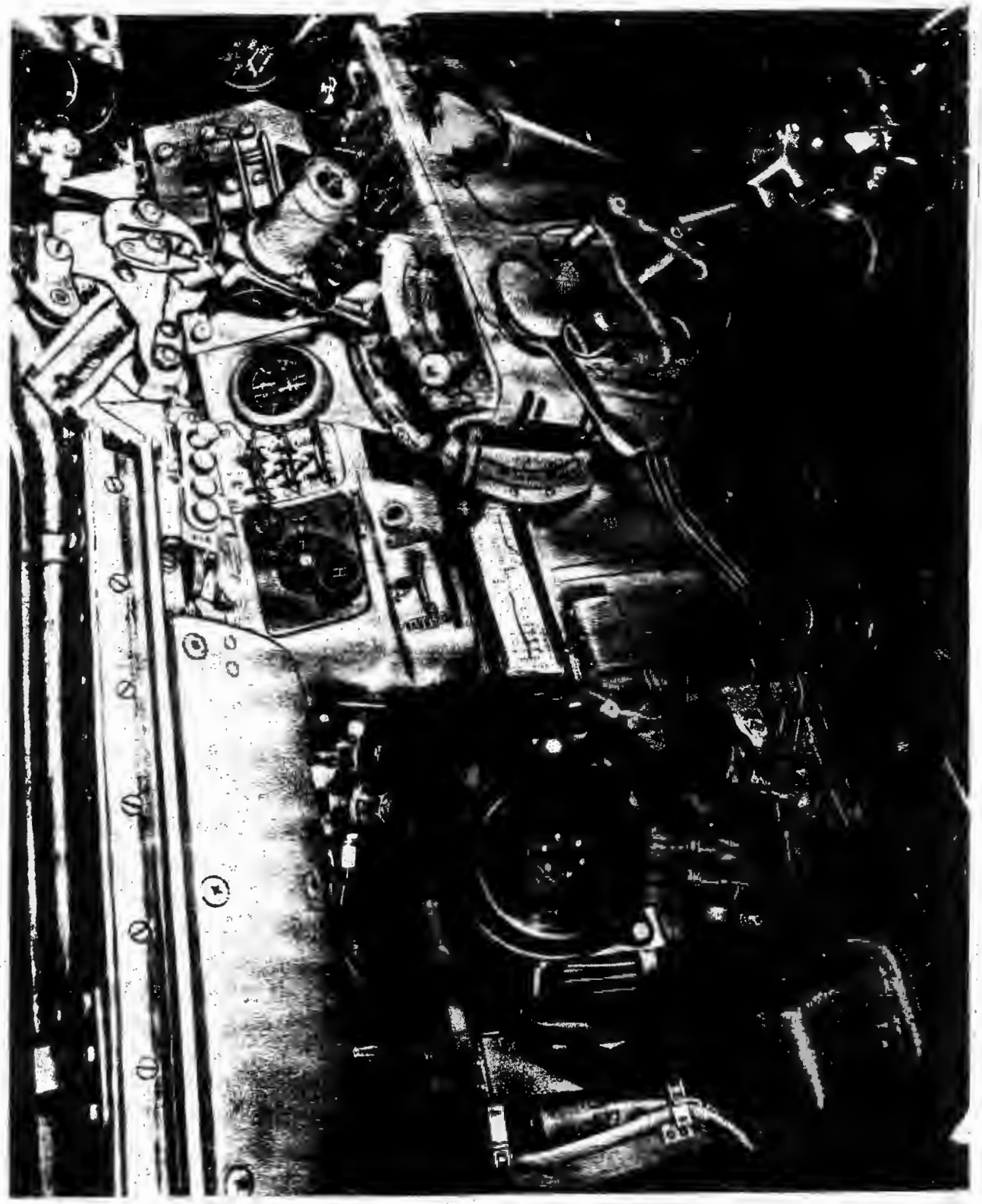


Fig. 8 Left Console

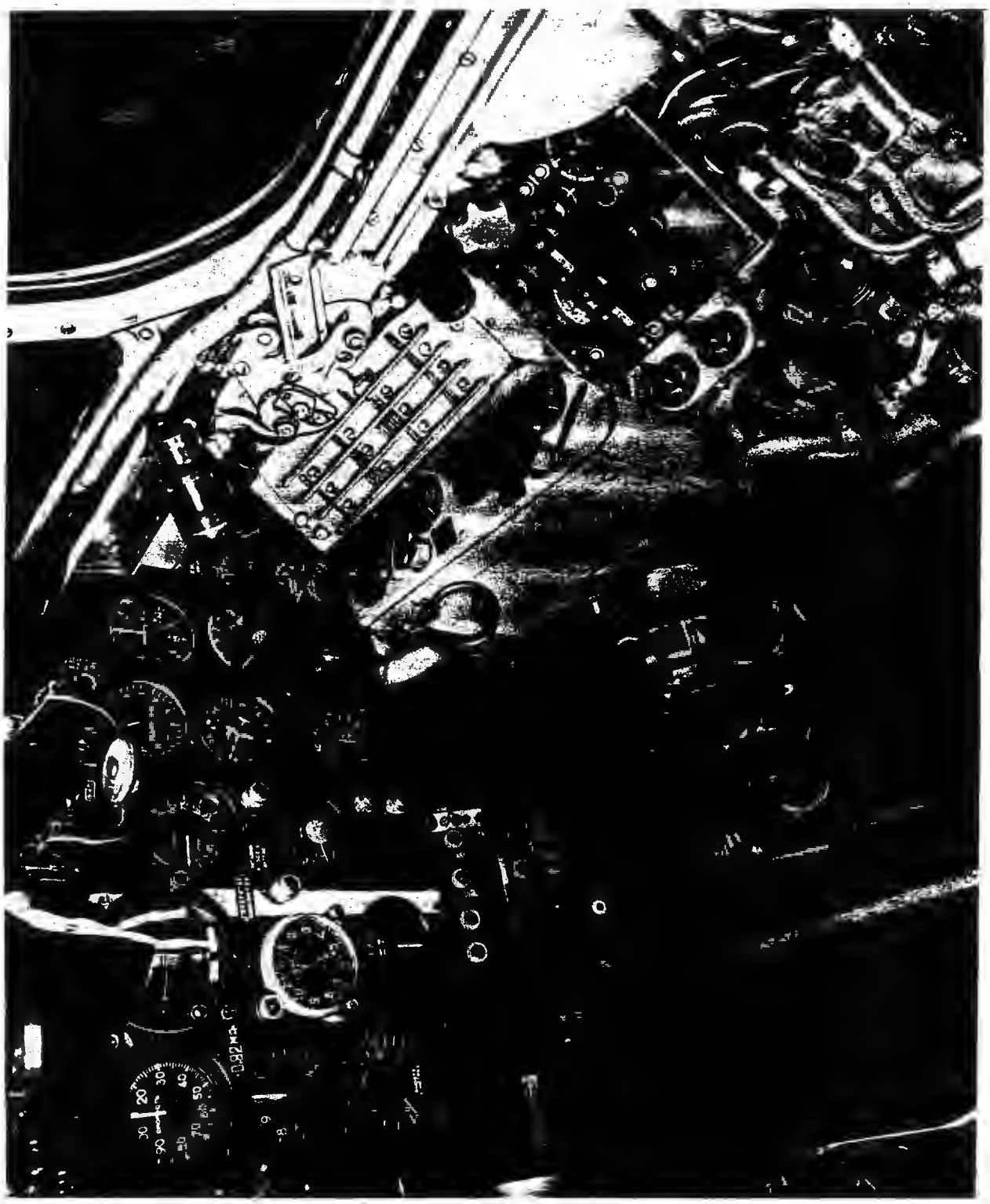


Fig. 9 Right Console

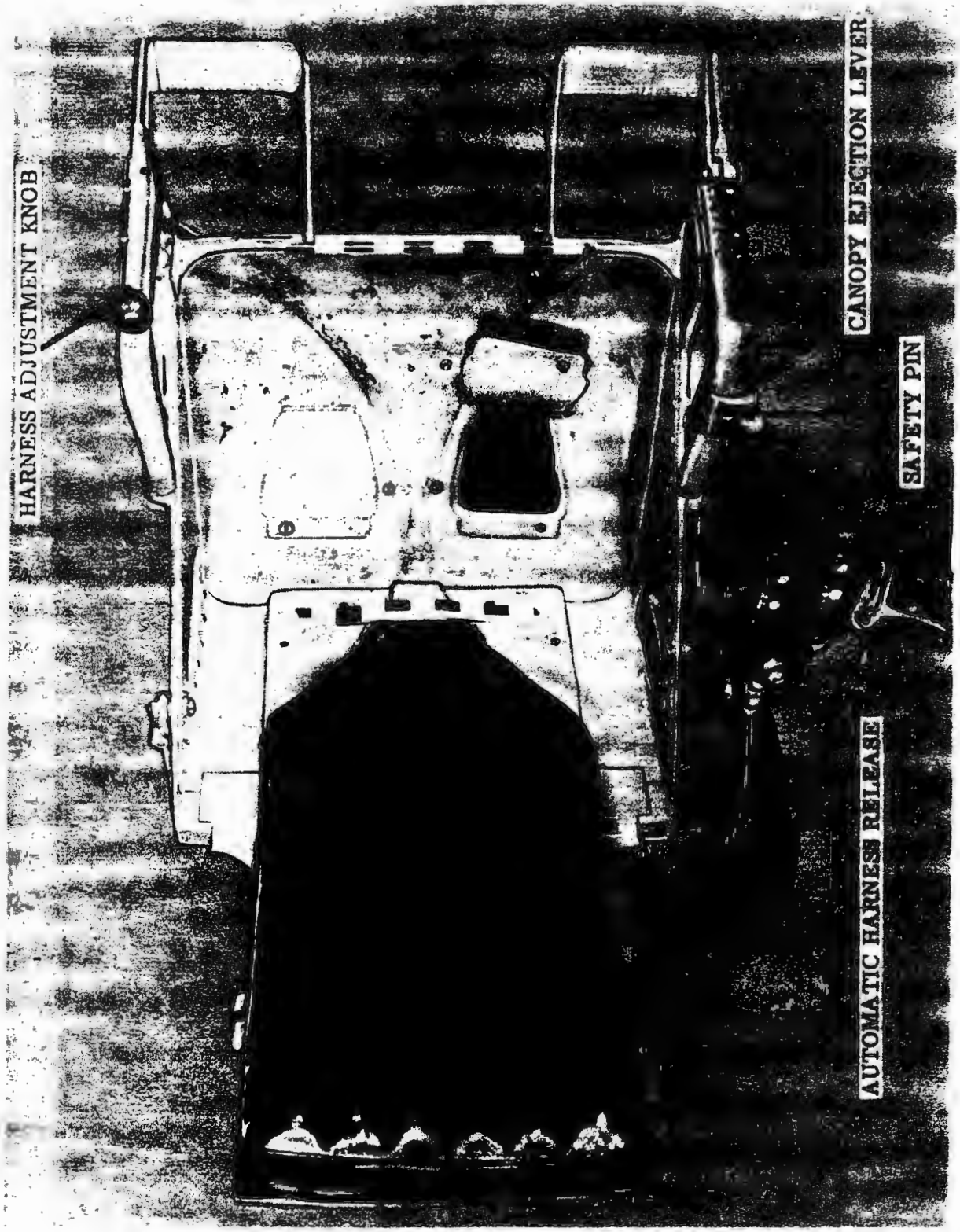


Fig. 10 Pilot's Seat

b. When the low-pressure fuel warning light (70) goes out, press starting button (17) for five seconds and release it. After approximately ten seconds (the engine speed will be 800 - 1,000 rpm), start to open the high-pressure fuel valve (11) slowly (down). As the engine accelerates, open the valve to the full open position. The engine will automatically accelerate to an idling speed of 2500 rpm.

c. The relight warning light (59) will be on during the automatic starting cycle. When it goes out, turn on the generator switch (85) and the battery switch (84). Then disconnect the battery cart.

NOTE: It should be remembered that reports indicate only one engine start can be made with the aircraft's battery instead of an external power source. If it is necessary to use the aircraft's battery, the battery and generator switches (84 and 85) should be turned on in addition to the engine switches as indicated in step one.

7. Wheel Brake Operation

The air operated wheel brakes are actuated by squeezing the brake lever, located on the control stick (Figure 11). When the lever is squeezed, air is supplied to the brake system. Gauge (26) indicates the pressure in each brake. For normal brake application the gauge reading should not exceed 6 kg/cm^2. Direction of braking corresponds to rudder movement, with both brakes being applied when the rudder is in neutral. The brakes are released when the lever is released. The pneumatic system is serviced at a point on the lower right side of the fuselage, under the cabin, as shown in Figure 3.

8. Landing Gear

The aircraft is equipped with a tricycle, lever suspension landing gear. The main gear retracts inward, the nose gear, forward. For normal operation the gear is retracted or extended by moving the landing gear control lever (82) to the "up" or "down" position. A sliding guard (83) prevents it from being raised accidentally to the "up" position. The gear handle should be returned to neutral after the cycle is completed.

The gear is actuated by the aircraft's hydraulic system. The system pressure is indicated on the main system pressure gauge (100). A green band along the edge of the instrument dial indicates normal pressure (90- 120 atm).

The aircraft is provided with an emergency pneumatic system for lowering the landing gear. A gauge (98) indicates the pressure (47- 55 kg/cm^2) in this system. To use the system, take these steps:

a. Place the landing gear selector handle in the "down" position.

