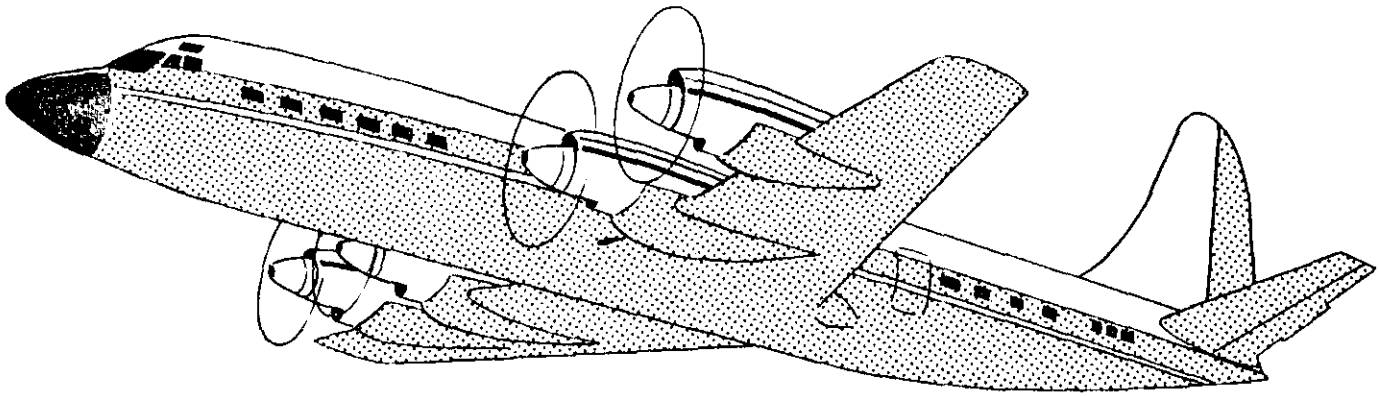
FLIGHT ENGINEER

Turboprop
Reciprocating Engine

WRITTEN TEST GUIDE



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AC 63-4 FLIGHT ENGINEER TURBOPROP RECIPROCATING ENGINE WRITTEN TEST GUIDE 1980

FLIGHT ENGINEER

TURBOPROP—RECIPROCATING ENGINE

WRITTEN TEST GUIDE

1980

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Office of Flight Operations

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

PREFACE

This written test guide had been developed by the Office of Flight Operations, Federal Aviation Administration, Department of Transportation, as Advisory Circular 63-4, to assist applicants who are preparing for the Flight Engineer-Turboprop or Reciprocating Engine Written Tests.

This guide outlines the scope of knowledge covered in the test, lists reference materials for study, and presents questions representative of those contained in the official test.

The test items in this guide are based on regulations, principles, and practices that were current at the time this publication was printed. This guide will be periodically revised.

Test items in the FAA written tests are updated as soon as possible when the need arises, consequently, FAA written test items may vary from those contained herein.

The FAA does not supply the correct answers to questions included in this guide. Students should determine the answers by research and study, by working with instructors, or by attending ground schools. The FAA is in no way responsible for the contents of commercial reprints of this publication nor the accuracy of answers they may list.

Comments regarding this publication should be directed to:

U.S. Department of Transportation
Federal Aviation Administration
Flight Standards National Field Office
Examinations Standards Branch, AFO-590
P.O. Box 25082
Oklahoma City, Oklahoma 73125

CONTENTS

FLIGHT ENGINEER
TURBOPROP— RECIPROCATING ENGINE
WRITTEN TEST GUIDE

INTRODUCTION

The Office of Flight Operations of the Federal Aviation Adminstration has issued this Flight Engineer Turboprop—Reciprocating Engine Written Test Guide as Advisory Circular 63-4 to provide information to prospective flight engineers and others interested in these certification areas. The guide contains information about certification requirements and describes the type and scope of the written test. It lists appropriate study and reference material and presents questions representative of those found in the official written test book.

As a convenience to the applicant, those portions of the present Federal Aviation Regulations concerning general eligibility and aeronautical experience requirements have been included. Applicants should be aware, however, that regulations are subject to amendment. Any questions regarding the currency of these quoted excerpts should be checked with the appropriate FAA office.

The written tests are designed to measure the aeronautical knowledge of the prospective flight engineer on an air carrier aircraft. The flight engineer is primarily a technical expert, who must be thoroughly familiar with the operation and function of various components of the aircraft. Specific duties vary with different aircraft and with different air carriers. The flight engineer written tests place major emphasis on the normal and emergency duties of an air carrier flight engineer and on the knowledge required to understand systems and components related to a particular powerplant class aircraft.

CERTIFICATION REQUIREMENTS

The following excerpts from the Federal Aviation Regulations, Part 63, pertaining to eligibility, are given for the convenience of the applicant:

"§63.31 Eligibility requirements: general.

To be eligible for a flight engineer certificate, a person must—

(a) Be at least 21 years of age;

(b) Be able to read, speak, and understand the English language, or have an appropriate limitation placed on his flight engineer certificate;

(c) Hold at least a second-class medical certificate issued under Part 67 of this chapter within the 12 months before the date he applies, or other evidence of medical qualification accepted for the issue of a flight engineer certificate under §63.42; and

(d) Comply with the requirements of this Subpart that apply to the rating he seeks.

"§63.37 Aeronautical experience requirements.

(a) Except as otherwise specified therein, the flight time used to satisfy the aeronautical experience requirements of paragraph (b) of this section must have been obtained on an airplane—

(1) On which a flight engineer is required by this chapter; or

(2) That has at least three engines that are rated at least 800 horsepower each or the equivalent in turbine-powered engines.

(b) An applicant for a flight engineer certificate with a class rating must present, for the class rating sought, satisfactory evidence of one of the following:

(1) At least three years of diversified practical experience in aircraft and aircraft engine maintenance (of which at least one year was in maintaining multiengine aircraft with engines rated at least 800 horsepower each, or the equivalent in turbine engine powered aircraft), and at least five hours of flight training in the duties of a flight engineer.

(2) Graduation from at least a two-year specialized aeronautical training course in maintaining aircraft and aircraft engines (of which at least six calendar months were in maintaining multiengine aircraft with engines rated at least 800 horsepower each, or the equivalent in turbine engine powered aircraft), and at least five hours of flight training in the duties of a flight engineer.

(3) A degree in aeronautical, electrical, or mechanical engineering from a recognized college, university, or engineering school; at least six calendar months of practical experience in maintaining multiengine aircraft with engines rated at least 800 horsepower each, or the equivalent in turbine engine powered aircraft; and at least five hours of flight training in the duties of a flight engineer.

(4) At least a commercial pilot certificate with an instrument rating and at least 5 hours of flight training in the duties of a flight engineer.

(5) At least 200 hours of flight time in a transport category airplane (or in a military airplane with at least two engines and at least equivalent weight and horsepower) as pilot in command or second in command performing the functions of a pilot in command under the supervision of a pilot in command.

(6) At least 100 hours of flight time as a flight engineer.

(7) Within the 90 day period before he applies, successful completion of an approved flight engineer ground and flight course of instruction as provided in Appendix C of this Part." [Part 63.]

TYPE OF WRITTEN TEST

An applicant for a flight engineer certificate must pass a Basic Written Test and a Class Rating Written Test (or a Combined Test) appropriate to the class of aircraft on which a rating is desired.

The Flight Engineer Basic Written Test consists of items pertaining to:

Federal Aviation Regulations.
Theory of Flight and Elementary Aerodynamics.
Basic Meteorology with respect to engine operations.
Center of Gravity Computation.

The Flight Engineer Class Rating Written Tests are related to a particular powerplant class of airplane and are titled:

Flight Engineer—Reciprocating Engine Written Test.
Flight Engineer—Turboprop Written Test.
Flight Engineer—Turbojet Written Test.

The Class Rating Written Test consists of items pertaining to:

Airplane Systems and Equipment.
Powerplant Systems and Equipment.
Normal Operating Procedures.
Emergency Procedures.

The Combined Test (e.g., Turboprop-Basic) consists of items found on the Flight Engineer Basic Written Test and on the appropriate Class Rating (e.g., Turboprop) Written Test.

Test items are multiple-choice, similar to those included in this guide. Questions are designed to determine whether the applicant has an adequate knowledge of fundamental principles and whether that knowledge can be applied to problems encountered in flight operations. Many items are based on charts, graphs, and diagrams similar to those found in this study guide.

The tests are based on aircraft which are used in the preponderance of initial Flight Engineer training by Civil United States Air Carriers. The aircraft are:

Turbojet—Boeing 727.
Turboprop—Lockheed L-188.
Reciprocating Engine—Douglas DC-6B.

In additions, tests are available to accommodate applicants who have had training on several other aircraft such as:

Boeing 707.
Douglas DC-8.
Lockheed L-382 (C-130).

Applicants may request one of these tests appropriate to their experience or training at the local FAA District Office.

TAKING THE WRITTEN TEST

The written tests may be taken at FAA District Offices and certain Designated Written Test Examiner locations.

The FAA has adopted a question book method of testing in the Flight Engineer Turboprop and Reciprocating Engine areas. The Question Book features a single book containing 1,000 or more questions plus all the necessary supplementary information (performance charts, illustrations, etc.) applicable to the test questions contained in the Question Book. Each applicant is issued a Question Book, a Question Selection Sheet, and the standard Airman Written Test Application (answer sheet), AC Form 8080-3. For each question on the answer sheet, the applicant is directed by the Question Selection Sheet to a numbered question in the Question Book. After selecting a response, the appropriate space on the answer sheet is filled in.

The Flight Engineer Turboprop-Reciprocating Engine Question Book is designed to meet a variety of applicant needs through use of the appropriate Question Selection Sheet. The book can be used to administer tests in these areas:

(a) Flight Engineer Turboprop (FEP)—containing questions based on one of two airplanes: L-188 or L-382. An applicant is given the option of taking a test based on the airplane in which training or experience has been received.

(b) Flight Engineer Reciprocating Engine (FER)—containing questions based on the DC-6B airplane.

(c) Flight Engineer Turboprop-Basic (FET)—containing a combination of FEP and FEB questions based on one of two airplanes: L-188 or L-382. An applicant is given the option of taking a test based on the airplane in which training or experience has been received.

(d) Flight Engineer Reciprocating Engine-Basic (FEN)—containing a combination of FER and FEB questions based on the DC-6B airplane.

A minimum grade of 70 percent is required to pass a Flight Engineer Written Test.

The applicant is notified of the test grade on the Airman Written Test Report, AC Form 8080-2. The report also contains coded indications of the subject matter involved in test items which the applicant missed. A Written Examination Subject Matter Outline is provided to relate the codes to specific topics. The study outline contained in this guide is similar to the Subject Matter Outline the applicant receives with AC Form 8080-2. An applicant who receives a failing grade must present the appropriate AC Form 8080-2 when appearing for reexamination. A test must be started in sufficient time to permit its completion during the normal working day. To save time, applicants should plan to use a computer or portable electronic calculator in solving weight and balance problems and in performing other computations. After completing the test, the applicant must surrender the question book, question selection sheet, and answer sheet, together with any papers used for computations or notations, before leaving the examination room.

When taking the test, the applicant should keep the following points in mind:

(a) Each question or problem should be read carefully before looking at the possible answers. The applicant should clearly understand the problem before attempting to solve it.

(b) After formulating an answer to the question, the applicant should determine which of the alternatives provided most nearly correspond with that answer. The alternative chosen should completely resolve the problem.

(c) From the alternatives given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other alternatives are either incomplete or derived from popular misconceptions.

(d) If a particular test item proves difficult, it is best to proceed to another question. After the less difficult questions have been answered, the others should then be reconsidered.

(e) The applicant may mark on the Question Selection Sheet. No marks are allowed to be made on the Question Book.

SCOPE OF THE WRITTEN TESTS

All test items used in official Flight Engineer Written Tests are related to topics in the study outline in this guide. An applicant who is thoroughly prepared in the subject matter and who follows the procedures recommended in this guide should have no difficulty in satisfactorily completing the written tests. The suggested topics for study are directly associated with the normal and emergency flight engineer duties.

When studying the topics listed in the outline, the prospective flight engineer should be concerned primarily with basic principles underlying the performance and operation of transport aircraft.

Each question in this guide is identified with a three-character subject matter code which can be used as a reference to the study outline topics. It is advisable to use the subject matter codes to identify question and subject groups for making your study more systematic.

RECOMMENDED STUDY MATERIALS

The publications listed in this section will be helpful to persons studying for the flight engineer written tests. A variety of additional textual material which can be helpful in preparing for the written test is available from various publishers, manufacturers, and operators. Textbook publishers will usually furnish a listing of their available publications in a specific area of information. Most public and institutional libraries maintain technical reference sections and will assist interested persons in locating material for study. Flight manuals, operation manuals, maintenance manuals, and technical booklets concerning transport category airplanes and equipment are also good information sources.

It is the responsibility of applicants to obtain study materials appropriate to their needs.

The following Federal Aviation Regulations and Advisory Circulars are sold by the Superintendent of Documents. Availability, prices, and ordering instructions for all AC's are contained in AC 00-2, Advisory Circular Checklist. AC 00-44, Status of Federal Aviation Regulations, contains like information for FAR's. Both lists are available without charge from:

Department of Transportation
Publications Section, M-443.1
Washington, D.C. 20590

Federal Aviation Regulations

The FAA publishes the Federal Aviation Regulations to make readily available to the aviation community the regulatory requirements placed upon them.

Part 1—Definitions and Abbreviations.—This Part lists the official definitions and abbreviations used in the Federal Aviation Regulations.

Part 63—Certification: Flight Crewmembers Other Than Pilots.—The applicant should be thoroughly familiar with the provisions of this Part pertaining to the flight engineer.

Part 121—Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft.—This Part provides the source material for most of the test items on Federal Aviation Regulations appearing in the tests.

Advisory Circulars

Pilot's Weight and Balance Handbook, AC 91-23A—This publication provides instruction on weight and balance terms, methods, and theory. It contains information relating to the control of loading of large aircraft. Practical examples are used throughout the text including problems similar to those used in this guide.

Aviation Weather, AC 00-6A—This joint FAA-National Weather Service publication provides an authoritative text on meteorology for the aircrew member. It gives the prospective engineer a practical understanding of those meteorological principles important to aviation and to aircraft operations.

Airplane Flight Manuals

Flight manuals prepared by the manufacturer or by an airline are the best source of information concerning the knowledge required by the flight engineer. These manuals are generally controlled items and are not for sale to the public. Flight manuals which are prepared for military transport aircraft also are a good reference source for those who have access to such publications.

FLIGHT ENGINEER TURBOPROP—RECIPROCATING ENGINE STUDY OUTLINE

Applicants for a Flight Engineer Certificate need to be familiar with construction features and component functions; normal operations; trouble analysis; and isolation and correction of faults in the airplane and powerplant systems relevant to the Class Rating they seek. They also need to know the proper procedures for ground and inflight emergencies, as well as the reasons for operating in an approved manner and the possible effects if improper methods are used.

GENERAL & FLIGHT ENGINEER REGULATIONS

A10. Definitions, abbreviations, and symbols—FAR 1.
A20. Certification—FAR 63.

CERTIFICATION AND OPERATION OF AIR CARRIERS

B10. General Air Carrier and Operating Rules—FAR 121.1 through 121.207.
B20. Special Airworthiness Requirements—FAR 121.215 through 121.291.
B30. Instrument and Equipment Requirements—FAR 121.301 through 121.360.
B40. Airman and Crewmember Requirements—FAR 121.381 through 121.427.
B50. Crewmember Qualifications—FAR 121.431 through 121.453.
B60. Flight Time Limitations—FAR 121.470 through 121.525.
B70. Flight Operations—FAR 121.531 through 121.589.
B80. Dispatch and Flight Release Rules—FAR 121.591 through 121.667.
B90. Records and Reports—FAR 121.681 through 121.723.

THEORY OF FLIGHT AND AERODYNAMICS

C10. Aerodynamic and airfoil definitions.
C20. Airspeed measurement.
C30. Characteristics of transport aircraft.
C40. High-lift devices.
C50. Takeoff and climb.
C60. Cruise.
C70. Descent and landing.
C80. Turbulence, gust, and load factors.

BASIC METEOROLOGY

D10. Pressure altitude, density altitude, and altimeter setting.
D20. Effect of pressure, temperature, and humdity variations on performance.
D30. Icing conditions and effects.
D40. Weather and the atmosphere.
D50. Speed of sound.

CENTER OF GRAVITY COMPUTATIONS

E10. Weight and balance definitions.
E20. Determine CG from given weights.
E30. Adding or removing passengers or cargo.
E40. Effect of burning or dumping fuel.
E50. Shifting weight.
E60. Weight and CG limitations.
E70. Use of loading tables.

AIRPLANE GENERAL

F10. Basic airframe.
F20. Airplane lighting.
F30. Doors and stairs.
F40. Furnishings.
F50. Preflight checks.
F60. After landing checks.

AIR-CONDITIONING AND PRESSURIZATION

G10. Pressurization sources.
G20. Pressurization system components.
G30. Pressurization controls.
G40. Air-conditioning system components.
G50. Cooling system.
G60. Heating system.
G70. Normal operations.
G80. Abnormal operation.
G90. Emergency operation.

AUTO-FLIGHT

H10. Autopilot.
H20. Flight director.

AUXILIARY POWER UNIT

I10. APU components.
I20. Controls and indicators.
I30. Normal operations.
I40. Abnormal and emergency operations.

ELECTRICAL

J10. Electrical theory.
J20. Battery and ground power.
J30. DC power system.
J40. AC power system.
J50. Controls and indicators.
J60. Electrical circuits.
J70. Normal operations.
J80. Abnormal operations.
J90. Emergency operations.