b. Pull on each of the red "D" rings clipped to the forward lower sides of the right and left consoles.

c. Open valve (99).

This will extend and lock the landing gear in the "down" position.

There are two systems for indicating the landing gear position. First, the position lights (80), located on the instrument panel, and second, "Pop-Up" rods protruding from three points (two from the wings, above the pivot point of each main gear, and one from a point just forward of the windshield, above the nose gear) when the gear is extended.

9. Flaps

The airplane is equipped with hydraulically operated 3-position flaps.

The flaps are operated by a four-position lever (13) on the aft side of the left console. The four positions, from top to bottom, are: (1) Flaps up, (2) Neutral, (3) An approach position of about 20°, and (4) A landing position of 55°. The handle should be returned to the neutral position after cycle is completed. A green "down" flap position indicator light (40) is located at the top left-hand side of the instrument panel. There is also a mechanical "pop-up" flap position indicator in the top of the left wing, between the two wing fences. The hydraulic pressure gauge for the flaps is the main hydraulic pressure gauge (100) located on the right console.

An emergency flap pneumatic system for extending the flaps is provided. By opening valve (102), located on the right console, the flaps are fully extended. The air pressure gauge (101) for this system is located on the right console. The working pressure is between 47 and 55 kg/cm^2.

10. Primary Flight Controls

The aircraft is equipped with a control stick (Figure 11) and rudder pedals for operating the elevator ailerons and rudder. The rudder and elevator are manually controlled, and the ailerons are operated manually or with the aid of a hydraulic boost system. The boost system is engaged when lever (14) is in the forward position and disengaged (manual) when in the aft position. The system pressure is indicated by a gauge (19) located on the left console.

The elevator and ailerons are equipped with electrically operated trim tabs. Switch (20) operates the aileron tab and switch (130) operates the elevator tab. Light (131) indicates the neutral position of the elevator tab. The circuits to both switches are controlled by a master switch (97) located on the right console.

11. Speed Brakes

The petal type speed brakes are controlled by either one of two switches, one on the pilot's left and one on the control column. The switch (35) on the pilot's left is for continuous OPEN position. The light (34), adjacent to the switch, indicates the OPEN position. The button on the control column (Figure 11) is used for "blipping" the brakes.

12. Control Stick

The control column (Figure 11) has provisions for the following:

a. Brake Lever: This lever is on a position which requires the fingers to be fully extended for operation. There is no parking position for the lever.

b. Speed Brake Control: This spring loaded "blipping" button is well placed under the thumb. Push to open; release to close.

c. 37-mm Gun Firing Button: This button is on top of the stick and is protected by the tongue.

d. 23-mm Trigger: The hinged tongue, which protects the 37-mm firing button, pivots forward and down and serves as a trigger. When squeezed it is pressed against the firing button.

e. Bomb Release Button: This button, protected by safety latch, is located on the front and at the bottom of the control grip.

f. At the bottom of the control column there is a gust lock, a pivoted arm which is disengaged when it is swung up and forward.

13. Cabin Conditioning and Pressurization

The cabin of the airplane is pressurized and ventilated by air bled from the engine compressor. This air is controlled by a manually operated temperature control valve (122) located on the pilot's right. The cabin pressure is controlled by a valve (124) on the pilot's left.

The manually operated temperature control valve also controls the inflation of the canopy seal. The valve functions thus:

Turning the handle counter-clockwise moves the valve pointer clockwise, shutting off the cabin air supply and causing the canopy seal to deflate. In turning the valve (counter-clockwise) to full on from the off position, the following sequence occurs:

a. Canopy seal inflates.

b. Cold air flow starts.

c. All cold air supplied.

d. Cold and hot air mixed.

e. All hot air supplied.

The cabin pressure regulator (124), located on the pilot's left, is designed to maintain the pressure schedule shown in Figure 11.

It is necessary that the knob be turned in (clockwise) before the regulator will function. The handle is turned counter-clockwise to dump the cabin

air. The cabin altitude and pressure differential are indicated by gauge (65). If the cabin pressure differential exceeds its red line valve, the pressure can be controlled by manual operation of the control valve (124).

14. Oxygen

The airplane contains a high-pressure oxygen system having a duration of approximately two hours. The system is serviced at a fitting located under the nose access cover, as shown in Figure 3.

The oxygen regulator is an automatic diluter-demand, pressure-demand type (127) which is made operational by opening (counter-clockwise) the two valves (125 and 126). Gauge (81) indicates oxygen pressure, and oxygen flow is indicated by a standard type blinker (41).

The oxygen tube goes from the aircraft's oxygen outlet to the front of the seat type parachute pack, which contains a bailout oxygen bottle, then to the oxygen mask. Upon ejection, the oxygen hose to the airplane is automatically disconnected and the bailout bottle is automatically put into operation.

If the parachute is in the airplane but no oxygen mask is available, the short length of hose from the parachute (to which the mask would be attached) can be used for breathing oxygen. If no oxygen is available, the aircraft should not be flown above a cabin altitude (65) of 5,100 meters (16,000 ft) which is approximately 32,000 feet aircraft altitude.

15. Electrical

The airplane has a 24-volt electric power system. The switches are circuit breaker toggle type. The battery switch (84) when on connects the battery to the aircraft electrical system, including the engine starting circuit. The generator switch (85) connects the generator to the aircraft's electric system. The generator warning light (52) indicates red when the generator output is below rated voltage (when the generator is inoperative or the engine rpm is low).

16. Radio Compass

The airplane is equipped with a completely automatic radio compass similar to the USAF SCR-26. The tuning controls (104) are located at the pilot's right and a master on-off switch (90) is located on the right console. A beacon signal in the 150-1300 KC band can be used for homing, when switch (36) is in the aft position.

17. Transmitter and Receiver

The airplane utilizes a high frequency (3.75 - 5.0 Mc) transmitter and receiver unit. Both the transmitter and receiver are turned on by switch (88) located on the right console. The receiver is tuned at box (24) located on the pilot's left. The transmitter is tuned while on the ground and cannot be tuned readily in flight. The "push-to-talk" transmitter button (17) is located on the throttle (16). Switch (128) changes the head phones between radio beacon and command receiver.

18. Armament

The aircraft has two 23-mm guns and one 37-mm gun located in the lower forward fuselage. The guns can be electro-pneumatically charged by push buttons (37, 38 and 39 located at the forward left-side of the cabin) after master switches (91, 93 and 94) have been turned on. The lights (3, 4 and 5 located below the instrument panel) indicate when the guns are charged.

The gun triggers are located on the control stick (Figure 11). The gunsight is operated and functions in the same manner as the K-14 gyro lead computing gunsight. The sight is turned on by a switch (91) located on the right console.

19. Remote Indicating Compass

The aircraft is equipped with a remote indicating compass (60) which is turned on by switch (87) located on the right console.

When the knob (69) is turned so the desired heading is at the top of the instrument, it is only necessary to turn the aircraft so the indicator aligns itself with the desired heading.

This system is gyro synchronized and may be used as a directional gyro. It may be necessary, when starting the system, to push the synchronizing push button (67).

SECTION III

OPERATING PROCEDURE

1. Select an aircraft that has been observed to have been completely serviced with fuel, oxygen, and air. In addition a parachute or equivalent size cushion will be necessary for the bucket seat in the airplane. An oxygen mask may be stored in the aircraft. However, its presence may not be assured.

2. If possible, obtain and connect an external power source.

3. Before entering the cockpit make certain that the external locks, chocks, and nose and dust covers have been removed. Note position of elevator and aileron trim tabs.

4. Enter the aircraft from the left side by use of a ladder or from the wing. Pull the seat ejection safety pin, located in the top of the ejection gun, at the rear of the headrest.

5. Turn all switches to the off position (aft). Place the throttle (16) in the closed (full aft) position. Place the high pressure fuel valve (11) in the off position (up). Unlock the control column. (The lock is located at the base of the column).

6. Turn master trim tab switch (97) on (forward) and place elevator tab in neutral, using switch (130) until light (131) comes on. Set elevator trim tab to neutral, using switch (20). Visually check tab position.

7. To start the engine:

   a. Turn on the following switches:

      (1) Engine instruments (29)

      (2) Ignition isolator (28)

      (3) Rear tank transfer pump (32)

      (4) Starter and boost pump (30)

      (5) If a starting cart is not used, one attempt at starting can be made with use of the aircraft's battery, by placing the battery switch (84) and the generator switch (85) in the on position.

   b. After the fuel pressure warning light (70) goes out, press the starting button (17) and hold for about 10 seconds. After a period of approximately 10 seconds, when the engine rpm is between 800 and 1000, start opening the high-pressure fuel valve (11) by slowly pressing it down. As the engine accelerates, open the high-pressure fuel valve to the full down position. The engine will automatically

accelerate to an idling speed of approximately 2500 rpm (the relight warning light (59) will be on during the automatic starting cycle; however, it will automatically go out in the completion of the cycle.)

8. Turn on the battery switch (84) and the generator switch (85) and disconnect the battery cart, if used.

9. Take Off:

a. The highest rpm and tail pipe temperature for take-off should be 11,500 rpm and 660 degrees centigrade.

b. Raise the nose at 160 km/hr.

c. Aircraft leaves the ground at 227 km/hr without flaps or wing tanks.

d. Retract landing gear.

10. Relight in the Air

The best altitude for re-starting the engine in the air is between 1800 meters and 5400 meters. The standard procedure is as follows:

a. Throttle lever closed.

b. High-pressure fuel valve closed.

c. Dive to 4000 meters altitude.

d. Decrease air speed to between 300 and 320 km/hr. Engine rpm will be approximately 800 - 1000.

e. Switch for radio off.

f. Relight switch (27) on.

g. Relight switch warning light (59) will be on.

h. After 10 to 15 seconds smoothly open the high-pressure fuel valve. Jet pipe temperature and increasing rpm should be watched to see whether the start is successful.

i. After the engine starts the relight switch (27) is placed in the off position.