EMERGENCY EQUIPMENT

K10. Crew oxygen.
K20. Passenger oxygen.
K30. Portable fire extinguishers.
K40. Emergency lighting.
K50. Evacuation equipment.

FIRE PROTECTION

L10. Detection system.
L20. Fire extinguishing system.
L30. Emergency operations.

FLIGHT CONTROLS

M10. Primary controls.
M20. Boost system.
M30. Trim tabs.
M40. High-lift devices.
M50. Abnormal and emergency operations.

FLIGHT INSTRUMENTS

N10. Instrument system.
N20. Pitot-static and air data.
N30. Airspeed warning.
N40. (Reserved).
N50. Temperature indicating.
N60. Flight recorder.

FUEL

O10. Fuel system components.
O20. Fuel dump system.
O30. Normal operations.
O40. Abnormal and emergency operations.

HYDRAULIC

P10. Hydraulic power system.
P20. Landing gear.
P30. Brake and antiskid.
P40. Nose gear steering.
P50. Normal operation.
P60. Abnormal and emergency operation.

ICE AND RAIN

Q10. Airfoil anti-ice.
Q20. Engine anti-ice.
Q30. Pitot-static heat.
Q40. Window heat.
Q50. (Reserved).
Q60. Normal operations.
Q70. Abnormal and emergency operations.

NAVIGATION—COMMUNICATIONS

R10. Controls and indicators.
R20. Weather radar.
R30. Interphone.
R40. PA system.
R50. Voice recorder.
R60. VHF, HF, SELCAL.

PNEUMATICS

S10. Engine bleed system.
S20. (Reserved).
S30. Overheat protection.
S40. Normal operations.
S50. Abnormal and emergency operations.

POWERPLANTS

T10. Basic engine.
T20, Controls and indicators.
T30. Engine fuel system.
T40. Oil system.
T50. Starting and ignition systems.
T60. Reduction gear box.
T70. Normal operations.
T80. Abnormal operations.
T90. Emergency operations.

PROPELLER SYSTEM

U10. Principles of propellers.
U20. BETA range principles.
U30. Constant-speed principles.
U40. Feather and unfeather.
U50. Speed synchronization.
U60. Negative thrust sensing.
U70. Propeller ice control.
U80. Normal operations.
U90. Abnormal and emergency operations.

PERFORMANCE COMPUTATIONS

V10. Takeoff.
V20. Climb.
V30. Cruise.
V40. Maneuvering.
V50. Descent.
V60. Landing.

APPENDIX 1

FLIGHT ENGINEER TEST
TURBOPROP - RECIPROCATING ENGINE

Questions in this guide are used for these tests

Flight Engineer-Turboprop L-188
Flight Engineer-Turboprop L-382
Flight Engineer-Reciprocating Engine DC-6
Flight Engineer-Turboprop/Basic L-188
Flight Engineer-Turboprop/Basic L-382
Flight Engineer-Reciprocating Engine/Basic DC-6

1. What is a definition of the term "brake horsepower"?

A10

1- Power delivered at the propeller
DC6 shaft.
2- Power developed in the combustion chambers.
3- Power output corrected for temperature variations.
4- Power converted by the propeller to useful thrust.

2. Which procedure applies for a flight engineer who has an increase in physical
A20 deficiency beyond the limits of the standards of the medical certificate as outlined in FAR Part 67? The engineer

1- must have a recheck by an FAA medical examiner.
2- may continue to perform as a flight engineer until the expiration date of the medical certificate.
3- may not legally perform flight engineer duties.
4- must return (surrender) the medical certificate to an FAA inspector.

3. Which speed symbol definition is correct for transport category airplanes?

A10

1- V_{MC} means minimum control speed with the critical engine inoperative.
2- V_{LO} means the maximum speed for operation with landing gear extended.
3- V_{LE} means the maximum speed for operation with leading edge flaps extended.
4- V_{S1} means the stalling speed or the minimum steady flight speed in the landing configuration.

4. Which is a definition of the term "flight crewmember" according to the FARs?

A10

1- Any person, including a flight attendant assigned to duty in an aircraft during flight time.
2- A pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.
3- A certificated airman assigned to flight deck duty during flight time.
4- A pilot or flight engineer assigned to flight deck duty but no other air carrier employees.

5. Which minimum aeronautical experience qualifies an applicant to obtain a Flight
A20 Engineer Certificate with a class rating?

1- At least 24 months of practical experience in aircraft and engine repair.
2- 200 hours of flight time as a pilot in command in a transport category airplane.
3- At least 50 hours as a flight engineer on the same class airplane for which the rating is sought.
4- Within 60 days prior to application, successful completion of an approved flight engineer ground school.

6. Which class of material will not propagate a flame, beyond safe limits, after
A10 the ignition source is removed?

1- Flash resistant.
2- Fireproof.
3- Flammable.
4- Flame resistant.

7. Which current certificates must a flight crewmember possess to act as a flight
A20 engineer on a DC-6 aircraft in passenger service for a Domestic U.S. Air Carrier?

1- Flight Engineer Certificate with appropriate rating, or a foreign flight engineer license and a Second- or Third-Class Medical Certificate.
2- Flight Engineer Certificate with appropriate rating, or a Commercial Pilot Certificate with instrument rating and a Second-Class Medical Certificate.
3- Flight Engineer Certificate with reciprocating engine rating, and a First- or Second-Class Medical Certificate.
4- Flight Engineer Certificate with DC-6 rating, and a First- or Second-Class Medical Certificate.

8. To be eligible for a Flight Engineer Certificate, a person must
A20

1- pass a written test on airplane procedures and operations of reciprocating and jet powered engines.
2- be able to read, speak, and write the English language.
3- hold a First- or Second-Class Medical Certificate issued within the 12 months before the date of application.
4- be the holder of a pilot certificate or mechanic certificate.

9. The term "fireproof" indicates that the material can withstand the heat of a
A10 fire at least as well as which other material?

1- Aluminum alloy.
2- Asbestos.
3- Steel.
4- Titanium.

10. Unless suspended or revoked, a Flight Engineer Certificate
A20

1- expires at the end of the 24th month following the month of issuance or renewal.
2- expires the same date as the expiration of the required First-Class Medical Certificate.
3- expires 1 year after the month of issuance.
4- is issued without a specific expiration date.

11. What is a definition of the term "crewmember" relative to provisions of the
A10 Federal Aviation Regulations?

1- United States citizens assigned to duty on an air carrier engaged in international air commerce.
2- Only a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.
3- A person assigned to perform duty in an aircraft during flight time.
4- Any person assigned to duty in an aircraft during flight except a pilot or flight engineer.

12. Which speed symbol is correctly defined?

A10 1- V_{MF} means maximum flap extended speed.
2- V_{LE} means maximum landing gear operating speed.
3- V_{SO} means minimum steady flight speed in landing configuration.
4- V_{MO} means minimum control speed with the critical engine inoperative.

13. Unless the order of revocation provides otherwise, a person whose Flight Engi-
A20 neer Certificate is revoked may not apply for the same kind of certificate for what period of time?

1- Six months after the date of revocation.
2- One year after the date of revocation.
3- Thirty days after the date of revocation.
4- Ninety days after the date of revocation.

14. A material which is not susceptible to burning violently when ignited is de-
A10 fined as

1- flame resistant.
2- fireproof.
3- flash resistant.
4- noninflammable.

15. Which of the following is an aircraft class rating appropriate for a Fligh'
A20 Engineer Certificate?

1- Jet powered.
2- Turbopropeller powered.
3- Multiengine.
4- Transport.

16. What is an area identified by the term "stopway"?

A10

1- An area, at least the same width as the runway, capable of supporting an airplane during a normal takeoff.
2- An area designated for use in decelerating an airplane during an aborted takeoff.
3- An area with an upward slope not to exceed 1.2° of runway gradient.
4- An area not as wide as the runway able to support an airplane during an aborted takeoff.

17. Which current certificates must a flight crewmember possess to act as a flight

A20 engineer on a Lockheed L-188 aircraft in passenger service for a Supplemental U.S. Air Carrier?

1- Flight Engineer Certificate with turboprop rating and a Second-Class (or higher) Medical Certificate.
2- Flight Engineer Certificate with appropriate rating, or a Commercial Pilot Certificate with instrument rating and a Second-Class Medical Certificate.
3- Flight Engineer Certificate with appropriate rating, or a foreign flight engineer license and a Second- or Third-Class Medical Certificate.
4- Flight Engineer Certificate with an L-188 rating and a First- or Second-Class Medical Certificate.

18. Which is an eligibility requirement for the issuance of a Flight Engineer Certi-

A20 ficate by the Federal Aviation Administration?

1- Hold a Second- or Third-Class Medical Certificate.
2- Be 21 years of age or older.
3- Be a citizen of the United States of America.
4- Have a fluent command of the English language.

19. What is the last date an airman may have performed as a required flight engineer

A20 on a domestic air carrier if the engineer's Class II physical examination was conducted on March 15, 1981?

1- March 31, 1982.
2- March 15, 1982.
3- September 15, 1981.
4- March 31, 1983.

20. Which speed symbol indicates the higher airspeed for a transport category air-

A10 plane?

1- V_{MO}/M_{MO}
2- V_A
3- V_{LE}
4- V_{LO}/M_{LO}

21. What is a definition of the term "flammable" with respect to a fluid or gas?

A10

1- Not susceptible to burning violently when ignited.
2- Not susceptible to propagating a flame after the ignition source is removed.
3- Susceptible to igniting readily or exploding.
4- Susceptible to violent burning and rapid spread of flame when ignited.

22. Assume an airman has lost a Flight Engineer Certificate document. The privi-

A20 leges of the certificate may be exercised when possessing a

1- confirming telegram from the FAA.
2- valid medical certificate but only for a period of 120 days.
3- copy of a passing written test grade report.
4- temporary certificate issued by a Designated Flight Engineer Examiner.

23. To be eligible for a Flight Engineer Certificate, <u>with no limitations</u>, a per-

A20 son must

1- be able to read, speak, and understand the English language.
2- hold a First-Class Medical Certificate issued no later than 6 months prior to the date of application.
3- pass a written test on airplane procedures and operations of reciprocating and jet aircraft engines.
4- hold either a pilot or a mechanic certificate.

24. Which speed symbol is correctly defined?

A10 1- V_{MC} means the minimum control speed with No. 1 engine inoperative.
2- V_{LO} means the maximum speed for operation with the landing gear extended.
3- V_F means the maximum speed with flaps in the extended position.
4- V_1 means takeoff decision speed.

25. What is the definition of the term "critical engine"?

A10

1- The outboard engine on the right side.
2- The engine which carries the greatest accessory load during takeoff.
3- The engine whose failure would most adversely affect airplane performance.
4- Either outboard engine.

26. The possession of which combination of certificates permits an airman to per-

A20 form as a flight engineer?

1- A Commercial Pilot Certificate with instrument rating and a Second-Class Medical Certificate.
2- A Temporary Flight Engineer Certificate and a First-Class Medical Certificate.
3- A Special Purpose Flight Engineer Certificate and a Third-Class Medical Certificate.
4- A Temporary Medical Certificate and a Limited Flight Engineer Certificate.

27. The alteration of a Flight Engineer Certificate or the falsification of required

A20 records by an airman, is the basis for

1- revocation and cancellation of the Flight Engineer Certificate.
2- suspending or revoking any Airman or Ground Instructor Certificate held by the person.
3- surrender of all FAA Certificates held by the flight engineer.
4- a special flight check and reexamination on the rules of FAR Part 63 by an FAA inspector.

28. Which is a definition of V_2 speed?

A10

1- Speed for the best rate of climb.
2- Takeoff decision speed.
3- Takeoff safety speed.
4- Minimum takeoff speed.

29. Which of the following is an aircraft class rating appropriate for a Flight

A20 Engineer Certificate?

1- Multiengine land.
2- Propeller driven.
3- Three or four engine fanjet.
4- Reciprocating engine powered.

30. What restriction is placed upon a flight engineer during the period in which the

A20 Flight Engineer Certificate is suspended?

1- May not take a written test at an FAA office.
2- May not act as a pilot if a valid Commercial Pilot Certificate is possessed.
3- May not apply for a rating to be added to the Flight Engineer Certificate.
4- May not apply for a Pilot, Mechanic, or Ground Instructor Certificate.

31. Which altitude is the highest at which an engine can maintain a rated continu-

A10 ous manifold pressure at maximum continuous rotational speed?

DC6

1- Rated altitude.
2- Critical altitude.
3- Service ceiling.
4- Absolute ceiling.

32. Which speed symbol is correctly defined?

A10

1- V_F means minimum steady flight speed with flaps extended.
2- V_{LOF} means lift-off speed.
3- V_{MC} means maximum continuous airspeed.
4- V_{REF} means rotation speed.

33. Which of the following is grounds for the revocation of a Flight Engineer Cer-

A20 tificate by the FAA?

1- Transportation of depressant or stimulant drugs.
2- Failure to pass a First- or Second-Class Medical Examination every 12 months.
3- Conviction on any charge of misdemeanor.
4- Failure to reapply for Flight Engineer Certificate renewal before the 24-month expiration date.

34. Which is a required feature of a Class B cargo and baggage compartment?

B20

1- Lined with fireproof material.
2- Contains a smoke or fire detector system.
3- Fire therein is readily discernible to a crewmember at his or her station.
4- Fire therein will be smothered because of limited ventilation.

35. What is the time limit for the use of rated takeoff power in a reciprocating
A10 or turbopropeller engine?

1- Not over 5 minutes.
2- Continuous.
3- 3 minutes.
4- Not over 30 minutes.

36. Which is a required feature of a Class A cargo compartment?
B20

1- The compartment must contain an approved fire extinguishing system controllable from the flight engineer's station.
2- Any fire in the compartment must be readily discernible to a member of the crew while at his or her duty station.
3- There must be a means to shutoff ventilating airflow to the compartment.
4- There must be a means to exclude hazardous quantities of smoke or noxious gases from entering the crew compartment.

37. All cargo or carry-on baggage in the passenger compartment must be carried in
B20 approved cargo bins if located

1- in an area above the passenger seats.
2- in a passenger seat.
3- forward of the foremost seated passengers.
4- aft of the foremost seated passengers.

38. Which class compartments require the loading of cargo so as to allow a crew-
B20 member, when fighting a fire, to effectively reach all parts of the compartment with the contents of a hand fire extinguisher?

1- Class C, D, and E compartments.
2- Class A, B, and E compartments.
3- Class B and C compartments.
4- Class A and B compartments.

39. Which class compartment may be found only in airplanes designed for the car-
B20 riage of cargo in the cabin?

1- Class D compartment.
2- Class C compartment.
3- Class B compartment.
4- Class E compartment.

40. What provisions must be provided on a propeller-driven airplane according to
B20 FAR 121?

1- Means of detecting a negative thrust condition.
2- Auto-feathering systems for use during takeoff.
3- Means of stopping and restarting an engine in flight.
4- Propeller RPM indicators on the flight deck.

41. Which of the following rules apply when cargo is carried in the passenger com-
B20 partment ahead of the foremost seated passengers?

1- The cargo must be secured to the floor with approved cargo tiedown straps.
2- The cargo must not restrict access to a regular exit or to an emergency exit.
3- The cargo must be in a passenger seat and secured by a safety belt.
4- The cargo must be carried in approved cargo bins.

42. In passenger-carrying airplanes, which class cargo and baggage compartment(s)
B20 require(s) the installation of an approved smoke or fire detector system to give warning at the pilot or flight engineer station and also have an approved built-in fire extinguisher system controlled from this station?

1- Class B, C, and D compartments.
2- Class B and D compartments only.
3- Class B compartment only.
4- Class C compartment only.

43. How many portable battery-powered megaphones are required on an air carrier
B30 airplane with a seating capacity of 100 passengers on a trip segment when 45 passengers are carried? (FAR Part 121)

1- Two, one at the forward end and the other at the most rearward location of the passenger cabin.
2- One, at the most rearward location in the passenger cabin.
3- One, located near the center of the passenger cabin.
4- Two, one located near or accessible to the flightcrew and one located near the center of the passenger cabin.

44. Which is a required feature of a Class E cargo compartment?
B20

1- Any fire in the compartment must be readily visible to a crewmember while at his or her station.
2- The compartment must contain an approved built-in fire extinguisher system controlled from the pilot or flight engineer station.
3- Enough access must be provided to enable a member of the crew to fight all fires with a hand fire extinguisher.
4- There must be means to shut off ventilating airflow to or within the compartment.

45. Which cargo in the passenger compartment need not be carried in an approved cargo
B20 bin?

1- Cargo carried aft of the rearmost seated passenger.
2- Any cargo carried alongside a seated passenger.
3- Cargo carried aft of the foremost seated passenger.
4- Cargo carried forward of the foremost seated passenger.

46. An aural landing gear warning device which operates in relation to flap posi-
B20 tion,

1- may have a manual shutoff located at the pilot or flight engineer station.
2- may be used instead of a throttle actuated warning device.
3- must have the flap position sensor located on the flap selector cable.
4- must sound continuously when the flaps are extended beyond the maximum approach climb configuration if the gear is not down and locked.

47. Interior emergency exit lights should be checked for operation. Federal Aviation
B30 Regulations require that these lights must

1- operate automatically when subjected to a negative "G" load.
2- be operable manually from the flight-crew station and the passenger compartment.
3- be armed or turned on during ground operation and all flight operations.
4- be operable from the flight deck only.

48. Which of the following statements is true regarding cargo compartment classi-
B20 fication?

1- Class B compartment--one which is NOT equipped with an approved smoke or fire detection system.
2- Class C compartment--one which is equipped with an approved, built-in fire extinguishing system.
3- Class D compartment--one which is NOT provided with a fire resistant lining.
4- Class E compartment--one in which there is no way of confirming smoke, flame, or noxious gases.

49. Which class cargo compartment(s) re-
quire(s) the installation of remote
B20 indicating fire or smoke detectors but do(does) not require the installation of a built-in fire extinguisher system?

1- Class B and E compartments only.
2- Class B, C, and E compartments.
3- Class B, C, and D compartments.
4- Class B compartment only.

50. Any piece of cargo or carry-on baggage in the passenger compartment ahead of
B20 the foremost seated passengers must be

1- packaged or covered in a manner to avoid possible injury to passengers.
2- secured with approved tiedown straps or net.
3- secured in a passenger seat with a safety belt.
4- carried in an approved cargo bin.

51. Which class cargo compartments require operable remote indicating fire or smoke
B20 detectors to give a warning at the pilot or flight engineer station?

1- Class A, B, and C compartments.
2- Class B, C, and D compartments.
3- Class B, C, and E compartments.
4- Class C, D, and E compartments.

52. Which item of required night-flying lighting equipment may also be required
B30 to have a means of controlling the intensity of illumination?

1- Landing lights.
2- Anticollision lights.
3- Instrument lights.
4- Position lights.

53. Which is a primary feature of a Class D compartment?

B20

1- Has a built-in fire extinguishing system.
2- Has a separate smoke or fire detection system.
3- Fire therein will not endanger airplane safety.
4- Completely sealed so no fire can occur therein.

54. The carriage of cargo aft of the rearmost seated passengers in the passenger
B20 compartment, is

1- permissible only if the cargo is carried in an approved cargo bin.
2- permissible if carried either in a cargo bin or tied securely to the floor and properly wrapped.
3- not permissible if the aircraft is used on a domestic or flag carrier route.
4- not permissible.

55. Hand fire extinguishers must be used to combat fires in certain locations. Which
B20 class compartments are protected from fire by the use of hand fire extinguishers?

1- Class A and B compartments only.
2- Class A, B, and E compartments.
3- Class B and E compartments only.
4- Class B, C, and E compartments.

56. The required hand fire extinguishers for a passenger transport airplane must be
B30 of a type suitable for combatting

1- the kind of fire likely to occur in the compartment where the extinguisher is to be used.
2- type A, B, and C fires.
3- type A and type C fires only.
4- fires which may occur in rugs or fire-resistant upholstery.

57. Interior emergency lights must be armed or turned on during

B30

1- ramp operations, taxiing, and takeoff.
2- takeoff, landing, and turbulent air operations.
3- descents, landings, and during emergency descents.
4- taxiing, takeoff, and landing.

58. In which class compartments must sufficient access be available to allow a
B20 member of the crew to reach all of the compartment for the purpose of fire fighting?

1- Class A and B compartments only.
2- Class A and E compartments only.
3- Class B and E compartments only.
4- Class A, B, and E compartments.

59. Which requirement applies to emergency equipment (fire extinguishers, mega-
B30 phones, first aid kits, and crash ax) installed in aircraft operated under FAR Part 121?

1- Cannot be located in the flight deck; all must be located in the passenger compartment.
2- Cannot be located in a compartment or area where it is not immediately visible to a flight attendant in the passenger compartment.
3- Must be replaced every 6 months to reduce possibilities of failure when needed.
4- Must be clearly marked to indicate its method of operation.

60. If there is a required emergency exit located in the flightcrew compartment,
B30 the door which separates the compartment from the passenger cabin shall

1- not be locked during flight.
2- be locked at all times except during emergency landings.
3- not be locked during takeoff and landing.
4- be locked at all times except during any emergency declared by the pilot in command.

61. An airplane used in domestic air carrier operations has a seating capacity for 65
B30 passengers. What is the minimum number of fire extinguishers and megaphones which must be located in the cabin when 55 passengers are carried? (FAR Part 121)

1- Two hand fire extinguishers and two megaphones.
2- One hand fire extinguisher and two megaphones.
3- Two hand fire extinguishers and one megaphone.
4- One hand fire extinguisher and one megaphone.

62. The calibration of each airspeed indicator, each airspeed limitation, and each
B30 item of related information in the Airplane Flight Manual or on pertinent placards must be expressed in

1- knots.
2- statute miles per hour.
3- equivalent airspeed.
4- percent of Mach.

63. Which event must cause the lighting of interior emergency exit lights?
B30

1- Opening of the emergency exit.
2- Actuation of the emergency exit equipment.
3- Interruption of the airplane's normal electric power.
4- Interruption of the airplane's emergency electric power.

64. Above which cabin altitude must oxygen be provided for all persons during the
B30 entire flight?

	All Crewmembers	All Passengers
1-	10,000 feet	12,000 feet
2-	12,000 feet	15,000 feet
3-	14,000 feet	14,000 feet
4-	10,000 feet	15,000 feet

65. Cockpit voice recorders shall be operated from the start of
B30

1- the takeoff roll to the end of the landing roll.
2- the before takeoff check to the end of the after landing check.
3- the before starting check to the end of the secure cockpit check.
4- departure from the ramp to the next full stop at a ramp.

66. How much supplemental oxygen must pressurized air carrier transport airplanes
B30 carry for each flight crewmember on flight deck duty?

1- A minimum of 30-minutes' supply.
2- A minimum of 2-hours' supply.
3- Sufficient for the duration of the flight above 8,000 feet cabin pressure altitude.
4- Sufficient for the duration of the flight above 10,000 feet flight altitude.

67. During preflight inspection, the flight engineer finds that one hand fire extin-
B30 guisher is missing in the passenger cabin. Which factor determines the minimum number of hand fire extinguishers required for flight under FAR Part 121?

1- Number of passengers aboard.
2- Number of installed passenger seats.
3- Number of required crewmembers.
4- Type of cabin wall lining and upholstery material.

68. In the event of an engine emergency, the use of a cockpit check procedure by the
B30 flightcrew is

1- discouraged because of possible failure of the cockpit lighting system.
2- required by regulations to prevent reliance upon memorized procedures.
3- recommended by the FAA as a double-check after the memorized procedure has been followed.
4- not recommended because of excess time involved in its proper utilization.

69. When operating under FAR Part 121, a flight engineer on flight deck duty must
B30 use supplementary oxygen

1- continuously when the aircraft is above Flight Level 250 regardless of the cabin altitude.
2- continuously during night flight when the cabin altitude is above 8,000 feet.
3- only after the cabin altitude has been between 10,000 and 12,000 feet for 30 minutes.
4- continuously when the cabin altitude is 10,000 feet or more.

70. When a flight recorder is required and installed, it shall
B30

1- be painted bright red for easy identification.
2- be operated continuously from the instant the airplane begins the takeoff roll to completion of the landing roll.
3- record heading, altitude, airspeed, aircraft weight, and vertical acceleration.
4- be in a container so constructed that it will not sink in the event of a water ditching.

71. Where should the portable battery-powered megaphone be located if only one is required on a passenger carrying airplane?
B30

1- The most rearward location in the passenger cabin.
2- The most forward location in the passenger cabin.
3- In the passenger cabin near the overwing emergency exit.
4- On the flight deck, readily accessible to the flight crewmembers.

72. Which aircraft are required to be equipped with a ground proximity warning-glide slope deviation alerting system?
B30

1- All transport category aircraft.
2- Large turbojet powered airplanes only.
3- Passenger carrying aircraft only.
4- Large turbine powered airplanes only.

73. Which equipment items are required for extended overwater operations?
B30

1- Life preserver equipped with a survivor locator light for each occupant of the airplane.
2- Liferafts in number such that there will be one liferaft for each four seats in the airplane, plus rafts to accommodate the crew aboard the airplane.
3- A survival kit for each life preserver.
4- A portable emergency radio signaling device for each crewmember.

74. Above which cabin altitude must oxygen be provided for all passengers during the entire flight?
B30

1- 15,000 feet.
2- 12,000 feet.
3- 14,000 feet.
4- 10,000 feet.

75. Which information must be retained by the required flight recorder?
B30

1- Voice communications of the three required flight crewmembers.
2- All radio and intercom communications.
3- Altitude, groundspeed, and heading.
4- Data from which time of radio transmissions with ATC can be determined.

76. A flight engineer, when on flight deck duty in a pressurized aircraft, must start using supplementary oxygen if the
B30

1- cabin pressure is above 5,000 feet at night or 10,000 feet during the day.
2- cabin pressure is above 10,000 feet for a period exceeding 30 minutes.
3- aircraft is operating above Flight Level 250 for a period exceeding 30 minutes.
4- aircraft is operating at or above Flight Level 250 for any period of time.

77. Each air carrier flight deck crewmember on flight deck duty must be provided with a quick-donning type oxygen mask when operating at flight altitudes above Flight Level
B30

1- 200.
2- 250.
3- 120.
4- 180.

78. The information recorded by a required cockpit voice recorder may be erased or otherwise obliterated no sooner than
B30

1- 48 hours after the end of the flight.
2- 60 days after the end of the flight.
3- 30 minutes after recording.
4- 15 minutes after recording.

79. When the requirement for needing a flight engineer crewmember is determined by aircraft weight, what is the limit above which a flight engineer is required?
B40

1- 80,000 lbs. maximum takeoff weight.
2- 80,000 lbs. maximum landing weight.
3- 80,000 lbs. maximum ramp or taxi weight.
4- 79,999 lbs. maximum gross weight.

80. To serve as a required flight crewmember on an air carrier airplane, a flight engineer must have satisfactorily completed recurrent ground and flight training for that airplane within the preceding
B40

1- 6 calendar months.
2- 12 calendar months.
3- 18 calendar months.
4- 24 calendar months.

81. The supplemental oxygen requirements for passengers when a flight is operated up
B30 to Flight Level 250 is dependent upon the airplane's ability to make an emergency descent to a flight altitude of

1- 10,000 feet within 4 minutes.
2- 12,000 feet within 4 minutes or at a minimum rate of 2,500 FPM, whichever is quicker.
3- 8,000 feet at a minimum rate of 3,000 FPM.
4- 14,000 feet within 4 minutes.

82. Which factors must be recorded by the approved flight recorder?
B30

1- Calibrated airspeed, time, pressure altitude, vertical acceleration or deceleration, and true course.
2- Time, true altitude, calibrated airspeed, vertical speed, and heading.
3- Elapsed time, airspeed, altitude, vertical acceleration, and magnetic course.
4- Airspeed, time, altitude, vertical acceleration, and heading.

83. If a flight engineer is a required flight crewmember of an airplane, which of the
B40 following is true regarding flight engineer emergency evacuation duties?

1- Flight engineer emergency evacuation duties must be described in the air carrier's Flight Operations Manual.
2- A flight engineer must receive recurrent emergency evacuation training each 6 months.
3- Flight engineer emergency evacuation duties must include the opening of all emergency exits.
4- The flight engineer must demonstrate the ability to accomplish emergency evacuation functions, in an airplane or simulator, at least once each 6 months.

84. How much operating experience must a flight engineer have completed to serve
B40 as a required crewmember on a particular type airplane?

1- Reciprocating engine--6 hours; turbopropeller--8 hours.
2- Reciprocating engine or turbopropeller--8 hours.
3- Reciprocating engine--8 hours; turbopropeller--10 hours.
4- Propeller-driven--10 hours.

85. On each air carrier flight requiring a flight engineer, at least one flight
B40 crewmember, other than the flight engineer, must be qualified to provide emergency performance of the flight engineer's functions. This flight crewmember

1- must have flown 50 hours, as a flight engineer, within the past 6 months.
2- is not required to have a flight engineer's certificate.
3- must be the pilot in command to perform flight engineer functions.
4- must have a flight engineer's certificate.

86. The flight engineer must perform, as part of emergency training, drills utilizing
B40 the proper equipment and procedure concerning

1- operation and use of emergency exit and evacuation chutes.
2- emergency descent.
3- discharge of fire extinguishers in engine nacelles.
4- dumping of fuel down to undumpable fuel level.

87. How much flight time as a flight engineer must an airman obtain in a 6-month
B50 period to remain qualified to perform in an airplane without taking a flight check?

1- 50 hours minimum and 500 hours maximum.
2- 50 hours in transport category airplanes.
3- 50 hours minimum in the airplane type.
4- 50 hours minimum and 600 hours maximum.

88. What is the limitation regarding time spent by a flight engineer in "deadhead"
B60 air transportation returning to the home station?

1- Cannot be considered part of the engineer's required rest period.
2- Must be considered part of the engineer's duty aloft.
3- Is considered part of the engineer's total commercial flying.
4- May be considered when determining the engineer's annual flight time requirement.

89. What is the term for the training required for flight crewmembers who have
B40 not qualified and served in the same capacity on another airplane of the same group (e.g., propeller-driven)?

1- Upgrade training.
2- Transition training.
3- Initial training.
4- Primary training.

90. During which preceding time period must a crewmember have completed an estab-
B40 lished training program in order to perform duties associated with handling of dangerous articles and magnetized materials?

1- 6 months.
2- 12 calendar months.
3- 18 calendar months.
4- 24 months.

91. Flight time limitations for domestic air carrier operations require that a flight
B60 engineer be

1- limited to a maximum of 1,200 hours duty aloft in any calendar year.
2- limited to a maximum of 40 hours aloft in any 7 consecutive days.
3- relieved of all duty for at least 24 consecutive hours in any 7 consecutive days.
4- relieved of all duty for at least 48 consecutive hours in any 7 consecutive days.

92. Which requirement must be met by all flight engineers every 6 months before
B50 they can serve on an air carrier flight under FAR Part 121?

1- Upgrade training.
2- Recurrent flight and ground training.
3- Line check or route check.
4- 50 hours of flight time or a flight check.

93. In flag air carrier operations (overseas) where the flightcrew consists of two
B60 pilots and one flight engineer, the engineer may not be scheduled for more than

1- 8 hours in any 24 consecutive hours.
2- 30 hours during any 7 days.
3- 300 hours in any 90 consecutive days.
4- 100 hours in any 30 consecutive days.

94. If the flight engineer becomes incapacitated, who may perform flight engineer
B40 duties during an IFR flight conducted under FAR Part 121?

1- A pilot crewmember but only if flight engineer certificated.
2- The pilot second in command only.
3- Any crewmember designated by the pilot in command.
4- Either pilot but only if qualified to perform flight engineer functions.

95. A drill which the flight engineer must perform, as part of emergency training,
B40 is one utilizing the proper equipment and procedures concerning

1- emergency descent following rapid decompression.
2- abnormal situations, such as hijacking.
3- fire extinguishing and smoke control.
4- emergency dumping of fuel.

96. How long a rest period is required for a flight engineer who has served on duty
B60 aloft for less than 8 hours on a domestic air carrier?

1- 8 hours.
2- Twice the number of hours of duty aloft, but not less than 8 hours.
3- 16 hours.
4- Twice the number of total duty hours (ground and aloft), but not less than 8 hours.

97. A flight engineer must receive recurrent training on emergency procedures at least
B40 once each

1- 12 calendar months.
2- 24 calendar months.
3- 6 calendar months.
4- 18 calendar months.

98. Which is a flight time limitation for a flight engineer on a flag air carrier
B60 where only one engineer is required?

1- 120 hours during any 30 consecutive days.
2- 300 hours during any 60 consecutive days.
3- 300 hours during any 120-day period.
4- 900 hours during any 12-calendar month period.

99. What is the term for the training required for flight crewmembers who have
B40 qualified and served in the same capacity on another airplane of the same group (e.g., propeller-driven)?

1- Differences training.
2- Transition training.
3- Upgrade training.
4- Programed training.

100. The air carrier must give instruction on such subjects as respiration, hypoxia,
B40 and decompression to each crewmember on pressurized airplanes operated above

1- 10,000 feet.
2- 20,000 feet.
3- 25,000 feet.
4- 12,000 feet.

101. Duty and rest period rules for domestic air carrier operations require that the
B60 flight engineer

1- not be assigned to any duty for a period of at least 18 hours if he or she had been on duty aloft for 9 hours.
2- not be on duty aloft for more than 90 hours in any calendar month.
3- be relieved of all duty for at least 48 hours during any 7 consecutive days.
4- not be assigned to any duty with the air carrier during a required rest period.

102. Which is a flight time limitation for a flight engineer on a domestic air car-
B60 rier according to FAR Part 121?

1- 100 hours in any 30 consecutive days.
2- 100 hours in any calendar month.
3- 30 hours in any calendar week.
4- 32 hours in any 7 consecutive days.

103. During which part of the flight must the flight engineer keep the required seat
B70 belt fastened?

1- At all times during flight.
2- During the entire time when seated at the flight engineer station.
3- Only during the time the "Fasten Seat Belt" sign is on.
4- Only during takeoff, landing, and when in turbulent air.

104. The pilot in command has the authority to exclude any and all persons from ad-
B70 mittance to the flight deck

1- with the exception of any certified FAA inspector.
2- as an emergency action in the interest of safety.
3- except those persons who have specific authorization of the certificate holder management and the FAA.
4- unless that person has a seat available in the passenger compartment.

105. Which rule applies when a passenger is seated in the cabin of an all-cargo air-
B70 craft?

1- The pilot in command may authorize the passenger to be admitted to the crew compartment.
2- The passenger must be reserved a seat on the flight deck.
3- The passenger must remain seated with seat belt fastened at all times during flight.
4- Crew-type oxygen equipment must be provided for the passenger.

106. When computing fuel required for a domestic air carrier flight, which factor must
B80 be considered?

1- Fuel for one instrument approach and a possible missed approach at the destination.
2- Fuel to the destination plus fuel for 45 minutes' operation at METO power.
3- Fuel to the destination, then to the alternate, plus 1 hour at normal cruise.
4- Fuel for 45 minutes at maximum endurance holding, after reaching the most distant alternate.

107. In addition to the required oral briefing before each takeoff, FAR Part 121
B70 requires that certain information must be made available on printed cards to each passenger. This information includes

1- rules about smoking during flight.
2- diagrams and methods of operating the emergency exits.
3- rules concerning the consumption of alcoholic beverages.
4- the procedure for administering first aid oxygen.