11. Cruise

CRUISE (CONSTANT ALTITUDE)

Altitude	Indicated Air Speed KM/HR	Approximate RPM	Range
SL	565 - 620	8,500 - 9,000	220
15,000	505 - 535	9,000	340
25,000	435 - 460	9,200	440
35,000	460 - 485	9,800	530
40,000	415 - 430	10,000	580
45,000	370 - 380	10,500	630

12. Landing

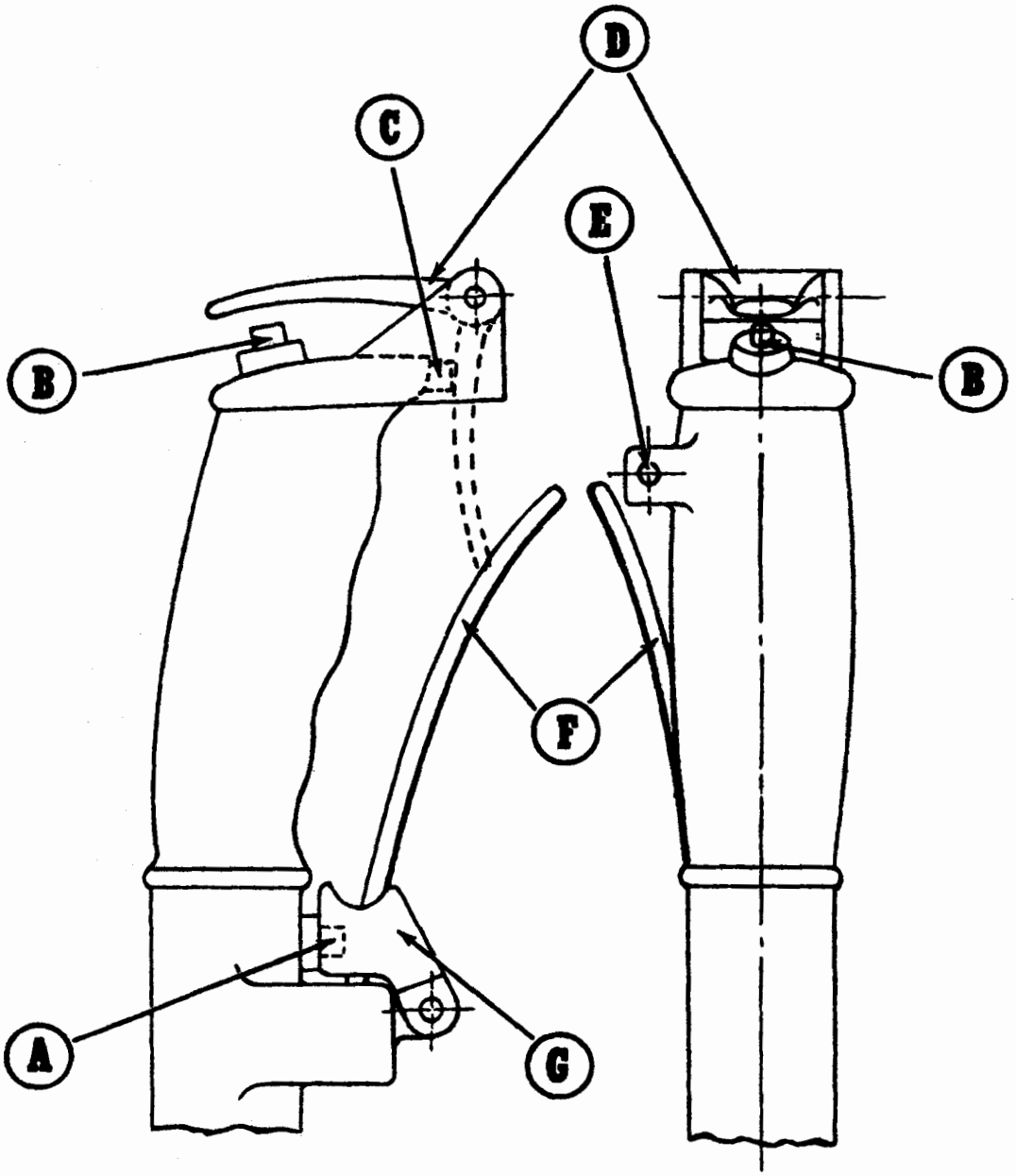
Approach - FULL flaps (55°) and gear DOWN.

Last turn is made at 300 km/hr.

Final at 250 km/hr.

Engine speed 6-7000 rpm. Fuel pressure 5 atmospheres.

Touch down at 172 km/hr.



A. Bomb Release Button
B. Firing Button for 37 mm Gun
C. Recessed Button for Firing 23 mm Guns and is Operated by D
D. Combined "Trigger" to Fire 37 mm Guns and Safety Lever
E. Speed Brake "Blipping" Button
F. Wheel Brake Operating Lever
G. Safety Guard for Bomb Release Button

Fig. 11 Control Stick

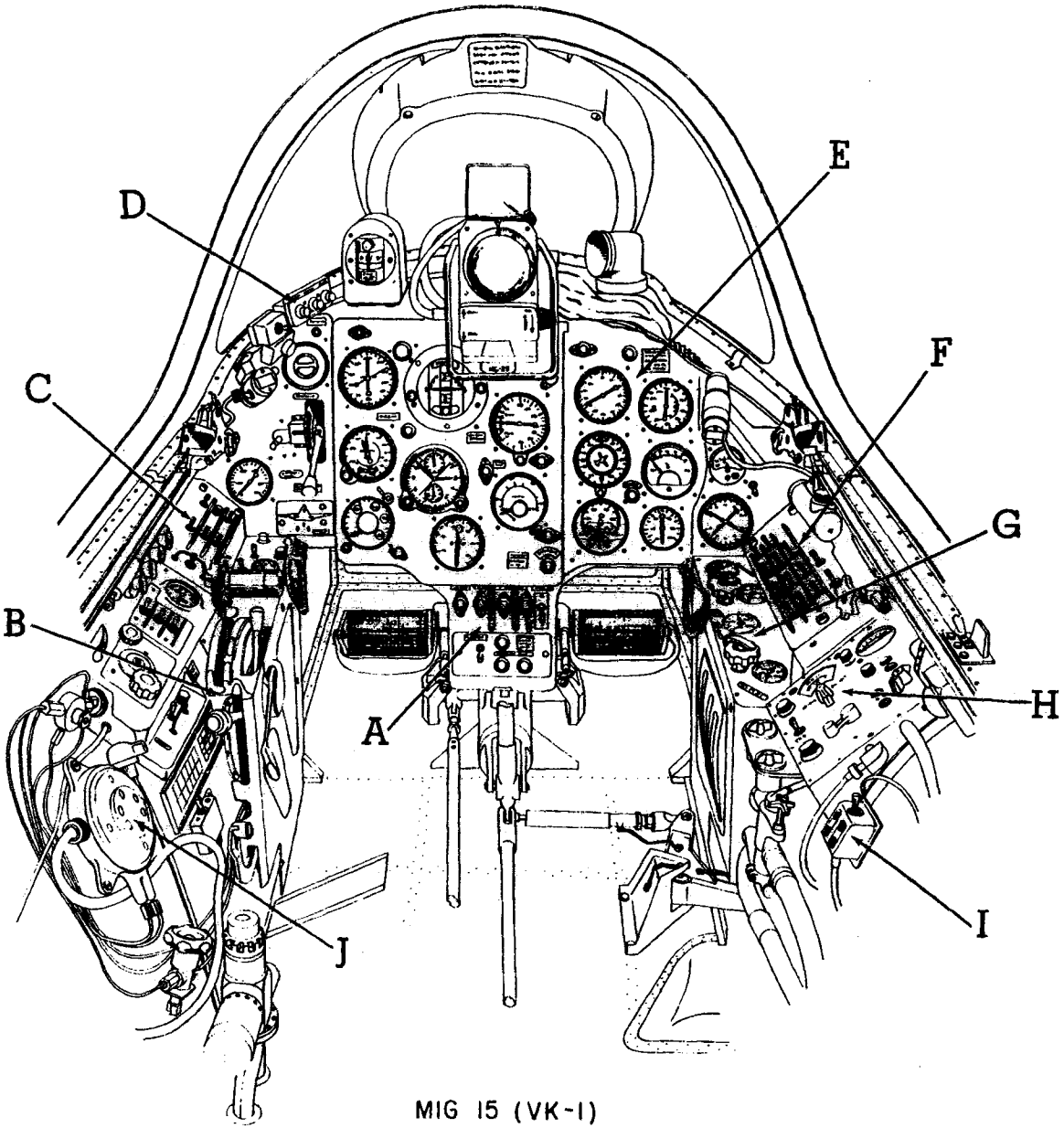
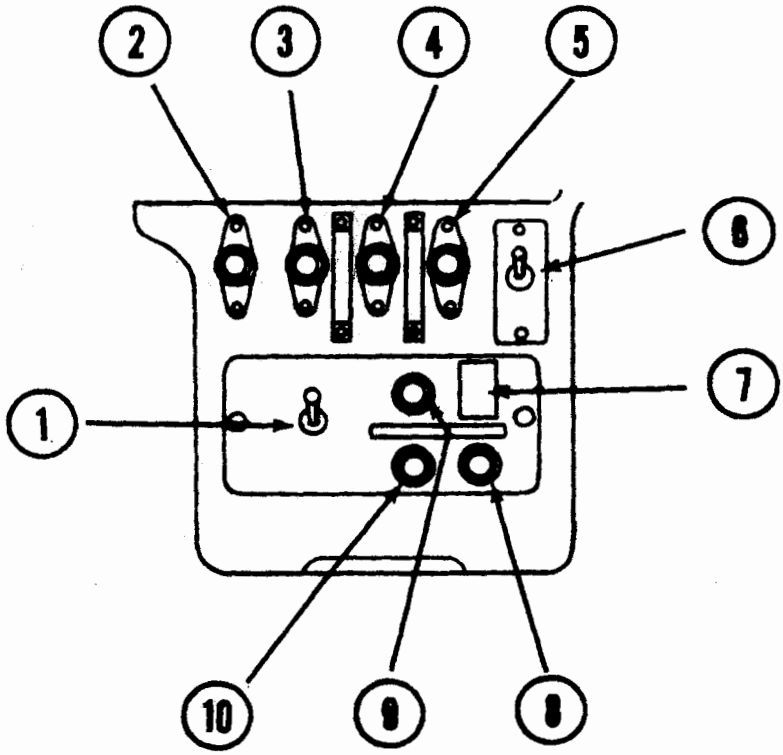