108. Crewmembers who have served as a flight engineer on a particular type airplane
B40 (e.g., Lockheed L-188C), may serve as second in command upon completing which training program?

1- Differences training.
2- Recurrent training.
3- Transition training.
4- Upgrade training.

109. Each domestic air carrier must relieve any flight crewmember engaged in sched-
B60 uled air transportation from all duties (flight or ground) for at least

1- 24 consecutive hours during any 7 consecutive days.
2- 48 continuous hours during any 7-day period.
3- 24 consecutive hours during any calendar week.
4- 48 consecutive hours in any calendar week.

110. The flight engineer is required by regulations to be at the flight engineer
B70 station

1- only during takeoff and landing.
2- at all times unless absence is necessary in the performance of flight engineer duties, or to meet physiological needs.
3- during takeoff and landing, but may be relieved by one of the pilots during cruising flight.
4- only during takeoff and landing and during emergencies.

111. Each crewmember shall have available for individual use on <u>each</u> flight a
B70

1- pyrotechnic signaling device.
2- quick-donning oxygen mask.
3- hand fire extinguisher suitable for combatting Class A, B, and C fires.
4- flashlight in good working order.

112. Which information must be entered on the load manifest for a domestic air carrier
B90 flight?

1- Make, model, and registration number of the aircraft.
2- The predicted landing weight.
3- Names of passengers.
4- Evidence that the center of gravity is within approved limits.

113. The angle of attack at which an airplane stalls
C10

1- decreases with an increase in engine power.
2- increases with an increase in engine power.
3- remains constant regardless of gross weight.
4- varies with gross weight and density altitude.

114. Under what conditions must a flight engineer's crewmember certificate be
B90 surrendered to the FAA for cancellation?

1- Each year when the flight engineer takes a recurrent flight check.
2- At each renewal of the flight engineer's medical certificate.
3- When the flight engineer is reassigned to duty as a pilot, second in command.
4- When the flight engineer is no longer assigned to international air commerce by the carrier.

115. Which passenger announcement must be made after each takeoff?
B70

1- The location and use of emergency exits.
2- To keep seat belts fastened while seated.
3- How to use the passenger oxygen system in an emergency.
4- How to don and inflate a life preserver.

116. Among the required items of information on the dispatch release of a domestic
B90 air carrier is the

1- minimum fuel supply.
2- weight and balance data.
3- airplane make and model.
4- name of the pilot in command.

117. Who is responsible for entry into the maintenance log of any in-flight mechan-
B70 ical irregularity that is noted by the flight engineer?

1- The pilot in command.
2- The flight engineer.
3- Equal responsibility between the pilot in command and the flight engineer.
4- The air carrier or its delegates.

118. What is the term for the training required for flight crewmembers who have
B40 qualified and served on a particular type airplane (e.g., Douglas DC-6B), before they may serve in the same capacity on a particular variation of that airplane?

1- Differences training.
2- Transition training.
3- Upgrade training.
4- Programed training.

119. The reserve fuel supply for a domestic air carrier flight in a propeller-driven
B80 aircraft shall be enough fuel for

1- 30 minutes at normal cruising fuel consumption.
2- 45 minutes at holding fuel consumption 1,500 feet above the alternate airport.
3- 45 minutes at normal cruising fuel consumption.
4- 30 minutes at holding fuel consumption 1,500 feet above the destination or alternate airport.

120. Which flight crewmembers may leave their station during cruising flight to perform
B70 normal duties?

1- One pilot and the flight engineer together when required.
2- Either pilot but not the flight engineer.
3- One pilot or the flight engineer if the flight engineer station is occupied by a pilot.
4- Either pilot or the flight engineer, but only one crewmember at a time.

121. Which factor causes the decreased pressure on the upper surface of the wing?
C10

1- Airflow over the upper surface travels faster than the air passing beneath the wing.
2- The curvature of the upper surface tends to direct the air away from the wing, thereby decreasing the pressure.
3- The curvature of the upper surface causes the air to burble and break away from the wing, leaving an area of lower pressure.
4- Airflow over the upper surface travels at a slower speed than the air beneath the wing due to the drag caused by the curvature of the upper surface.

122. Flight time limitations for all flight crewmembers are established for operations under FAR Part 121. Which phrase correctly identifies the flight time that is included in these limits?
B60

1- Flight time in FAR Part 121 operations only.
2- All commercial flying in any flightcrew position.
3- All flight time in any flightcrew position.
4- Only commercial flying in the flightcrew position in which FAR 121 operations are conducted.

123. The pilot in command has emergency authority to exclude people from the flight
B70 deck. Those who may be excluded from this area include

1- anyone except an FAA air carrier inspector.
2- all persons except those specifically designated by the certificate holder as essential crewmembers.
3- any person regardless of their official status.
4- anyone except a federal law enforcement officer who presents proper credentials.

124. Which rule applies to the carriage of a person in the custody of law enforcement
B70 personnel?

1- Each person in custody must be accompanied by at least two escorts.
2- The air carrier is not authorized to serve a meal to the person in custody.
3- No more than one person in custody may be carried on a flight if the person is considered dangerous.
4- The person in custody and the escort must remain seated for the entire flight.

125. Which documents are required to be carried aboard each domestic air carrier
B90 flight conducted under FAR Part 121?

1- Load manifest and flight release.
2- Maintenance release, weight and balance release, and flight plan.
3- Dispatch release and weight and balance release.
4- Dispatch release, load manifest, and flight plan.

126. The function of the minimum equipment list is to indicate required items which
B80

1- cannot be missing from the aircraft for any air carrier flight.
2- are required to be operative when the aircraft is used on domestic passenger scheduled flights.
3- may be inoperative for a flight beyond a terminal point.
4- may be inoperative only during a ferry flight to a maintenance terminal.

127. A crewmember certificate may be issued by the FAA to flight crewmembers on U.S.
B90 registered aircraft engaged in

1- international air commerce.
2- supplemental air carrier operations.
3- flight crewmember training only.
4- intrastate operations only.

128. The angle of attack which produces the highest lift-drag ratio
C10

1- remains constant as weight is changed, but decreases as altitude is increased.
2- increases as weight or altitude is increased.
3- remains constant as altitude is changed, but decreases as weight is reduced.
4- remains constant regardless of weight or altitude.

129. The use of the recommended partial flap setting for takeoff in a transport cate-
C50 gory airplane increases performance in comparison to a flaps-up takeoff by reducing takeoff

1- distance but not changing takeoff speed.
2- distance and takeoff speed.
3- speed but not changing takeoff distance.
4- distance and increasing takeoff speed.

130. Which factor has the effect of increasing V_1 speed?
C50

1- Downhill runway slope.
2- High takeoff gross weight.
3- Dry, cold air.
4- Slush or standing water on the runway.

131. The true airspeed at which an airplane stalls varies with
C10

1- load factor and angle of attack.
2- load factor, weight, and density altitude.
3- density altitude, weight, and angle of attack.
4- groundspeed, load factor, and density altitude.

132. Mach number is commonly defined as the

C20 1- ratio of true airspeed to the speed of sound.
2- speed of sound under conditions of standard pressure and temperature.
3- calibrated airspeed corrected for position and instrument error.
4- ratio of equivalent airspeed to the speed of sound.

133. As compared to a no-wind condition, what effect would a 20-knot headwind compo-
C50 nent have upon takeoff performance?

1- Actual groundspeed at rotation will be greater than V_R.
2- Takeoff decision speed and actual groundspeed will be the same as in a zero-wind condition.
3- The airplane will reach takeoff decision indicated airspeed at a lower groundspeed.
4- The effect of wind on initial acceleration will result in a longer takeoff roll.

134. The ratio of nautical miles per hour to fuel flow in pounds per hour identifies
C60 which item relating to airplane performance?

1- Specific fuel consumption.
2- Specific fuel flow.
3- Specific endurance.
4- Specific range.

135. The landing speed, in terms of TAS, for a particular weight and configuration of
C70 the aircraft will

1- increase as relative humidity is decreased.
2- increase as altitude is increased.
3- remain constant regardless of altitude.
4- decrease as atmospheric pressure is decreased.

136. In many conventional airplanes, control about the lateral axis is obtained by
C10 the use of

1- rudder.
2- ailerons.
3- elevators.
4- sweepback.

137. The authorized maximum takeoff weight of a transport airplane, when less than the
C50 maximum certificated weight, is a factor which

1- varies with runway length, airport elevation, and ambient temperature.
2- may not be more than 105% of the maximum landing weight.
3- is the sum total of the maximum zero fuel weight and the maximum allowable fuel load.
4- may be increased by headwind components and higher than normal temperatures.

138. What effect does an uphill runway slope have upon takeoff performance?
C50

1- Increases takeoff distance.
2- Increases takeoff speed.
3- Decreases takeoff distance.
4- Decreases takeoff speed.

139. Which type operation produces maximum endurance for reciprocating engine and
C60 turboprop airplanes?

1- Highest possible altitude.
2- Lowest possible altitude.
3- Altitude where lowest power is required.
4- Altitude where lowest thrust is required.

140. The trimming devices on a particular airplane include trailing edge tabs on
C10 the rudder and ailerons. If the airplane is trimmed to a more nose right and right wing up position, the right aileron trim tab will move

1- up, and the rudder tab will move to the left.
2- down, and the rudder tab will move to the left.
3- up, and the rudder tab will move to the right.
4- down, and the rudder tab will move to the right.

141. Which factors are used to define the angle of attack of an airfoil?
C10

1- Chord line of the airfoil and the horizon.
2- Bottom surface of the wing and the flightpath.
3- Mean chord of the airfoil and the relative wind.
4- Relative wind and chord line.

142. An airplane is flying at a constant flight level and at a power schedule
C60 which produces maximum air miles per pound of fuel. In this event, as the weight of the airplane reduces, engine power setting or fuel flow is

1- reduced to maintain the best L/D ratio flight conditions.
2- reduced to maintain the best constant airspeed.
3- held constant to simplify fuel consumption computations.
4- increased to allow flight at maximum efficient airspeed relative to tailplane drag.

143. During a coordinated turn in level flight at a constant airspeed, centrifugal force
C60 is counterbalanced by

1- the weight of the airplane.
2- the coordinated use of rudder control.
3- a portion of the lift of the wing.
4- the increased speed of the high wing and decreased speed of the low wing.

144. Takeoff speed limits (V_1, V_R, and V_2) contained in performance charts and tables
C20 of the airplane flight manual, are to be observed on the captain's airspeed indicator. These speeds are classified as

1- equivalent airspeeds.
2- calibrated airspeeds.
3- true airspeeds.
4- indicated airspeeds.

145. Wake turbulence produced by large aircraft in flight is
C80

1- produced by downwash over the tail surfaces.
2- primarily caused by jet engine exhaust.
3- greatest at high airspeeds.
4- greatest at low airspeeds.

146. The trimming devices on a particular airplane include trailing edge tabs on
C10 the rudder and a movable horizontal stabilizer. If the airplane is trimmed to a more nose down and nose left position, the stabilizer leading edge will move

1- down and the rudder tab will move to the right.
2- down and the rudder tab will move to the left.
3- up and the rudder tab will move to the left.
4- up and the rudder tab will move to the right.

147. How is true airspeed determined?

C20
1- Correcting EAS for density altitude error.
2- Correcting CAS for instrument and position error.
3- Correcting IAS for compressibility.
4- Correcting IAS for density altitude error.

148. Variations in 1.3 V_{SO} for a particular airplane are primarily a function of
C70

1- takeoff weight, wind component, and runway length.
2- landing weight.
3- number of engines operating and flap configuration.
4- gross weight, pressure altitude, and ambient temperature.

149. Under which condition during the landing roll are the main wheel brakes at maxi-
C70 mum effectiveness?

1- At high groundspeeds.
2- When wing lift has been reduced.
3- When the wheels are locked and skidding.
4- When the emergency air brakes are applied.

150. Which condition is indicated when density altitude is the same as pressure
D10 altitude?

1- Temperature is ISA standard.
2- Indicated altitude is the same as pressure altitude.
3- IAS and CAS are the same speed.
4- Engine performance is maximum for the pressure altitude.

151. Which has the effect of reducing takeoff decision speed (IAS)?
C50

1- High density altitude.
2- High gross weight.
3- Dry runway with an uphill slope.
4- Slush on the runway.

152. Which relationship is true at constant airspeed in level flight?
C60

1- Lift equals total drag.
2- Lift exceeds airplane weight.
3- Thrust equals total drag.
4- Drag equals total engine power output.

153. Which maximum range factor decreases as weight decreases?
C60

1- Maximum range airspeed.
2- Maximum range angle of attack.
3- Maximum range altitude.
4- Specific range.

154. Which flight condition of a large jet airplane creates the most severe flight
C80 hazard by generating wingtip vortices of the greatest strength?

1- Heavy, slow, gear and flaps down.
2- Heavy, slow, gear and flaps up.
3- Heavy, fast, gear and flaps up.
4- Heavy, fast, gear and flaps down.

155. To obtain pressure altitude during flight, adjust the altimeter to
D10

1- 29.92 and read pressure altitude directly from the altimeter.
2- the current altimeter setting and read pressure altitude directly from the altimeter.
3- the current altimeter setting and adjust the indicated altitude with the correction factor from a pressure altitude table.
4- 29.92 and correct the indicated altitude for temperature.

156. Which has the effect of increasing load factor?
C80

1- Vertical gusts.
2- Increased airplane weight.
3- Increased air density.
4- Rearward CG location.

157. Assuming a constant true altitude, a barometric pressure increase of 1" Hg
D10 would be indicated by an altimeter reading change of approximately

1- plus 1,000 feet.
2- minus 1,000 feet.
3- plus 100 feet.
4- minus 100 feet.

158. Density altitude may be determined by correcting
D10

1- indicated altitude for temperature.
2- indicated altitude for atmospheric pressure and temperature.
3- true altitude for atmospheric pressure and temperature.
4- pressure altitude for temperature.

159. Which conditions are most conducive to structural icing on the airframe and
D30 propeller?

1- Temperature -10°C. to 0°C. and relative humidity 85% or more.
2- Temperature -5°C. to +10°C. and frozen precipitation.
3- Temperature -15°C. to 0°C. with visible moisture.
4- Temperature 0°C. to +15°C. and relative humidity 85% or more.

160. The average altitude for the one-half atmosphere pressure level (500 millibar)
D40 is

1- 10,000 feet.
2- 13,000 feet.
3- 18,000 feet.
4- 25,000 feet.

161. Which of the following is an indication of the coldest atmospheric temperature?
D40

1- -35°C. RAT (Ram Air Temp.).
2- -35°C. TAT (Total Air Temp.).
3- -35°C. SAT (Static Air Temp.).
4- -35°C. Ambient Air Temp.

162. An inversion can be identified by the

D40 1- pressure lapse rate.
2- tropopause location.
3- temperature lapse rate.
4- jetstream location.

163. What is the relationship between altitudes when the altimeter setting is
D10 higher than standard while flying at 15,000 feet indicated altitude?

1- Indicated altitude is higher than pressure altitude.
2- Indicated altitude is lower than true altitude.
3- Indicated altitude is lower than pressure altitude.
4- Indicated altitude is higher than true altitude.

164. Which statement is a definition of relative humidity?
D20

1- The relative point at which the air, being cooled, becomes saturated.
2- The density of the water vapor in the air.
3- The ratio of actual water vapor in the air to the amount required for saturation.
4- The ratio of the pressure exerted by the water vapor in the air to the standard vapor pressure.

165. Which of the following is true concerning the troposphere?
D40

1- It is thicker over the equator than over the poles.
2- It is the dividing line between the stratosphere and the atmosphere.
3- It contains all the free oxygen of the atmosphere.
4- It extends to a uniform height at all latitudes.

166. If the temperature at the airport is 25°C. where the elevation is 1,500 feet
D40 MSL and a standard lapse rate exists, what is the temperature at 15,000 feet MSL?

1- -5°C.
2- -15°C.
3- STD +15°C.
4- STD +13°C.

167. The speed of sound in the atmosphere normally increases
D50

1- with an increase in pressure.
2- as temperature becomes warmer.
3- as altitude increases.
4- as temperature becomes colder and pressure decreases.

168. Which airplane performance change takes place as air density or density altitude
D20 changes?

1- Takeoff performance improves as density altitude decreases.
2- Required landing distance decreases as air density decreases.
3- Climb performance improves with an increase in density altitude.
4- Final approach indicated airspeed ($1.3\ V_{SO}$) is reduced as air density decreases.

169. Without the use of supplemental oxygen, crewmembers and passengers would suffer
D40 from hypoxia in high altitude unpressurized flight. This problem occurs because as altitude is increased,

1- nitrogen in the atmosphere and in the bloodstream expands.
2- the percentage of oxygen in the atmosphere is decreased.
3- the percentage of nitrogen in the atmosphere is increased.
4- oxygen partial pressure is decreased.

170. During a climb, the tropopause can be identified as the altitude where the
D40

1- air density starts to increase as altitude increases.
2- atmospheric pressure becomes zero.
3- jetstream winds are encountered.
4- temperature lapse rate becomes zero.

171. The "basic operating weight" of a transport airplane is the empty weight plus
E10

1- required crew and standard operating items.
2- fuel and oil.
3- required crew.
4- fixed ballast, hydraulic fluid, undrainable fuel, and undrainable oil.

172. The center of gravity of an airplane is normally located in the fuselage at a
E10 point expressed in

1- percentage of MAC aft of the leading edge of the wing.
2- inches from the leading edge of the wing.
3- inches from the forward CG limit.
4- percent of mean aerodynamic chord aft of LEMAC.

173. Which of the following is true concerning the tropopause?
D40

1- The polar tropopause is at a higher altitude than the tropical tropopause.
2- The tropopause is the dividing line between the atmosphere and the stratosphere.
3- The tropopause is higher in the summer than in the winter.
4- Above the tropopause, the oxygen content of the air drops to approximately 2%.

174. The term "mean aerodynamic chord" may be defined as the
E10

1- distance from the leading edge to the trailing edge of the wing, measured at the wing root.
2- total lift of an airfoil divided by its mean chord.
3- ratio of the average wing chord to its aerodynamic center of pressure.
4- chord of an imaginary airfoil which has the same aerodynamic characteristics as the actual airfoil.

175. What is a definition of "zero fuel weight"?
E10

1- Basic operating weight plus maximum capacity of passengers and cargo.
2- Empty weight plus passengers and cargo.
3- Takeoff weight minus fuel to destination and alternate.
4- Basic operating weight plus payload.

176. The payload of a transport aircraft consists of
E10

1- passengers, baggage, and cargo only.
2- passengers, cargo, and fuel only.
3- crew, passengers, baggage, cargo, and fuel only.
4- all weights in excess of zero fuel weight (ZFW).

177. Which of the following weight factors determine ramp or taxi weight?
E10

1- Zero fuel weight plus payload, fuel, and oil.
2- Payload plus operating weight.
3- Takeoff weight minus taxi fuel.
4- Zero fuel weight plus total fuel load.

Table I. Determine CG % MAC

OPERATING CONDITIONS	1	2	3	4
Basic Operating Weight (BOW)	61,310	62,700	59,340	60,850
BOW CG % MAC	24.0	15.5	26.5	18.7
Passengers Fwd (Sta. 300)	2,890	1,700	2,550	1,530
Aft (Sta. 654)	12,070	8,500	10,540	9,350
Cargo Fwd (Sta. 313)	500	3,800	1,000	2,570
Aft (Sta. 885)	700	1,000	100	4,000
Fuel 1 & 4 (Sta. 605.7)	7,300 ea.	7,370 ea.	10,500 ea.	6,500 ea.
2 & 3 (Sta. 628.4)	7,300 ea.	11,122 ea.	10,500 ea.	6,500 ea.
MAC 168.7, LEMAC 545.9				

178. What is the loaded CG in % MAC under operating conditions No. 1, Table 1?

E20
L188
1- 30.5%.
2- 28.7%.
3- 29.3%.
4- 25.4%.

179. What is the loaded CG in % MAC under operating conditions No. 2, Table 1?

E20
L188
1- 23.2%.
2- 19.4%.
3- 21.8%.
4- 22.3%.

180. What is the loaded CG in % MAC under operating conditions No. 3, Table 1?

E20
L188
1- 30.5%.
2- 32.0%.
3- 29.9%.
4- 28.9%.

181. What is the loaded CG in % MAC under operating conditions No. 4, Table 1?

E20
L188
1- 25.4%.
2- 29.3%.
3- 28.6%.
4- 30.5%.

182. What is the loaded CG in % MAC under operating conditions No. 1, Table 2?

E20
L382
1- 26.0%.
2- 25.8%.
3- 26.5%.
4- 24.8%.

183. What is the loaded CG in % MAC under operating conditions No. 2, Table 2?

E20
L382
1- 25.8%.
2- 28.7%.
3- 22.4%.
4- 27.6%.

184. What is the loaded CG in % MAC under operating conditions No. 3, Table 2?

E20
L382
1- 20.7%.
2- 28.5%.
3- 24.5%.
4- 26.3%.

185. What is the loaded CG in % MAC under operating conditions No. 4, Table 2?

E20
L382
1- 30.2%.
2- 29.8%.
3- 28.6%.
4- 26.7%.

Table 2. Determine CG % MAC

OPERATING CONDITIONS		1	2	3	4
Basic Operating Weight (BOW)		70,500	70,450	69,800	65,500
BOW CG %MAC		25.0	23.5	20.4	26.7
Cargo	Compt. A (TS-299.5)	1,000	3,000	3,000	2,000
	Compt. B (TS -10)	2,000	4,500	5,500	3,000
	Compt. C (TS-120)	3,500	5,500	6,500	4,000
	Compt. D (TS-30)	3,500	6,500	7,500	4,000
	Compt. E (TS+60)	2,500	6,500	7,000	4,000
	Compt. F (TS+150)	2,500	6,000	6,500	4,000
	Compt. G (TS+239.5)	1,000	6,000	6,000	3,000
Fuel Avg. Sta. 555.0		30,000	42,000	43,000	50,000

NOTE: Sta. 527.0 = Trim Sta. (TS) 0.0
MAC 164.5", LEMAC 487.4 (TS -39.6)

Table 3. Determine CG % MAC

OPERATING CONDITIONS	1	2	3	4
Basic Operating Weight (BOW)	58,000	59,100	61,200	55,700
BOW CG % MAC	15.0	11.5	21.6	17.2
Passengers Fwd (Sta. 172.0)	1,360	1,190	1,020	1,360
Aft (Sta. 570.0)	9,520	8,500	7,650	9,350
Cargo Fwd (Sta. 217.0)	1,500	2,560	4,000	3,850
Aft (Sta. 720.0)	3,350	1,540	5,000	1,360
Fuel 1 & 4M (Sta. 460.0)	4,170 ea.	4,170 ea.	4,050 ea.	3,000 ea.
2 & 3M (Sta. 441.0)	3,048 ea.	3,048 ea.	3,048 ea.	3,000 ea.
1 & 4A (Sta. 444.0)	1,650 ea.	2,310 ea.	---	---
2 & 3A (Sta. 438.0)	1,632 ea.	2,172 ea.	1,002 ea.	---
MAC 163.6, LEMAC 395.2				

186. What is the loaded CG in % MAC under operating conditions No. 1, Table 3?

E20

1- 28.9%.
DC6 2- 32.9%.
3- 29.7%.
4- 30.5%.

187. What is the loaded CG in % MAC under operating conditions No. 2, Table 3?

E20

1- 21.5%.
DC6 2- 22.9%.
3- 18.8%.
4- 23.5%.

188. What is the loaded CG in % MAC under operating conditions No. 3, Table 3?

E20

1- 32.6%.
DC6 2- 33.0%.
3- 31.6%.
4- 32.2%.

189. What is the loaded CG in % MAC under operating conditions No. 4, Table 3?

E20

1- 23.5%.
DC6 2- 24.7%.
3- 24.2%.
4- 23.8%.

190. What is the new CG position after removing the weight under operating conditions
E30 No. 1, Table 4?

L188 1- 31.1%.
2- 35.2%.
3- 27.8%.
4- 25.3%.

191. What is the new CG position after removing the weight under operating conditions
E30 No. 2, Table 4?

L188 1- 18.5%.
2- 27.9%.
3- 23.7%.
4- 28.3%.

192. What is the new CG position after removing the weight under operating conditions
E30 No. 3, Table 4?

L188 1- 21.8%.
2- 29.1%.
3- 35.7%.
4- 23.7%.

193. What is the new CG position after removing the weight under operating conditions
E30 No. 4, Table 4?

L188 1- 28.5%.
2- 25.8%.
3- 30.0%.
4- 20.6%.

Table 4. Removing Weight

OPERATING CONDITIONS	1	2	3	4
Original Weight	116,000	110,000	113,000	104,500
Original CG %MAC	31.5	23.2	29.7	25.3
Length of MAC	168.7	168.7	168.7	168.7
LEMAC - STA	545.9	545.9	545.9	545.9
Weight Removed	2,500	3,100	3,800	2,900
Location of Weight Removed	885.0	313.0	885.0	313.0

Table 5. Removing Weight

OPERATING CONDITIONS	1	2	3	4
Original Weight	155,000	130,500	100,350	142,000
Original CG %MAC	29.5	20.8	24.6	28.7
Length of MAC	164.5	164.5	164.5	164.5
LEMAC	TS-39.6	TS-39.6	TS-39.6	TS-39.6
Weight Removed	7,500	9,600	12,500	10,500
Location of Weight Removed	TS+239.5	TS-120	TS-30	TS+150

NOTE: STA. 527.0 = TRIM STA. (TS) 0.0

194. What is the new CG position after removing the weight under operating conditions
E30 No. 1, Table 5?

L382 1- 22.4%.
2- 36.6%.
3- 28.8%.
4- 21.8%.

195. What is the new CG position after removing the weight under operating conditions
E30 No. 2, Table 5?

L382 1- 27.5%.
2- 20.3%.
3- 21.4%.
4- 26.3%.

196. What is the new CG position after removing the weight under operating conditions
E30 No. 3, Table 5?

L382 1- 25.4%.
2- 22.0%.
3- 27.3%.
4- 28.9%.

197. What is the new CG position after removing the weight under operating conditions
E30 No. 4, Table 5?

L382 1- 29.4%.
2- 21.8%.
3- 28.0%.
4- 20.6%.

198. What is the new CG position after removing the weight under operating conditions
E30 No. 1, Table 6?

DC6 1- 23.3%.
2- 31.9%.
3- 27.2%.
4- 21.8%.

199. What is the new CG position after removing the weight under operating conditions
E30 No. 2, Table 6?

DC6 1- 21.8%.
2- 11.5%.
3- 20.0%.
4- 16.2%.

200. What is the new CG position after removing the weight under operating conditions
E30 No. 4, Table 6?

DC6 1- 9.9%.
2- 11.1%.
3- 16.2%.
4- 18.1%.

201. What is the new CG position after removing the weight under operating conditions
E30 No. 3, Table 6?

DC6 1- 24.3%.
2- 33.2%.
3- 31.8%.
4- 25.7%.

Table 6. Removing Weight

OPERATING CONDITIONS	1	2	3	4
Original Weight	103,000	99,800	101,500	100,000
Original CG %MAC	27.6	15.8	32.5	10.5
Length of MAC	163.6	163.6	163.6	163.6
LEMAC - STA	395.2	395.2	395.2	395.2
Weight Removed	2,600	2,850	4,050	3,960
Location of Weight Removed	715.0	185.0	715.0	185.0

Table 7. Adding Weight

OPERATING CONDITIONS	1	2	3	4
Original Weight	100,000	102,500	98,700	110,000
Original CG %MAC	13.1	28.7	17.6	31.2
Length of MAC %MAC	168.7	168.7	168.7	168.7
LEMAC - STA	545.9	545.9	545.9	545.9
Weight Added	3,500	3,650	4,000	3,800
Location Added - STA	885.0	313.0	885.0	313.0

202. What is the new CG position after adding weight under operating conditions No. 1,
E30 Table 7?

L188 1- 19.5%.
2- 18.0%.
3- 7.1%.
4- 23.6%.

203. What is the new CG position after adding weight under operating conditions No. 2,
E30 Table 7?

L188 1- 21.9%.
2- 23.0%.
3- 18.8%.
4- 23.6%.

204. What is the new CG position after adding weight under operating conditions No. 3,
E30 Table 7?

L188 1- 18.3%.
2- 10.4%.
3- 24.7%.
4- 20.8%.

205. What is the new CG position after adding weight under operating conditions No. 4,
E30 Table 7?

L188 1- 23.3%.
2- 30.6%.
3- 36.8%.
4- 25.5%.

206. What is the new CG position after adding weight under operating conditions No. 1,
E30 Table 8?

L382 1- 25.8%.
2- 20.9%.
3- 12.9%.
4- 27.9%.

207. What is the new CG position after adding weight under operating conditions No. 2,
E30 Table 8?

L382 1- 27.9%.
2- 21.1%.
3- 36.3%.
4- 25.7%.

208. What is the new CG position after adding weight under operating conditions No. 3,
E30 Table 8?

L382 1- 29.2%.
2- 23.8%.
3- 30.0%.
4- 26.8%.

209. What is the new CG position after adding weight under operating conditions No. 4,
E30 Table 8?

L382 1- 25.3%.
2- 30.7%.
3- 27.7%.
4- 28.6%.

Table 8. Adding Weight

OPERATING CONDITIONS	1	2	3	4
Original Weight	120,000	115,000	122,500	105,700
Original CG - %MAC	20.2	28.7	23.2	29.9
Length of MAC %MAC	164.5	164.5	164.5	164.5
LEMAC	TS-39.6	TS-39.6	TS-39.6	TS-39.6
Weight Added	6,500	12,500	8,500	10,500
Location Added	TS+239.5	TS-120	TS+150	TS-30

NOTE: STA 527.0 = TRIM STA (TS) 0.0

Table 9. Adding Weight

OPERATING CONDITIONS	1	2	3	4
Original Weight	96,000	100,000	94,000	95,000
Original CG %MAC	20.5	16.7	14.3	29.7
Length of MAC %MAC	163.6	163.6	163.6	163.6
LEMAC - STA	395.2	395.2	395.2	395.2
Weight Added	3,500	2,500	5,400	4,300
Location of Weight Added	715.0	715.0	715.0	185.0

210. What is the new CG position after adding weight under operating conditions No. 1,
E30 Table 9?

DC6
1- 23.4%.
2- 21.1%.
3- 26.7%.
4- 27.6%.

211. What is the new CG position after adding weight under operating conditions No. 2,
E30 Table 9?

DC6
1- 18.7%.
2- 22.4%.
3- 12.3%.
4- 21.1%.

212. What minimum weight of cargo must be shifted from the forward to the aft
E50 cargo location to bring the CG within limits under operating conditions No. 1,
L188 Table 10?

1- 500 lbs.
2- 4,990 lbs.
3- 240 lbs.
4- 2,372 lbs.

213. What minimum weight of cargo must be shifted from the aft to the forward
E50 cargo location to bring the CG within limits under operating conditions No. 2,
L188 Table 10?

1- 4,690 lbs.
2- 470 lbs.
3- 278 lbs.
4- 500 lbs.

214. What is the new CG position after adding weight under operating conditions No. 3,
E30 Table 9?

DC6
1- 24.1%.
2- 15.8%.
3- 25.7%.
4- 20.4%.

215. What is the new CG position after adding weight under operating conditions No. 4,
E30 Table 9?

DC6
1- 24.3%.
2- 29.0%.
3- 33.0%.
4- 22.9%.

216. What minimum weight of cargo must be shifted from the forward to the aft
E50 cargo location to bring the CG within limits under operating conditions No. 3,
L188 Table 10?

1- 6,350 lbs.
2- 645 lbs.
3- 945 lbs.
4- 620 lbs.

217. What minimum weight of cargo must be shifted from the aft to the forward
E50 cargo location to bring the CG within limits under operating conditions No. 4,
L188 Table 10?

1- 3,000 lbs.
2- 26 lbs.
3- 255 lbs.
4- 151 lbs.

Table 10. Weight to be Shifted

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight	113,000	106,000	110,500	95,650
Original CG %MAC	20.5	33.5	19.9	32.9
Length of MAC	168.7	168.7	168.7	168.7
LEMAC	545.9	545.9	545.9	545.9
Affected CG limit %MAC	22.0	32.0	21.8	32.0
Cargo Locations FWD	313.0	313.0	313.0	313.0
AFT	885.0	885.0	885.0	885.0

Table II. Weight to be Shifted

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight	155,000	133,330	100,100	130,000
Original CG % MAC	21.9	31.5	16.5	30.7
Affected CG limit % MAC	23.2	30.0	18.4	30.0
Cargo Locations FWD TS	-120	-30	-210	-120
AFT TS	+150	+239.5	+60	+150
MAC 164.5, LEMAC TS -39.6, TS 0 = STA 527.0				

218. What minimum weight of cargo must be shifted from the FWD to the AFT location
E50 to bring the CG within limits under operating conditions No. 1, Table 11?
L382

1- 6,717 lbs.
2- 1,110 lbs.
3- 1,230 lbs.
4- 750 lbs.

219. What minimum weight of cargo must be shifted from the AFT to the FWD location
E50 to bring the CG within limits under operating conditions No. 2, Table 11?
L382

1- 1,222 lbs.
2- 1,570 lbs.
3- 741 lbs.
4- 1,310 lbs.

220. What minimum weight of cargo must be shifted from the FWD to the AFT location
E50 to bring the CG within limits under operating conditions No. 3, Table 11?
L382

1- 122 lbs.
2- 2,086 lbs.
3- 775 lbs.
4- 1,160 lbs.

221. What minimum weight of cargo must be shifted from the AFT to the FWD location
E50 to bring the CG within limits under operating conditions No. 4, Table 11?
L382

1- 4,990 lbs.
2- 555 lbs.
3- 337 lbs.
4- 715 lbs.

222. What minimum weight of cargo must be shifted from the FWD to the AFT location
E50 to bring the CG within limits under operating conditions No. 1, Table 12?
DC6

1- 20 lbs.
2- 2,200 lbs.
3- 117 lbs.
4- 195 lbs.

223. What minimum weight of cargo must be shifted from the AFT to the FWD location
E50 to bring the CG within limits under operating conditions No. 2, Table 12?
DC6

1- 50 lbs.
2- 455 lbs.
3- 610 lbs.
4- 5,115 lbs.

224. What minimum weight of cargo must be shifted from the FWD to the AFT location
E50 to bring the CG within limits under operating conditions No. 3, Table 12?
DC6

1- 410 lbs.
2- 250 lbs.
3- 50 lbs.
4- 1,750 lbs.

225. What minimum weight of cargo must be shifted from the FWD to the AFT location
E50 to bring the CG within limits under operconditions No. 4, Table 12?
DC6

1- 782 lbs.
2- 558 lbs.
3- 562 lbs.
4- 374 lbs.