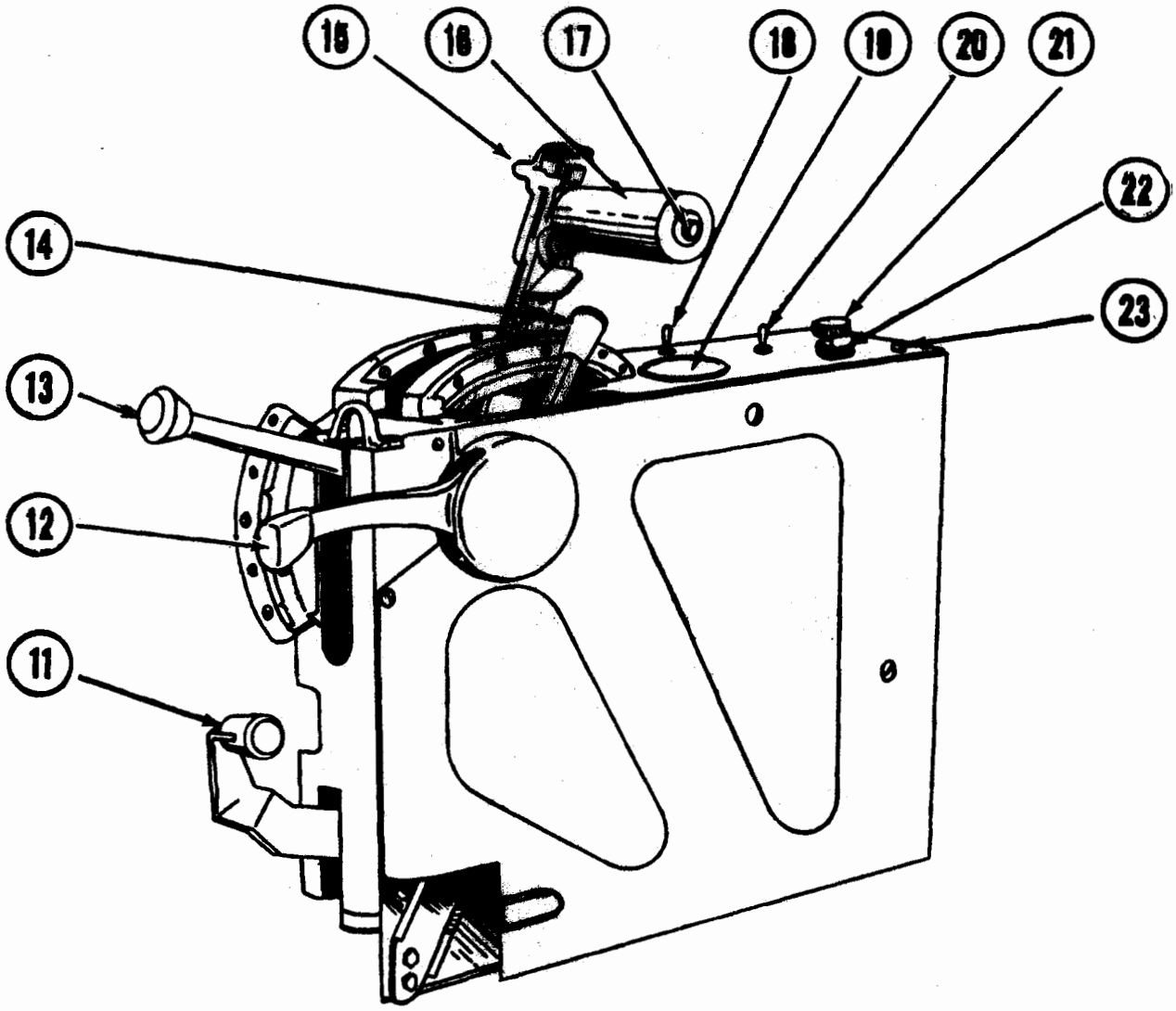
Fig. 12 MIG-15 (VK-1) Cabin Layout

T54-4394



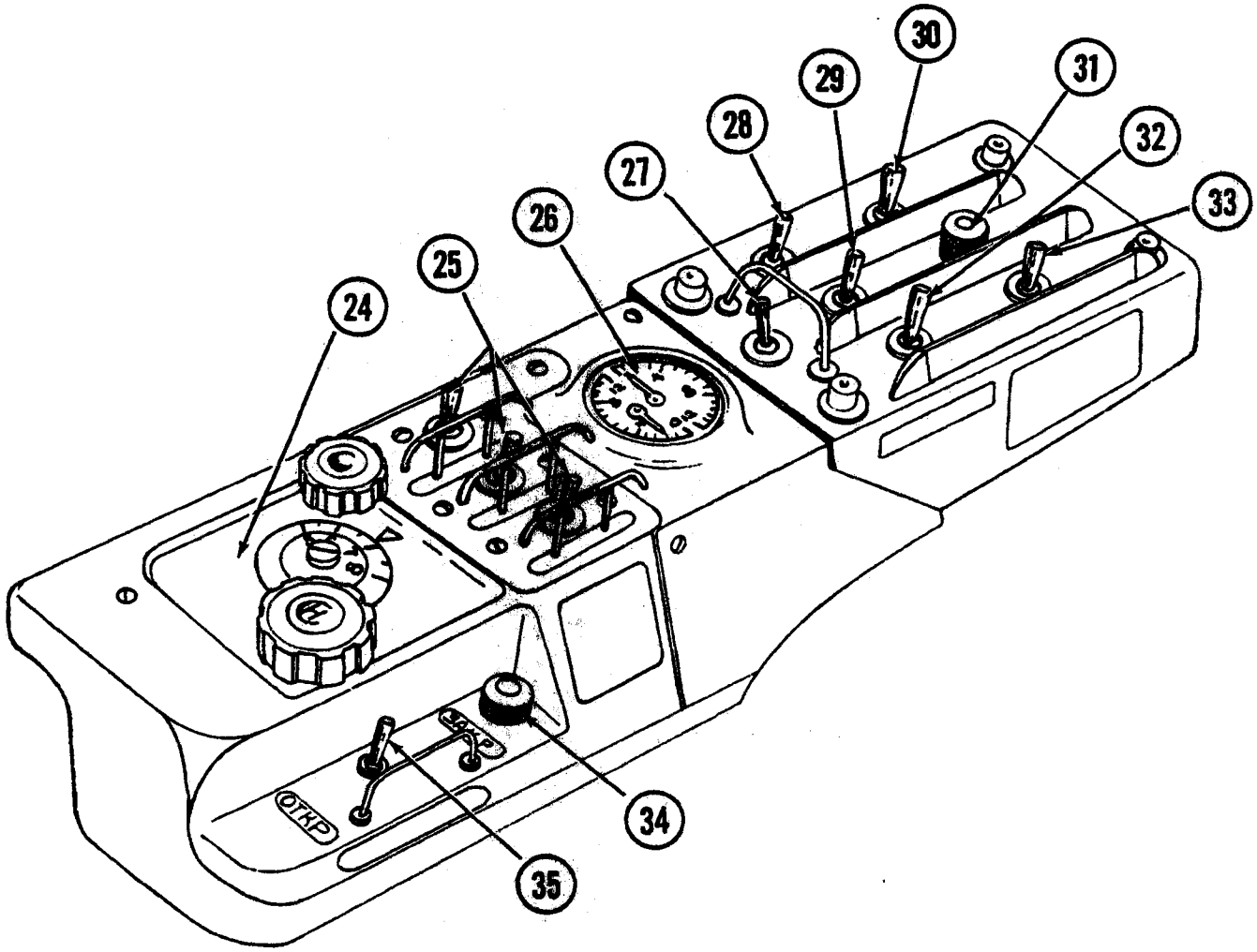
1. Bomb Fuzing Switch
2. Wing Tank Empty (Green Light)
3. 23mm Gun Cocked Indicator Light (Red)
4. 23mm Gun Cocked Indicator Light (Red)
5. 37mm Gun Cocked Indicator Light (Red)
6. Drop Tank Light On/Off Switch
7. Drop Tank-Bomb Jettison Push Button
8. Bomb Slip Cocked and Selected, Right (Green)
9. Bombs Fuzed Light (Red)
10. Bomb Slip Cocked and Selected, Left (Green)

Fig. 12 Cabin Layout - Detail A



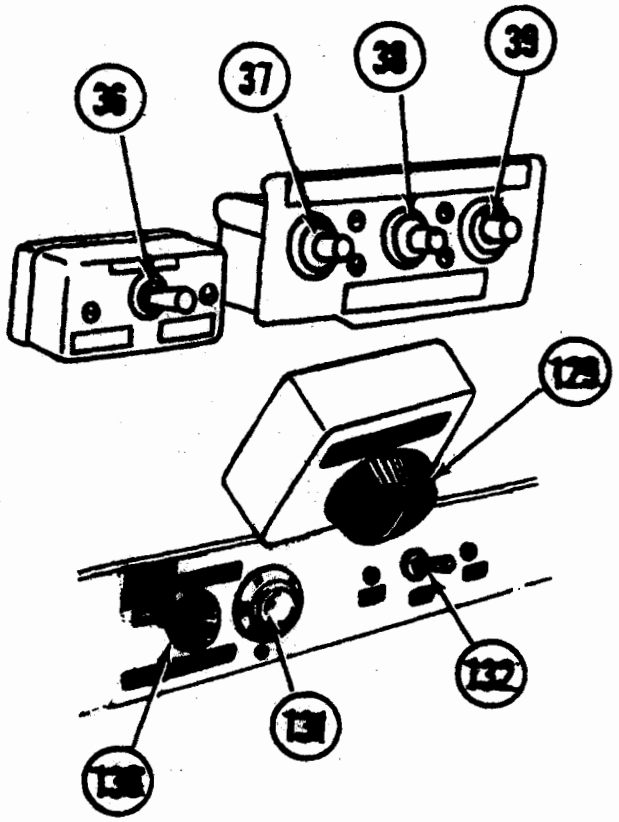
11. High Pressure Cock
12. Throttle Locking Lever
13. Flap Selector Lever
14. Aileron Boost Selector On/Off
15. Engine Starter Button
16. Throttle Lever
17. Push-to-Talk Switch (Command Transmitter)
18. Auto-Speed Brake On/Off (Inoperative)
19. Aileron Booster System Hydraulic Pressure Gauge
20. Aileron Trim Tab Positioning Switch
21. Fire Warning Light
22. Fire Extinguishing Operating Switch
23. Fire Warning Light Circuit-Check Button

Fig. 12 Cabin Layout - Detail B



24. Radio Command Receiver Remote Control Box
25. Three Range Toggle Switch (Radio Compass)
26. Brake Pressure Gauge
27. Engine Re-light Switch
28. Ignition Isolator Switch
29. Switch for Engine Instruments
30. Start and Booster Pump Switch
31. Isolating Valve Light (Green)
32. Rear Tank Pump and Light Switch
33. Isolating Valve Switch
34. Air Brake Indicator Light (Green)
    Air Brake "Open" Light "On"
35. Air Brake Operation Toggle Switch

Fig. 12 Cabin Layout - Detail C



36. Radio Beacon FAR-NEAR Switch
37. Gun Cocking Button 23 mm (Outer)
38. Gun Cocking Button 23 mm (Inner)
39. Gun Cocking Button 37 mm
129. Rheostat Magnetic Compass Light
130. Positioning Switch - Elevator Trim Tab
131. Elevator Trim Tab-Neutral Position Indicating Light
132. Navigation Light Switch