Table I2. Weight to be Shifted

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight	103,000	98,200	88,200	100,010
Original CG % MAC	10.4	34.5	9.5	9.2
Affected CG limit % MAC	11.0	33.0	11.0	11.0
MAC 163.6, LEMAC 395.2, FWD Cargo 185.0, AFT CARGO 715.0				

Table 13. Shifting Weight

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight	114,000	102,000	108,000	98,000
Original CG %MAC	32.0	20.4	31.5	18.6
Length of MAC	168.7	168.7	168.7	168.7
LEMAC	545.9	545.9	545.9	545.9
Weight Moved	1,500	2,400	500	1,650
Cargo Locations - FWD	313.0	313.0	313.0	313.0
AFT	885.0	885.0	885.0	885.0

226. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 1, Table 13?
E50
L188

1- 27.5%.
2- 36.4%.
3- 31.2%.
4- 29.8%.

227. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 2, Table 13?
E50
L188

1- 21.1%.
2- 12.4%.
3- 28.4%.
4- 29.3%.

228. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 3, Table 13?
E50
L188

1- 28.7%.
2- 31.7%.
3- 29.9%.
4- 33.1%.

229. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 4, Table 13?
E50
L188

1- 24.3%.
2- 12.9%.
3- 19.1%.
4- 23.7%.

230. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 1, Table 14?
E50
L382

1- 29.1%.
2- 25.4%.
3- 18.3%.
4- 28.7%.

231. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 2, Table 14?
E50
L382

1- 30.3%.
2- 24.4%.
3- 27.7%.
4- 23.2%.

232. What is the new CG position after the weight is moved from the aft to the forward location under operating conditions No. 3, Table 14?
E50
L382

1- 26.9%.
2- 30.5%.
3- 25.5%.
4- 27.4%.

233. What is the new CG position after the weight is moved from the forward to the aft location under operating conditions No. 4, Table 14?
E50
L382

1- 25.2%.
2- 17.9%.
3- 19.1%.
4- 24.4%.

Table 14. Shifting Weight

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight	145,000	120,500	150,700	101,000
Original CG %MAC	23.5	29.8	28.7	18.5
Length of MAC	164.5	164.5	164.5	164.5
LEMAC	TS-39.6	TS-39.6	TS-39.6	TS-39.6
Weight Moved	2,770	4,000	1,700	3,600
Cargo locations FWD	TS-210	TS+150	TS+239.5	TS-120
AFT	TS+239.5	TS-120	TS-30	TS+150

Table 15. Shifting Weight

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight	100,500	98,700	89,200	101,600
Original CG %MAC	12.3	32.5	15.6	29.7
Length of MAC	163.6	163.6	163.6	163.6
LEMAC	395.2	395.2	395.2	395.2
Weight Moved	750	1,000	940	1,250
Cargo locations FWD	185.0	185.0	185.0	185.0
AFT	715.0	715.0	715.0	715.0

234. What is the new CG position after the weight is moved from the forward to the
E50 aft location under operating conditions No. 1, Table 15?
DC6

1- 15.3%.
2- 13.5%.
3- 14.7%.
4- 9.9%.

235. What is the new CG position after the weight is moved from the aft to the for-
E50 ward location under operating conditions No. 2, Table 15?
DC6

1- 27.9%.
2- 32.1%.
3- 35.8%.
4- 29.2%.

236. What is the maximum payload under operating conditions No. 1, Table 16?
E60

1- 18,700 lbs.
L188 2- 24,700 lbs.
3- 26,800 lbs.
4- 18,250 lbs.

237. What is the maximum payload under operating conditions No. 2, Table 16?
E60

1- 18,250 lbs.
L188 2- 13,950 lbs.
3- 26,650 lbs.
4- 13,150 lbs.

238. What is the new CG position after the weight is moved from the forward to the
E50 aft location under operating conditions No. 3, Table 15?
DC6

1- 19.0%.
2- 12.2%.
3- 15.9%.
4- 21.2%.

239. What is the new CG position after the weight is moved from the aft to the for-
E50 ward location under operating conditions No. 4, Table 15?
DC6

1- 33.7%.
2- 25.7%.
3- 29.3%.
4- 26.3%.

240. What is the maximum payload under operating conditions No. 3, Table 16?
E60

1- 9,650 lbs.
L188 2- 17,500 lbs.
3- 22,200 lbs.
4- 13,700 lbs.

241. What is the maximum payload under operating conditions No. 4, Table 16?
E60

1- 28,150 lbs.
L188 2- 25,400 lbs.
3- 22,200 lbs.
4- 23,300 lbs.

Table 16. Maximum Payload

OPERATING CONDITIONS	1	2	3	4
Basic Operating Weight	61,300	59,350	63,800	60,600
Maximum Zero Fuel Weight	86,000	82,500	86,000	86,000
Maximum Landing Weight	95,650	95,650	95,650	95,650
Maximum Takeoff Weight	116,000	113,000	116,000	113,000
Fuel Tank Load	36,000	33,100	38,500	22,900
Estimated Fuel Burn	27,900	10,750	20,800	10,050

Table 17. Maximum Payload

OPERATING CONDITIONS	1	2	3	4
Basic Operating Weight	70,500	72,400	69,700	71,350
Maximum Zero Fuel Weight	125,000	126,790	126,790	125,000
Maximum Landing Weight	130,000	135,000	135,000	130,000
Maximum Takeoff Weight	155,000	155,000	155,000	155,000
Fuel Tank Load	60,500	41,610	35,300	50,250
Estimated Fuel Burn	41,200	20,440	15,910	35,100

242. What is the maximum payload under operating conditions No. 1, Table 17?

E60
L382
1- 54,500 lbs.
2- 43,300 lbs.
3- 24,000 lbs.
4- 19,300 lbs.

243. What is the maximum payload under operating conditions No. 2, Table 17?

E60
L382
1- 62,600 lbs.
2- 36,430 lbs.
3- 57,090 lbs.
4- 40,990 lbs.

244. What is the maximum payload under operating conditions No. 3, Table 17?

E60
L382
1- 57,090 lbs.
2- 45,910 lbs.
3- 50,000 lbs.
4- 43,590 lbs.

245. What is the maximum payload under operating conditions No. 4, Table 17?

E60
L382
1- 33,400 lbs.
2- 53,650 lbs.
3- 44,100 lbs.
4- 32,200 lbs.

246. What is the maximum payload under operating conditions No. 1, Table 18?

E60
DC6
1- 25,200 lbs.
2- 21,500 lbs.
3- 30,200 lbs.
4- 27,375 lbs.

247. What is the maximum payload under operating conditions No. 2, Table 18?

E60
DC6
1- 25,500 lbs.
2- 26,100 lbs.
3- 28,600 lbs.
4- 24,200 lbs.

248. What is the maximum payload under operating conditions No. 3, Table 18?

E60
DC6
1- 19,650 lbs.
2- 28,550 lbs.
3- 29,450 lbs.
4- 20,500 lbs.

249. What is the maximum payload under operating conditions No. 4, Table 18?

E60
DC6
1- 24,580 lbs.
2- 26,280 lbs.
3- 30,630 lbs.
4- 22,750 lbs.

Table 18. Maximum Payload

OPERATING CONDITIONS	1	2	3	4
Basic Operating Weight	58,000	57,700	58,750	56,920
Maximum Zero Fuel Weight	83,200	83,200	83,200	83,200
Maximum Landing Weight	88,200	88,200	88,200	88,200
Maximum Takeoff Weight	103,000	103,000	103,000	103,000
Fuel Tank Load	23,500	19,200	17,000	21,500
Estimated Fuel Burn	17,625	16,700	8,050	15,450

250. Which type compartments are the flight deck and the lower cargo areas?

F10

1- Both are Class A.
L188 2- Class B and Class C respectively.
3- Class A and Class D respectively.
4- Class A and Class E respectively.

251. Which type compartments are the flight deck and main cabin (cargo) compartments?

F10

1- Both are Class A.
L382 2- Class B and Class C respectively.
3- Class A and Class C respectively.
4- Class A and Class E respectively.

252. Before taxiing, the lower compartment doors can be checked for being closed by
F30 use of the

L188 1- annunciator panel.
2- viewing ports.
3- door warning buzzer.
4- "door open" flashing red light.

253. During the before engine start check, you determine that the door warning
F30 light or lights are out. Which doors make use of safety switches to actuate
DC6 the door warning light or lights?

1- Only the doors used for emergency evacuation.
2- The main cabin, belly compartment, and landing gear doors.
3- The main cabin and belly compartment doors.
4- Only the main cabin doors.

254. Which control position is proper during the preflight check when ready to start
F50 engines?

L188 1- Temperature datum control switch--CONTROLLING.
2- Inverter switch--OFF.
3- Flight recorder--SET and ON.
4- Windshield heat--LOW.

255. Which indication is proper during the preflight check when ready to start
F50 engines?

DC6 1- Propeller governor limit lights--ON.
2- Vacuum pump lights--OUT.
3- Oil cooler flap indicators--OPEN.
4- Engine oil pressure lights--ON.

256. During the external preflight inspection proper operation of the electronics
F50 equipment cooling system should be checked. Where is the cooling air
L188 vented?

1- Into the cabin mixing valve.
2- Overboard through a venturi or nozzle.
3- Into the area surrounding the lower baggage compartments.
4- Overboard through the outflow valve.

257. During preflight, what should be checked at the main landing gear?

F50

1- Fusible plugs in the tire tread.
L188 2- Lockout cylinder air pressure pre-
DC6 load.
3- Brake wear indicators at each wheel.
4- Wheel well doors locked closed.

258. During the external preflight inspection, the extension of the nose gear shock
F50 strut is checked. Which condition may prevent proper engagement of the nose
DC6 gear centering cam?

1- Excessive fluid.
2- Insufficient fluid.
3- Excessive air pressure.
4- Insufficient air pressure.

259. Which part of the preflight check should be noted in the logbook?

F50

1- NTS system check.
L188 2- Auto-feather check.
3- Engine starting temperature peak.
4- Fuel distribution.

260. Which control position is proper during the preflight check when ready to start
F50 engines?

L382 1- Temperature datum switches--AUTO.
2- Condition levers--RUN.
3- Fuel enrichment switches--NORMAL.
4- Ground idle buttons--OUT.

261. Which control position is proper during the preflight check when ready to start
F50 engines?

DC6 1- Hydraulic bypass lever--UP.
2- Cooling turbine switch--ON.
3- Battery master switch--ON.
4- Cowl flap switches--POSITIONING.

262. What means are provided to assure all doors are closed before flight?

F30

1- A master light, a cockpit light for
L382 each door, and a light and reset switch at each door.
2- A master light and reset switch in the cockpit, and a light at each door.
3- A light and reset switch for each door in the cockpit.
4- A master light, a warning buzzer, and a mechanical indicator at each door.

263. Which item should be checked in the nose section area during the external pre-
F50 flight inspection?

L382 1- Angle of attack indicator.
2- ATM inlet and exhaust.
3- Pitot masts and heads.
4- Trailing wire antenna.

264. Which is the most critical area to check for the accumulation of ice or snow on
F50 the external preflight inspection?

DC6 1- Fuel vent ports.
2- Pitot heads.
3- Control surfaces.
4- Radome.

265. Which control position is proper during preflight check when ready to start
F50 engines?

L188 1- Hydraulic cooling switch--ON.
2- Emergency shutdown handles--OUT.
3- Voice recorder--OFF.
4- Temperature trim switches--LOCKED.

266. Air for the cabin pressurization system is supplied by two engine-driven super-
G10 chargers (compressors) which are located on engines Nos.

L188

1- 1 and 4; they can maintain a cabin altitude of sea level at an aircraft altitude of 18,000 feet.
2- 2 and 3; they can maintain a cabin altitude of sea level at an aircraft altitude of 18,000 feet.
3- 1 and 4; they can maintain a cabin altitude of 8,000 feet at an aircraft altitude of 30,000 feet.
4- 2 and 3; they can maintain a cabin altitude of 5,500 feet at an aircraft altitude of 25,000 feet.

267. Which item should be checked to assure that the airplane is safe before begin-
F50 ning the preflight checks?

L382 1- Nose gear lock--REMOVED.
2- Condition levers--GROUND STOP.
3- Landing gear lever--NEUTRAL.
4- Parking brake--SET.

268. What check should be made of the fire extinguisher system during the external
F50 preflight inspection?

L188 1- Volume of carbon dioxide in the
L382 containers.
2- Air preload pressure in the fire extinguisher bottles.
3- Rigging of discharge cables.
4- Bottle pressures relative to ambient temperature limits.

269. Which control position is proper during the preflight check when ready to start
F50 engines?

L188 1- Gear lever--NEUTRAL + 3 GREEN.
2- Pitot heaters--ON.
3- DC hydraulic pump switch--OFF.
4- Temperature datum control switch--NORMAL.

270. Which control position is proper during the preflight check when ready to start
F50 engines?

L382 1- Oil cooler flap switches--FIXED.
2- Inverters--ON.
3- Sync master switch--ENGINE No. 2.
4- Air-conditioning master switch--AIR COND AUTO PRESS.

271. What is the approximate maximum altitude at which a sea level cabin pressure can
G10 be maintained?

L382 1- 8,000 feet.
2- 15,000 feet.
3- 18,000 feet.
4- 25,000 feet.

272. To which altitude can the pressurization system normally maintain a sea level
G10 cabin (5.46 PSI system)?

DC6 1- 8,000 feet.
2- 12,500 feet.
3- 15,000 feet.
4- 18,000 feet.

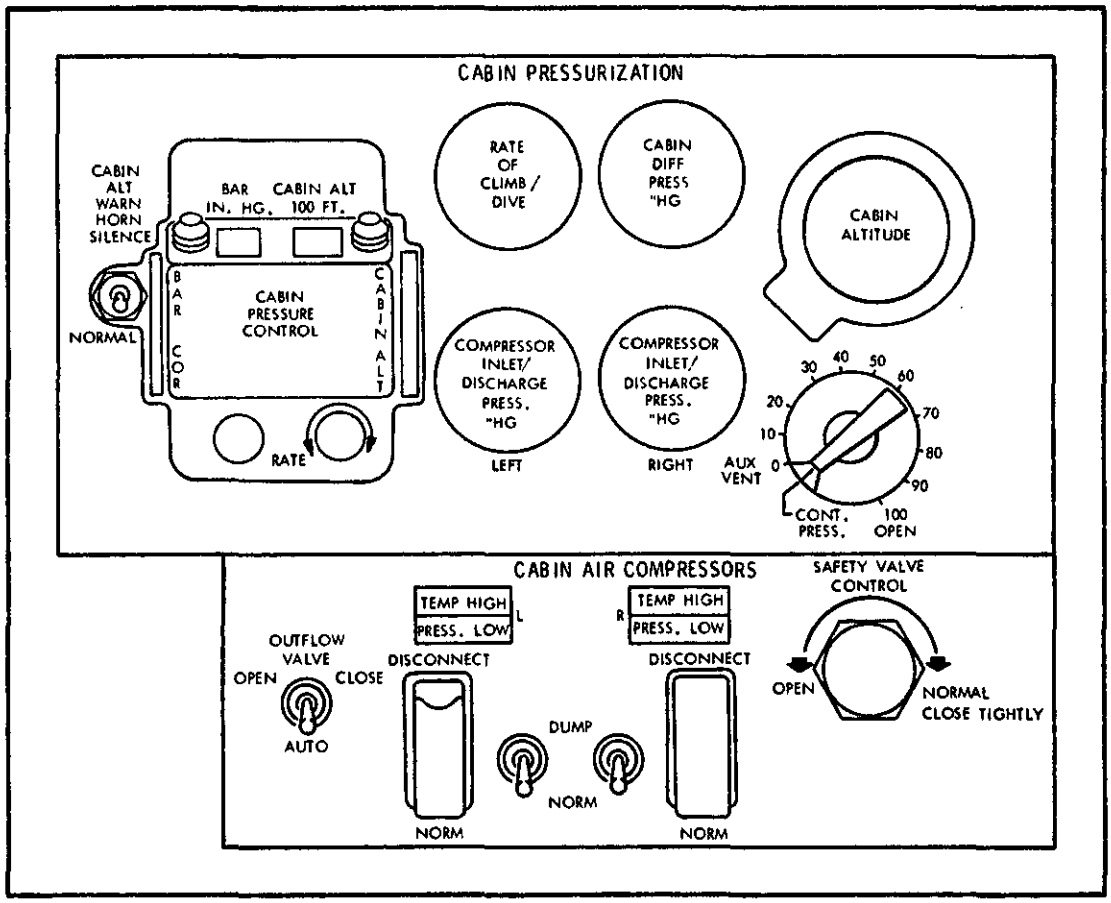


Figure I. Pressurization Controls (Typical L-188)

273. What is the approximate maximum altitude at which a sea level cabin pressure can
G10 be maintained?

L188 1- 8,000 feet.
2- 15,000 feet.
3- 30,000 feet.
4- 10,000 feet.

274. At which point in the pressurization system is the amount of airflow regu-
G10 lated to control cabin pressure?

DC6 1- Input to the superchargers.
2- Output of the superchargers.
3- Input to the cabin.
4- Outflow from the cabin.

275. Which control should be used in event of a malfunction of one cabin supercharger?

G10

1- Johnson bar.
DC6 2- Disconnect switch.
3- Clutch disconnect lever.
4- Emergency cabin pressure control.

276. What is the effect of running the out-flow valve partially open, then placing
G20 the outflow valve switch to OFF during flight?

L188

1- The outflow valve will be limited in its range of operation by the pneu-matic system.
2- The outflow valve will be locked in the partially-open position.
3- The outflow valve will be locked in the partially-open position, but electric control will still be available.
4- The pneumatic system will take over and be able to control the system normally.

277. When using a mobile unit to air-condition the airplane on the ground, which control
G30 position is required?

L382 1- Air-condtioning master switch--AIR COND GTC.
2- Air-conditioning shutoff switches--OFF.
3- Air-conditioning master switch--AUX VENT.
4- Manual override--PULLED CLOSED.

278. How is cabin pressurization controlled during normal, automatic operation?

G10

1- Modulating bleed air output of the
L382 engines.
2- Controlling air admitted to the cabin.
3- Regulating the speed of the cabin air compressors.
4- Limiting the amount of air leaving the fuselage.

279. What means is used to control the output of a cabin supercharger during a descent?

G10

1- The scoop which admits ambient air
DC6 to the impeller is gradually closed by an inlet valve.
2- The discharge duct valve is gradually opened to increase the rate of airflow being vented overboard.
3- The pressure of the hot air which drives the supercharger turbine is gradually reduced.
4- The supercharger variable speed drive gradually decreases the speed of the supercharger impeller.

280. Which means can be used to close the cabin pressure control valve in flight?

G20

1- Electrical actuator or pneumatic
DC6 actuator.
2- CO_2 cylinder actuator or electrical actuator.
3- Pneumatic actuator, electrical actuator, or cable-operated manual control.
4- CO_2 cylinder actuator, pneumatic actuator, or DC motor actuator.

281. Which control positions are required when using an external ground source of
G30 conditioned air?

L188 1- AUX VENT 100% and fan switch AUTO.
2- Safety relief OPEN and EDCs dumped.
3- AUX VENT ZERO and fan switch ON.
4- AUX VENT 100%, safety relief OPEN, and fan switch OFF.

282. What should you check if a warning horn sounds intermittently while in cruise
G30 flight?

DC6 1- Maximum airspeed.
2- Flap position.
3- Engine fire.
4- Cabin altitude.

283. What happens to the cabin compressor air when it is not required for pressuriza-
G10 tion, such as when operating in AUX VENT?

L188 1- Exhausted overboard through the dump valve.
2- Exhausted through the outflow valve which is held wide open.
3- Vented back to the engine inlet.
4- Recirculated to the cabin compressor inlet.

284. Which means are provided to control the opening of the pressurization outflow
G20 butterfly valve?

L382 1- Electric motor, solenoid, and manual actuator.
2- Solenoid dump valve and pneumatic pressure only.
3- Pneumatic pressure, electric motor, and manual actuator.
4- Electric motor, solenoid dump valve, and pneumatic pressure.

285. What is the function of the cabin pressure relief valve?

G20

1- Starts to open at a cabin differen-
L188 tial pressure of 13.9" Hg in flight.
2- Prevent exceeding 8,000 feet cabin altitude.
3- Prevent external atmospheric pressure exceeding internal cabin pressure.
4- Limit cabin differential pressure to a maximum of 1.5 PSI on the ground.

286. How is cabin pressurization adjusted during descent?

G20

1- Gradual opening of the vacuum relief
DC6 valve.
2- Gradual closing of the cabin supercharger delivery duct damper.
3- Gradual reduction of cabin supercharger air volume output.
4- Gradual opening of the outflow valve.

287. At which point in the pressurization system is airflow regulated to control
G10 cabin pressure?

L188 1- Input to the EDCs.
2- Output of the EDCs.
3- Exhaust from the fuselage.
4- Inlet to the cabin.

288. What is the source of air for pressurization of the main cargo compartment?

G10

1- The gas turbine compressor.
L382 2- Cabin compressors driven by two engines.
3- Bleed air from four engines.
4- Tenth-stage bleed air from engines Nos. 1 and 2 only.

289. How may the EDC be disconnected from the reduction gear box in flight?

G10

1- The EDC will disconnect automatically
L188 when pressure ratio is exceeded.
2- The EDC will disconnect in the event of engine decoupling.
3- By actuation of a guarded cockpit switch.
4- By selecting AUX VENT in the 100% position.

290. What is the effect if the outflow valve switch is held in the "CLOSED" position
G20 after landing?

L188 1- The outflow valve will run toward the closed position, because the manual outflow switch overrides all other signals.
2- The outflow valve will remain full open because the circuit is controlled by the landing gear ground safety switches.
3- The outflow valve will be run toward the closed position by the pneumatic actuator.
4- The outflow valve will be run full closed due to action of the electrical actuator.

291. What cue alerts the crew if the cabin altitude exceeds 10,000 feet?

G30

1- A red warning light will blink on
L188 and off.
DC6 2- The warning bell will ring steadily.
3- The warning horn will sound steadily.
4- An interrupted warning horn will sound.

292. Which position of the air-conditioning master switch will cause the safety
G30 valve to close?

L382 1- AIR COND GTC.
2- AUX VENT.
3- OFF.
4- AIR COND NO PRESS.

293. What is the function of the cabin negative pressure relief valve?

G20

1- Prevent atmospheric pressure exceed-
L188 ing cabin pressure.
2- Prevent exceeding 2.04" Hg differential pressure when on the ground.
3- Prevent a pressure differential between the main cabin and the lower cargo compartments.
4- Prevent landing with a positive cabin pressure.

294. What is a function of the pressurization safety valve?

G20

1- Prevent atmospheric pressure exceed-
L382 ing cabin pressure.
2- Prevent exceeding .76" Hg differential pressure when on the ground.
3- Prevent a pressure differential between the flight deck and the cargo compartment.
4- Prevent landing with a positive cabin pressure.

295. How is cabin differential pressure reduced to zero when the airplane is
G20 landed?

L188 1- By actuation of the cabin compressor
DC6 disconnect switches.
2- By automatic opening of the differential pressure relief valve.
3- By adjusting the cabin pressure controller to a sea level setting.
4- By automatic opening of the outflow valves.

296. When the engines are supplying bleed air to the air-conditioning system, which
G30 position of the air-conditioning master switch should <u>not</u> be used?

L382

1- Air-conditioning automatic pressurization.
2- Air-conditioning manual pressurization.
3- Air-conditioning no pressurization.
4- Air-conditioning GTC.

297. What should you check if a warning horn sounds intermittently while in cruise
G30 flight?

L188 1- Outflow valve position.
DC6 2- Cabin altitude.
3- Differential pressure.
4- Stabilizer position.

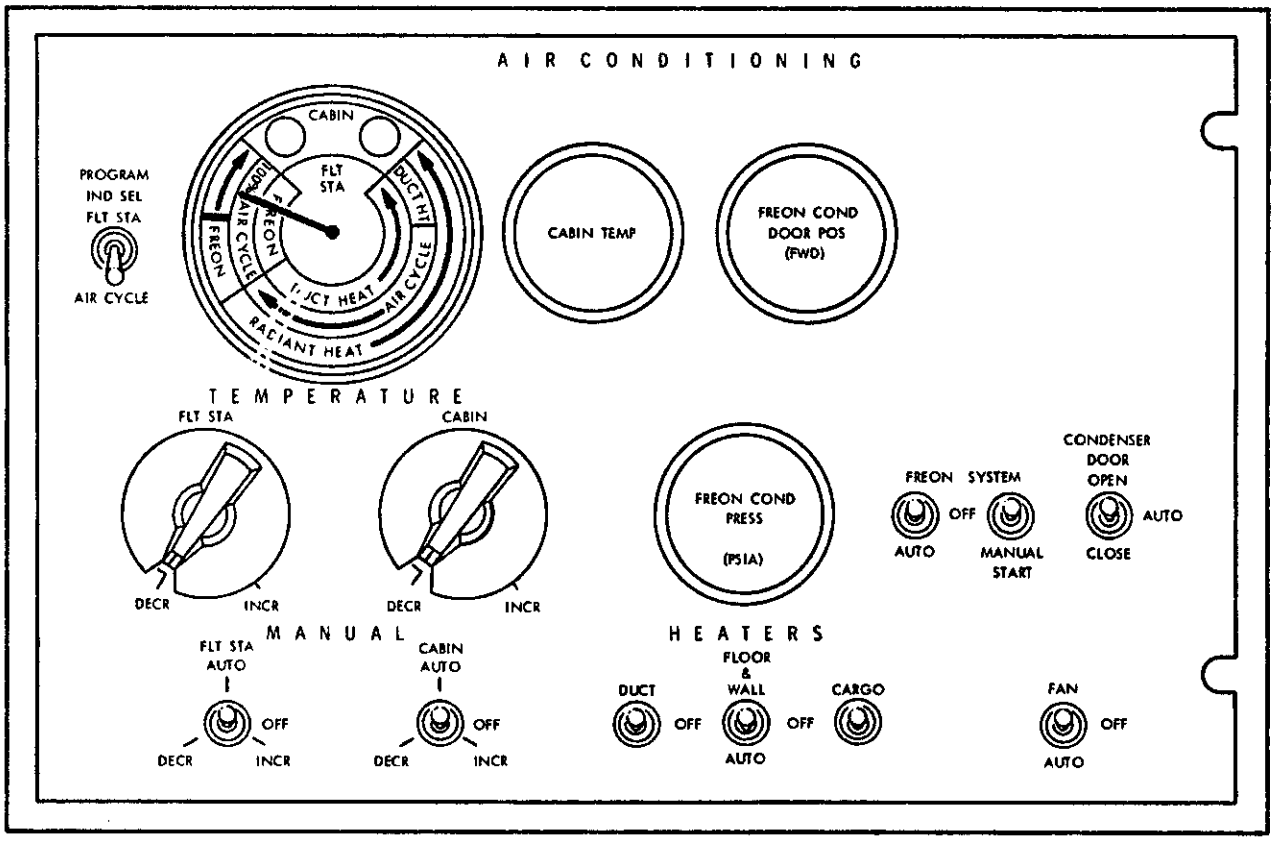


Figure 2. Air Conditioning Controls (Typical L-188)

298. If the cabin pressure safety relief valve is set to open at 6.5 PSI pressure differential, at approximately what cabin pressure will it open if the outside atmospheric pressure is 14.45 inches of mercury?
G20
L188

1- 21.0 PSI.
2- 21.0" Hg.
3- 27.5 PSI.
4- 27.5" Hg.

299. What is the purpose of the ground pressure test switch on the temperature control and indication panel?
G30

L188 1- Test operation of the pressurization controls.
2- Test operation of the engine-driven compressors.
3- Test the automatic temperature control of the electric heating system.
4- Test the automatic temperature control of the cooling system.

300. What will occur in the event that auxiliary (ambient) ventilation is selected while at cruising altitude?
G20

L188 1- Rapid decompression.
L382 2- Increased cooling efficiency.
3- Overspeeding of the cabin supercharger (compressor).
4- Cabin altitude will be reduced.

301. What may be the result of placing the air-conditioning master switch to AIR COND GTC while the engines are supplying bleed air?
G30

L382

1- The GTC may automatically shut down.
2- The airflow regulators may be damaged by excess pressure.
3- Flight deck conditioned air may become uncontrollably hot.
4- The fuselage may become pressurized on the ground.

302. How is the flow of air out of the cabin compressors controlled?

G10

L188
1- Variable speed of the compressor impeller.
2- Variable dump valve opening.
3- Constant speed drive.
4- Variable vanes on the compressor inlet.

303. When will the negative pressure relief valve open during descent?

G20

ALL
1- When the airplane altitude becomes equal to the cabin altitude.
2- When the airplane altitude becomes less than the cabin altitude.
3- When the airplane altitude becomes greater than the cabin altitude.
4- When the cabin pressure controller is reset.

304. Which control should be adjusted if the cabin differential pressure approaches the maximum too early during a climb?

G30

L382
1- The rate control to cause the outflow valve to close slower.
2- The cabin altitude control to cause the bleed air pressure to increase.
3- The rate control to cause the outflow valve to close faster.
4- The manual pressure control switch to cause the safety valve to close.

305. What is the result of placing the air-conditioning master switch in the AIR COND GTC position?

G30

L382
1- The flight deck air-conditioning unit receives a reduced volume of airflow; cargo compartment airflow is normal.
2- The safety valve opens at 5.12" differential pressure.
3- The cargo compartment air-conditioning unit receives a normal volume of airflow if the bleed air system air pressure is above 27 PSI.
4- Both the outflow and safety valves open.

306. Which form of air-conditioning is NOT possible when AUX VENT is selected?

G40

L188
1- Freon cooling.
2- Duct heater warming.
3- Radiant panel heating.
4- Air cycle cooling.

307. What event will occur when cabin altitude exceeds 10,000 feet?

G30

L188
1- A blinking red light will illuminate on the annunciator panel.
2- A continuous-sounding horn will be activated. The horn cannot be silenced until cabin altitude is lower than 9,000 feet.
3- An intermittent horn will sound and a warning light will illuminate on the annunciator panel.
4- The outflow valve closes enough to prevent cabin altitude exceeding 10,500 feet.

308. What pressurization system component indicates the difference between cabin pressure and the pressure outside the aircraft, and what unit of measurement is used?

G30

L188
L382
1- Pressure controller--PSI.
2- Pressure controller--inches of mercury.
3- Cabin differential pressure gauge--PSI.
4- Cabin differential pressure gauge--inches of mercury.

309. What is the effect of selecting AUX VENT on the air-conditioning master switch?

G40

L382
1- Ambient air enters the aux vent valves, and cabin air exits through the outflow and safety valves.
2- Bleed air enters the fuselage and escapes through the aux vent dump valve.
3- Cabin pressure is relieved through the safety valve, and auxiliary pump air is admitted to the fuselage.
4- Outside air enters the engine scoops and is vented to the flight compartment.

310. How can an engine-driven compressor be reconnected after a disconnect switch has been activated?

G10

L188
1- Placing the disconnect switch back to normal.
2- Dumping the compressor, then placing the disconnect switch back to normal.
3- Manually on the ground with the engine stationary.
4- Feathering the propeller then placing the disconnect switch to normal.

311. What correction is made if cabin altitude becomes greater than the pressure
G20 altitude?

ALL 1- Closing of the outflow valve.
2- Opening of the positive pressure emergency relief valve.
3- Opening of the negative pressure relief valve.
4- Disconnect of a supercharger (compressor) drive.

312. What pressurization system operation should be changed in the event that the
G30 cabin rate of climb is too fast?

L188 1- The outflow valve should close
DC6 faster.
2- The cabin compressor should increase speed.
3- The outflow valve should close slower.
4- The cabin compressor should decrease speed.

313. What is the function of the ground pressure switch located on the temperature
G30 control and indication panel?

L188 1- Permits bypassing the scissor switches for a maintenance check of the outflow valve.
2- Prevents dumping the EDCs when the aircraft lands.
3- Eliminates cabin pressure bump after takeoff.
4- Permits operation of the pressurization system prior to takeoff.

314. What is accomplished by rotating the AUX VENT selector from the CONT PRESS posi-
G40 tion to the AUX VENT "O" position?

L188 1- Opening of the cabin and cockpit aux vent valves to permit ram airflow into the air distribution ducts.
2- Closing of the outflow valve and shutting off all airflow into the fuselage.
3- Shutting off all airflow into the fuselage and opening the outflow valve.
4- Opening the cabin aux vent valve but not until the selector is rotated to 30% or greater.

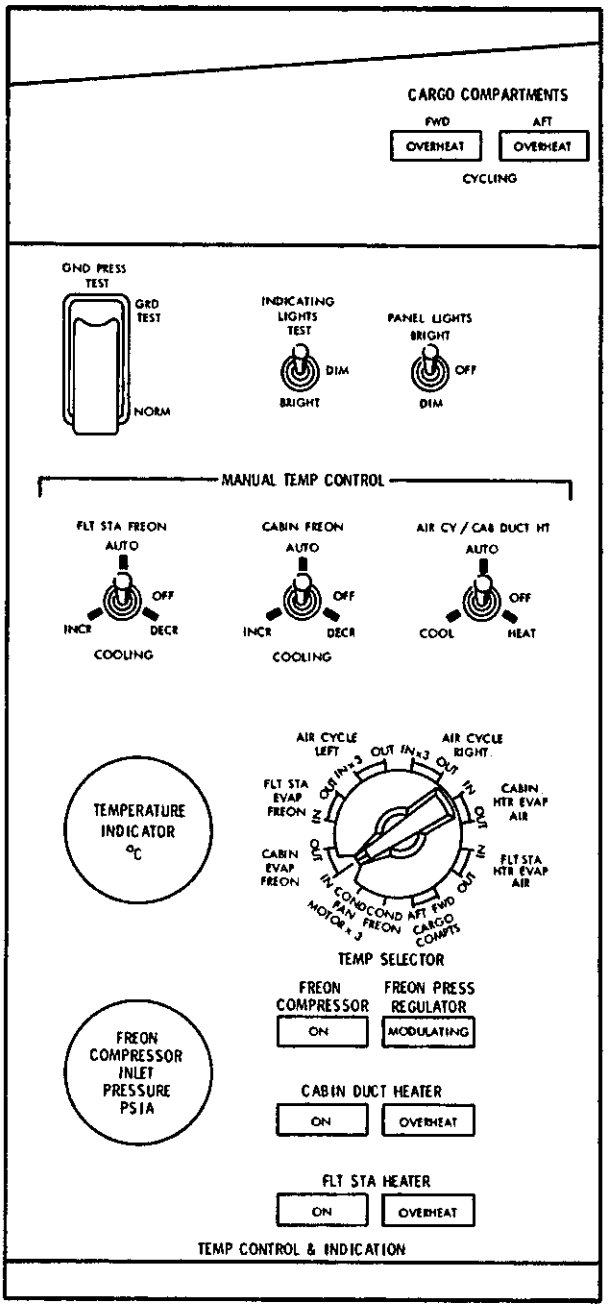


Figure 3. Temperature Controls (Typical L-188)

315. What component gives an indication of the rate of change in cabin altitude and what
G30 unit of measurement is used?

ALL 1- Pressure controller--PSI.
2- Cabin vertical velocity indicator--feet per minute.
3- Cabin vertical velocity indicator--PSI.
4- Cabin altitude indicator--inches of mercury.

316. What is the effect of operating the emergency cabin altitude control?
G30

1- The cabin pressure control valve is
DC6 manually opened or closed.
2- Auxiliary ventilation mode is selected.
3- The cabin pressure relief valves are opened or closed.
4- Both cabin superchargers are disengaged.