Fig. 12 Cabin Layout - Detail D

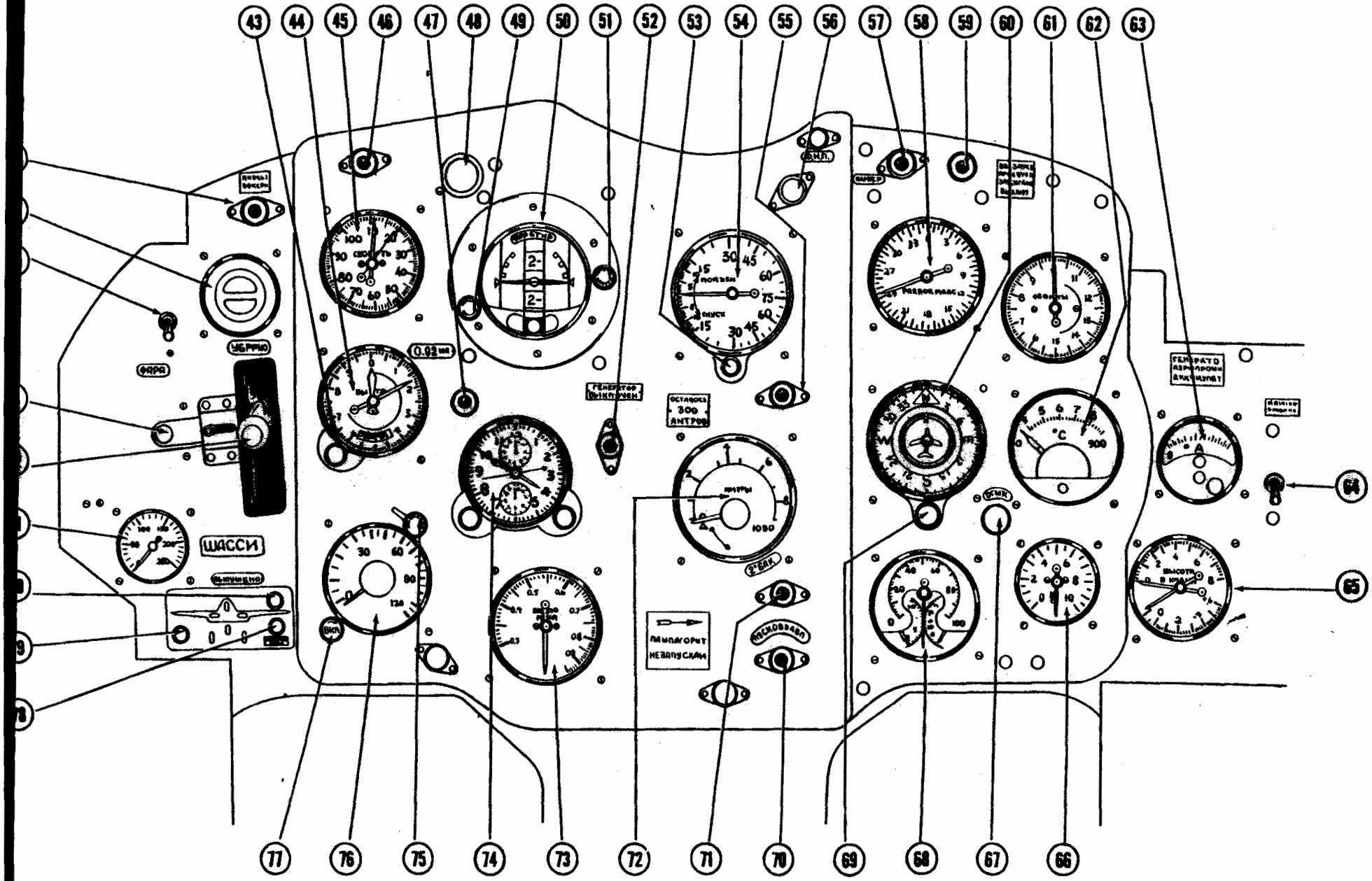
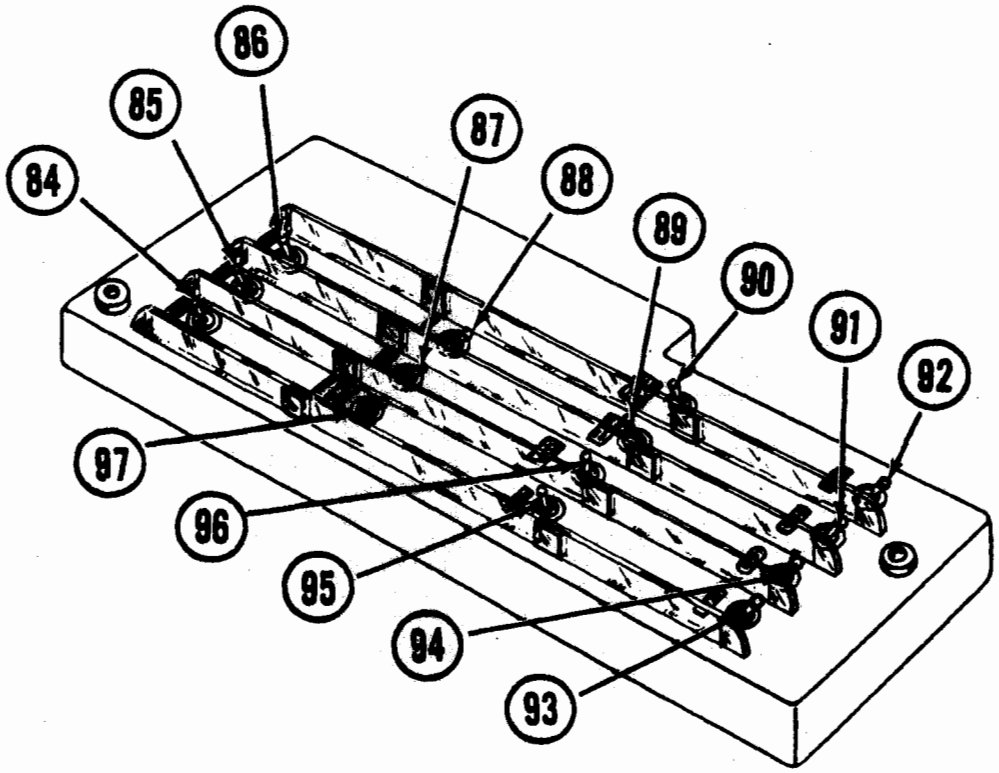


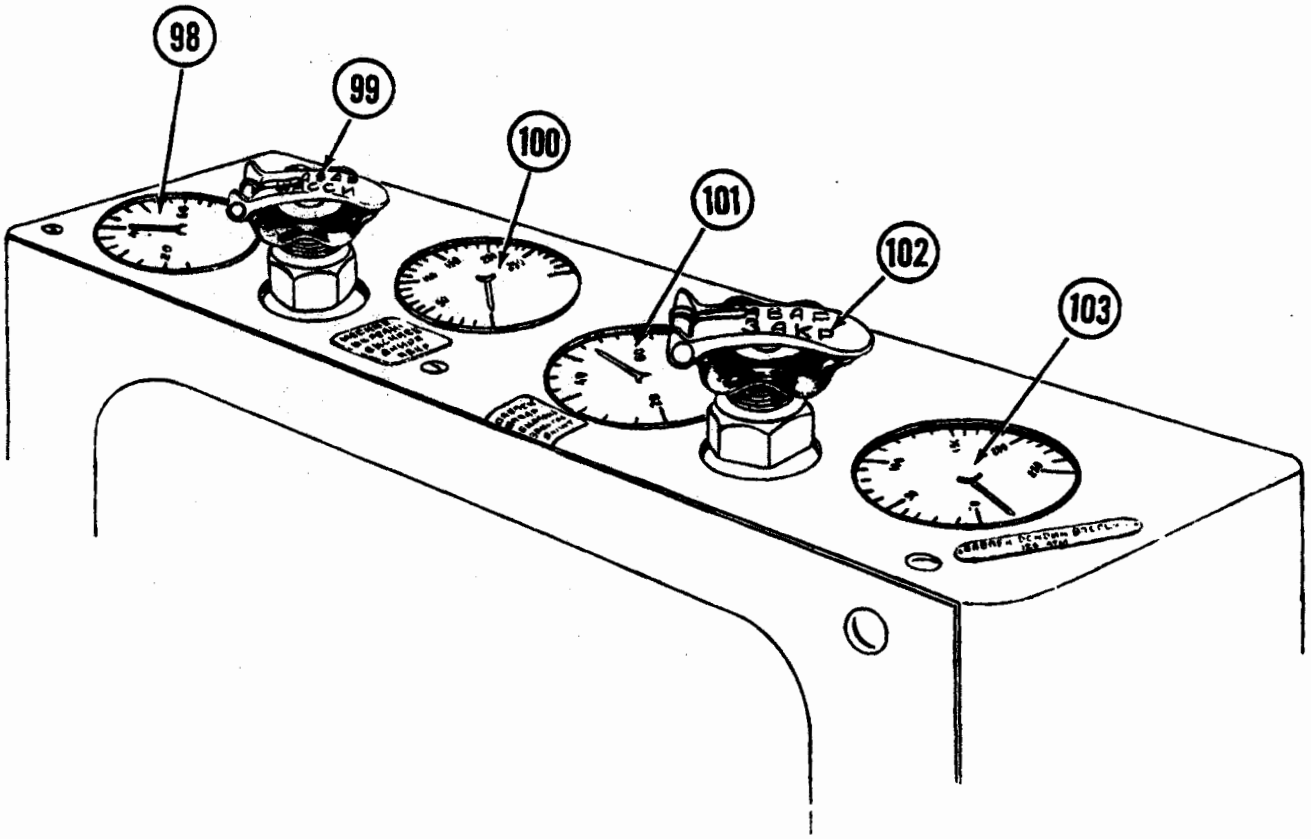
Fig. 12 Cabin Layout - Detail E

40. Landing Lamp Switch
41. Oxygen Flow Indicator
42. Flap Indicator Light (Green) "on" When Flaps Not "up"
43. Altimeter Barometric Setting Knob
44. Altimeter
45. Air-Speed Indicator
46. One of Four Thumb Nuts for Removing Instrument Panel
47. M-0.92 Red Warning Light (Inoperative)
48. Warning Light Under Carriage Not Down (Red)
49. Adjustment Knob-Horizon Reference Line
50. Combined Gyro Horizon-Turn-Bank Indicator
51. Caging Knob - Gyro Horizon
52. Generator Warning Light (Red)
53. Zero Adjustment Knob-Rate of Climb Indicator
54. Rate of Climb Indicator
55. Fuel Warning Light (300 Litres Level) (Red)
56. Camera Gun Indicator Light (White)
57. Marker Beacon Indicator Light
58. Indicator for the Radio Compass Receiver
59. Warning Light for Engine Re-Light Switch
60. Gyro Magnetic Compass Indicator
61. Engine R.P.M.
62. Jet Pipe Temperature
63. Volt Ammeter
64. Pitot Head Heater Switch
65. Cockpit Differential Pressure Gauge and Cockpit Altimeter
66. Low Fuel Pressure Gauge
67. Gyro Magnetic Compass Synchronizing Push Button
68. Engine Gauge Unit (Oil Temperature)
    (Oil Pressure)
    (Fuel Pressure)
69. Gyro Magnetic Compass Scale Adjustment Knob
70. Low Fuel Pressure Warning Light (Red)
71. Signal Light (Green) Rear Tank Booster Pump Out or Tank Empty
72. Fuel Quantity Gauge
73. Machmeter
74. Clock
75. Range Switch (Radio Altimeter)
76. Indicating Meter for Radio Altimeter
77. On/Off Switch (Radio Altimeter)
78. Push Button for Checking the Lamp Serviceability in the Undercarriage Indicating Unit
79. A Slide Control for Lessening the Intensity of the Landing Gear Position Indicator Lamp
80. Undercarriage Indicator Unit
81. Oxygen Pressure Gauge
82. Undercarriage Selector Lever
83. Lock Slide Undercarriage Selector



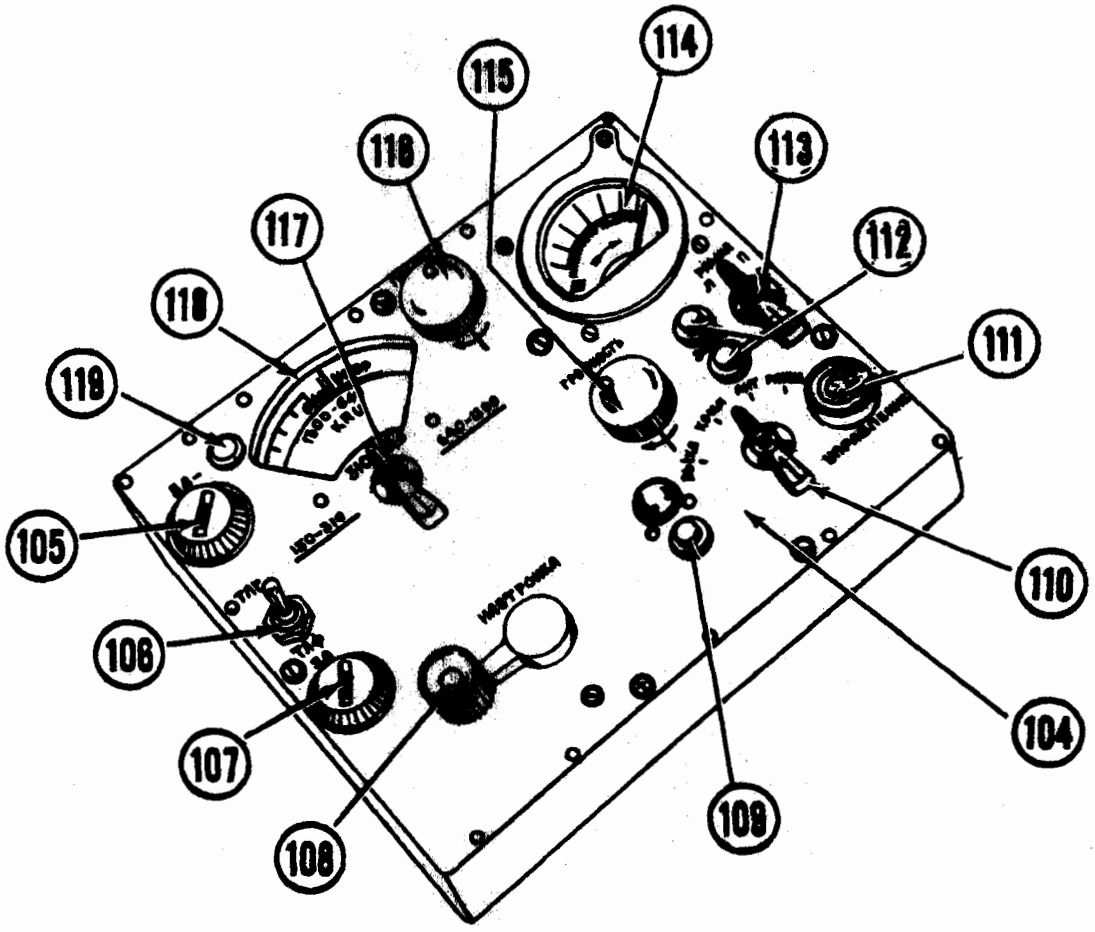
84. Master Battery Switch
85. Generator Switch
86. Landing Light Switch (Light in Left Wing)
87. Gyro Magnetic Compass
88. Radio Transmitter Receiver
89. ARK Marker Switch (Radio Compass)
90. Radio Altimeter
91. Gun Sight Switch
92. Camera Gun Switch
93. Master Switch 23mm Gun
94. Master Switch 37 mm Gun
95. Bomb Release Selector
96. Drop Tank Release - Emergency Bomb Release Selector Switch
97. Master Switch - Elevator and Aileron Trim Tab Motors

Fig. 12 Cabin Layout - Detail F



98. Emergency Undercarriage Air Pressure Gauge
99. Undercarriage Emergency Air Valve
100. Main Hydraulic System Pressure Gauge
101. Emergency Flap Air Pressure Gauge
102. Flap Emergency Air Valve
103. Air Pressure Gauge Main System

Fig. 12 Cabin Layout - Detail G



104. Remote Control Box (Radio Compass Receiver)
105. Fuse Holder
106. BFO Relay (on-off) Switch
107. Fuse Holder
108. Tuning Crank
109. "On" Indicating Lamp
110. Function Switch
111. Control Switch (not in use)
112. 2 Spare Dial Clamps
113. "Left-Right" Switch
114. Tuning Meter
115. Volume Control
116. Light Intensity Control
117. Band Change Switch
118. Frequency Dial
119. Dial Lamp

Fig. 12 Cabin Layout - Detail H