317. Which ventilation equipment is controlled by a switch in the flight compartment?
G40

1- Electronic equipment cooling fan.
L188 2- Lavatory ventilation fan.
3- Windshield defogging fan.
4- Recirculation fan and electronic equipment cooling fan.

318. Which sources can be used for air-conditioning air on the ground?
G50

1- Gas turbine compressor (GTC) bleed
L188 air or external air-conditioning unit.
2- Engine bleed air or engine-driven compressor (EDC).
3- External air-conditioning unit or engine-driven compressor.
4- Cabin air compressors, air cycle machine, or external bleed air generator.

319. What is the purpose of a mixing valve in an air-conditioning system?
G50

1- Control hot, cool, and cold air
DC6 supplies.
2- Distribute conditioned air evenly to all parts of the cabin.
3- Combine electrical signals from the temperature control and the cabin thermisters.
4- Dehumidify cabin air by mixing with dry air from the supercharger.

320. What is the effect on operation of the cabin and cockpit temperature controller
G40 if the manual temperature controls on the auxiliary air-conditioning panel are
L188 positioned OFF, but all other air-conditioning switches are normal?

1- The temperature controller would be inoperative.
2- The temperature controller would be limited in its range of operation.
3- The temperature controller is not affected by the manual temperature control switches.
4- The temperature controller overrides the action of the manual temperature control switches.

321. When the engines are not running, which control position is required to use an
G30 external air-conditioner unit to cool the cabin?
DC6

1- Battery selector switch--GROUND POWER.
2- Cooling turbine--ON.
3- Cabin temperature control--FULL COLD.
4- Ground blower switch--ON.

322. Which is the correct sequence of components encountered by the cabin air as it
G50 flows through an air cycle cooling system?
L188
DC6 1- Compressor; evaporator; heat exchanger; turbine.
2- Evaporator; turbine; heat exchanger.
3- Turbine; compressor; heat exchanger.
4- Heat exchanger; turbine.

323. Which freon system component provides for a freon to cabin air heat exchange?
G50

1- Compressor.
L188 2- Expansion valve.
3- Condenser.
4- Evaporator.

324. When does the recirculating fan operate?

G60 1- When the underfloor heat is turned on.
L382 2- When its switch is turned on.
3- When the cargo compartment air-conditioning system is turned on.
4- When the air-conditioning master switch is in one of the air-conditioning positions.

325. What is the effect of placing the flight deck temperature control switch in the
G40 OFF position?

L382
1- The temperature control valve remains in a set position regardless of other controls.
2- Automatic temperature regulators drive the valves to the full cold position.
3- Flight deck temperature can be regulated with the air-conditioning master switch.
4- The flight deck temperature rheostat retains control unless the switch is placed in COOL or WARM position.

326. Which is a feature of the windshield defogging system?
G40

1- Uses a diverter valve to take priority over the foot warmers.
L382
2- Receives air from the cargo compartment air-conditioning unit.
3- Has a separate electric control system.
4- Utilizes unmodulated bleed air and an electric fan.

327. Which sources of air are used for air-conditioning on the ground?
G50

1- Gas turbine compressor bleed air or external air-conditioning unit.
L382
2- Engine bleed air or engine-driven cabin compressor air.
3- Engine-driven cabin compressor air or auxiliary ventilation.
4- Engine bleed air, gas turbine compressor bleed air, or external air-conditioning unit.

328. Which power source drives the expansion turbine in the cooling system?
G50

1- Discharge air from the superchargers.
DC6
2- A direct current electric motor.
3- Outside ram air.
4- The engine through a drive shaft.

329. Which air-conditioning master switch position is used for air-conditioning on
G70 the ground after one or more engines are operating?
L382

1- AIR COND NO PRESS.
2- AIR COND GTC.
3- OFF.
4- AUX VENT.

330. Which is an operating feature of the flight deck air-conditioning unit?
G40

1- It can be controlled by a manual override, cable-operated system.
L382
2- It is controlled by its own temperature selector switch and its own air-conditioning master switch.
3- The heat exchanger uses ram air assisted by a fan which is driven by the cooling turbine.
4- It is not affected by the emergency depressurization switch.

331. What means is used to obtain the initial reduction of air temperature in the cabin
G50 cooling system?

ALL
1- An air to air heat exchanger.
2- Expansion of air through the turbine.
3- A freon condenser.
4- An increase in airflow velocity.

332. How does the air cycle machine produce cold air?
G50

1- By passing cold air through cooling coils containing freon.
ALL
2- By extracting heat energy across the expansion turbine.
3- By passing heated air through a compressor which drops the temperature.
4- By routing conditioned air through the cooling fan.

333. The cargo compartment underfloor heating system utilizes
G60

1- air from and through the cargo compartment air-conditioning unit.
L382
2- a flow diverter valve which is thermostatically controlled.
3- jet pumps to ensure circulation.
4- air from and through the flight deck air-conditioning unit.

334. What is normal for operation of the pressurization system on the ground?
G70

1- The cabin altitude should be set below airport elevation before takeoff.
ALL
2- The cabin compressors should be in dump position on the ground.
3- Pressure differential should be gradually increased during taxi to prevent pressure surges or bumps during the takeoff and initial climb.
4- The cabin must be completely depressurized for takeoff and landing.

335. Which action causes the automatic cabin temperature control to be shut off?

G40

1- Placing the cooling turbine switch
DC6 OFF.
2- Opening the door over the manual switches.
3- Rotating the temperature control to full HOT.
4- Starting the cabin heater on the ground.

336. Which is the correct position of the cockpit temperature control for cooling
G40 turbine operation?

DC6 1- Cool.
2- Warmer.
3- Off.
4- Normal.

337. What source of power is used to rotate the cooling turbine?

G50

1- Cabin supercharger (compressor) air.
L188 2- 115 Volt, three-phase AC.
DC6 3- Freon compressor motor.
4- Condenser discharge ram air.

338. Which freon system component provides for freon to ambient air heat exchange?

G50

1- Evaporator.
L188 2- Expansion valve.
3- Condenser.
4- Compressor.

339. Which of the following is a normal source of heat for the air-conditioning system?

G60

1- Jet heat pump.
L382 2- Engine turbine section heat exchanger.
3- Electric radiant ceiling panels.
4- Engine bleed air.

340. Which components are used to increase the temperature of cabin air?

G60

1- Electric duct heaters and cabin
DC6 superchargers.
2- Gasoline combustion heater and cabin air superchargers.
3- Radiant panels, combustion heater, and heat pump.
4- Cabin air compressors, electric duct heaters, and butane combustion heaters.

341. What possible sources of cabin cooling are available on the ground?

G50

1- External air-conditioning unit or
DC6 cooling turbine with both engines Nos. 1 and 4 operating.
2- Cooling turbine with either engine No. 1 or 4 operating.
3- Cabin ground blower, cabin superchargers, or passenger cold air outlets.
4- Air cycle machine, engine bleed air, or external air-conditioning unit.

342. At which location in the freon air-conditioning system is freon changed from a
G50 liquid state to a gaseous state?

L188 1- Expansion valve.
2- Evaporator.
3- Condenser.
4- Compressor.

343. Which components are sources of heat for the air-conditioning of the fuselage?

G60

1- Bleed air, electric duct heaters,
L188 and radiant heat panels.
2- Engine-driven compressors, radiant heat panels, and duct heaters.
3- Vapor cycle heat pump, radiant heat floor and wall panels, and the heat of compression.
4- Electric resistant duct heaters, cabin compressors, and tailpipe heat exchanger.

344. What areas of the cabin have radiant heat panels?

G60

1- The entire cabin floor and the walls.
L188 2- Only the aisle flooring.
3- The cabin floor under the seats and the cabin walls.
4- The entire cabin and cockpit floor and the cabin walls up to the top of the windows.

345. Which operating procedure applies when using the cabin heater on the ground?

G70

1- The outboard engines must be opera-
DC6 ting.
2- The heater must not be operated with passengers aboard.
3- Fuel may not be supplied from any tank other than 2M.
4- The heater must not be operated while refueling.

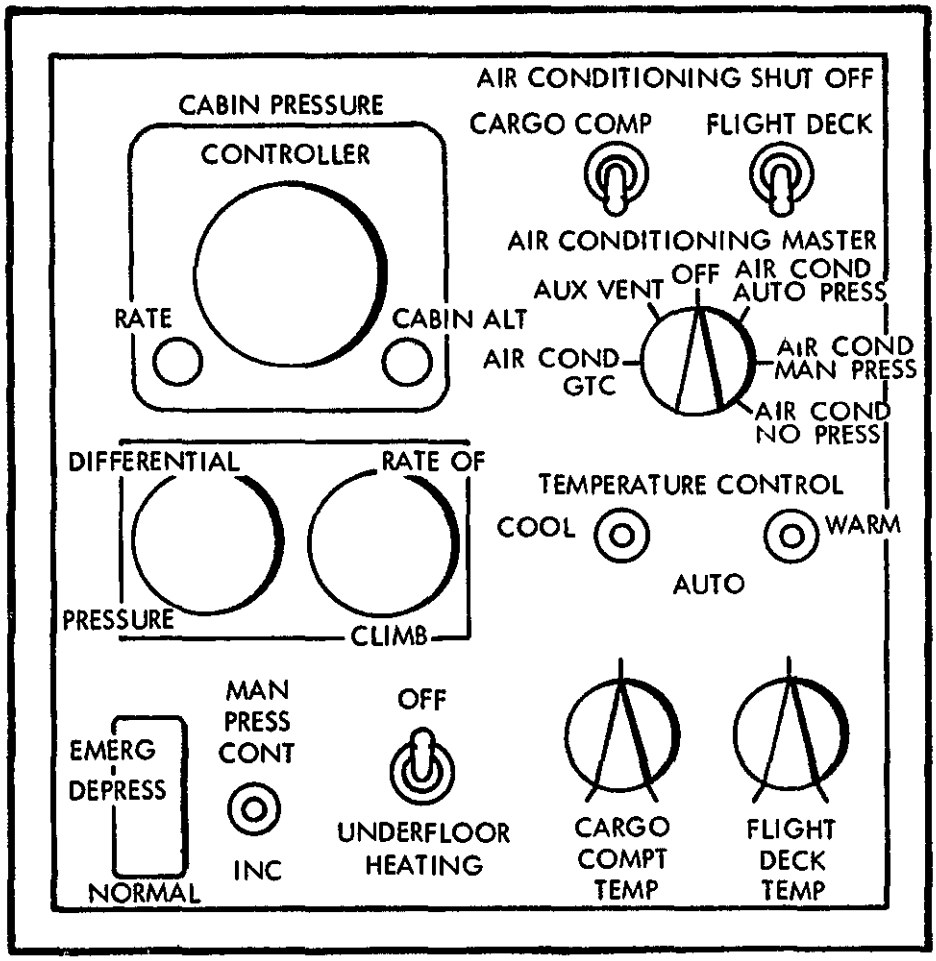


Figure 4. Pressurization Controls (Typical L-382)

346. What turns the turbine of the air cycle machine?

G50

L382

1- Bleed air flowing from the heat exchanger.
2- Ambient air rotating the heat exchanger fan.
3- Engine compressor section hot air.
4- Conditioned air flowing from the cooling turbine compressor.

347. The air cycle cooling system is affected by which control(s)?

G70

L188

1- The cabin temperature control system only.
2- The cabin and cockpit temperature control systems.
3- The cockpit temperature control and the cooling turbine switch.
4- The air cycle temperature control system only.

348. What purpose is served by the air-conditioning system water separator?

G50

L382

1- Remove condensation caused by ACM operation.
2- Prevent circulation of excessively dry air.
3- Provide water for galley and lavatory uses.
4- Prevent freezing of the air filters.

349. What precaution must be observed before turning off the freon system switch?

G70

L188

1- The freon compressor indicator light must be out.
2- The freon condenser pressure must be below 12-1/2 PSI.
3- The cabin program indicator must be out of the freon range.
4- The condenser tunnel door must have cycled closed.

350. Which conditions are normally required before the heating system can be used on
G60 the ground?

DC6 A. 28V DC electrical supply for cabin heater ignition.
B. Fuel from Nos. 1 and 4 fuel systems.
C. Ground blower in operation.
D. 115V AC electrical supply for cabin temperature indicators.

1- B and D.
2- A and C.
3- B and C.
4- C and D.

351. How should the cabin pressure controller be set for the climb?
G70

1- Desired cruising altitude plus field
L188 elevation.
DC6 2- Desired cabin cruise altitude but never less than field elevation.
3- 8,000-foot cabin altitude.
4- Maximum cabin differential pressure.

352. With both cabin superchargers operating, which procedure would give maximum cool-
G70 ing to lower the cabin temperature?

DC6 1- Fly with the airplane unpressurized and have the cooling turbine operating.
2- Pressurize the airplane to the maximum rate and have the cooling turbine operating.
3- Fly with the airplane unpressurized and place the cooling turbine switch OFF.
4- Prepressurize the airplane prior to takeoff and place the cooling turbine switch to NORMAL.

353. When starting the freon system in a heat-soaked airplane (engines not operating),
G70 the freon system should be started

L188 1- in the full 100% freon range to have the system operate efficiently.
2- in the full air cycle range to reduce the freon cooling load.
3- by manually starting the freon system with the manual start switch, then turning off the fan switch to decrease the airflow through the evaporators.
4- with the cabin temperature program indicator in the freon demand range, and the cabin manual switch OFF.

354. How should the pressurization system be set during taxi operations before take-
G70 off?

L382 1- No pressurization to allow rapid evacuation in event of fire.
2- Pressurization to a negative cabin altitude to prevent pressure surge at takeoff.
3- Pressurization to a positive pressure to keep exhaust fumes out of the flight deck.
4- Pressurization to a cabin altitude below airport altitude to permit checking the flight instrument systems for leaks.

355. What is the effect of placing the flight deck temperature control in a cooler
G70 position?

L382 1- A greater proportion of bleed air is routed through the cooling turbine.
2- The heat exchanger outlet valve is opened to admit more outside air.
3- Pressure drop across the cooling turbine is decreased.
4- The auxiliary vent valves are closed to a greater degree.

356. In the event that cabin differential pressure is too high, a correction can
G80 be made by

ALL 1- increasing cooling turbine speed.
2- closing the outflow valve.
3- decreasing cabin supercharger (compressor) RPM.
4- increasing cabin altitude.

357. Assume the cabin thermostat is set to 70°F. and all air-conditioning controls
G80 are set for automatic operation. What action should be taken if the cabin tem-
DC6 perature remains at 60°F. and it is determined that the electronic temperature regulator is inoperative?

1- Hold the manual temperature control in HOT position until the cabin temperature rises to 70°F.
2- Decrease the cabin pressure altitude to obtain a greater degree of cabin supercharger heat of compression.
3- Increase the thermostat setting to 80°F.
4- Hold the manual temperature control in HOT position for about 10 seconds and wait 10 seconds to determine results.

358. If a ground air-conditioning unit is required to supply conditioned air to the
G70 cabin, where may the unit be connected?

L188 1- Ground recirculating blower air inlet.
2- Ground air-conditioner connection located in the air-conditioning service center.
3- Cabin auxiliary ventilation valve air inlet, inside the freon condenser tunnel.
4- Cabin pressure safety relief valve inlet.

359. What would be the effect of turning off the fan switch during freon operation?
G70

1- The fan switch has no control over
L188 the freon system.
2- The expansion valves would close and the freon compressor would stop.
3- The freon compressor would stop, but the expansion valves would stay in their last position.
4- The expansion valves would close, but the freon compressor will continue to operate.

360. What condition is indicated if the cargo heat lights are on?
G80

1- Cargo compartment heat is ON.
L188 2- Cargo compartment heat has been cycled OFF due to an overheat condition.
3- Fire exists in the cargo compartment.
4- Cargo compartment heat has been cycled ON due to an under temperature condition.

361. What action should be taken with the manual pressurization control switch
G80 when climbing with the air-conditioning master switch set in AIR COND MAN PRESS?
L382

1- Intermittently position the switch between INCREASE and OFF to obtain a desired cabin rate of climb.
2- Use the switch to establish the desired cabin rate of climb after takeoff, then place the switch OFF for the rest of the climb.
3- Hold the switch in the DECREASE position throughout the climb.
4- Intermittently position the switch between DECREASE and NORMAL to obtain a desired rate of cabin pressure reduction.

362. Why should the cabin altitude selector on the pressure controller be set at
G70 least 300 feet above the desired cruising altitude?
L188

1- To assist in changing the cabin altitude if the aircraft is required to ascend to a higher altitude.
2- To prevent pressurization instability due to cabin pressure being maintained at the maximum limit.
3- To allow for any overshooting of the airplane over the desired cruising altitude.
4- To prevent overpressurization of the cabin.

363. If the cabin differential pressure is increasing slower than desired, what
G80 control should be adjusted?

ALL 1- The cabin altitude selector to cause the cabin compressor to decrease speed.
2- The cabin rate selector knob to cause the outflow valve to close faster.
3- The cabin climb control to cause the relief valves to open faster.
4- The cabin differential control to cause the cabin compressor to increase speed.

364. Which action should be taken when descending from cruise altitude while
G80 operating the pressurization system in AIR COND MAN PRESS mode?
L382

1- Select the DECREASE position on the manual pressure control.
2- Select the INCREASE position on the manual pressure control.
3- Select landing airport elevation on the cabin pressure controller.
4- Select ZERO on the differential pressure gauge.

365. What action should be taken if the difference between left and right EDC inlet
G80 pressure indicators exceeds 3" Hg during flight?
L188

1- Dump the compressor with the highest inlet pressure.
2- Disconnect the compressor with the highest inlet pressure.
3- Dump the compressor with the lowest inlet pressure.
4- Disconnect the compressor with the lowest inlet pressure.

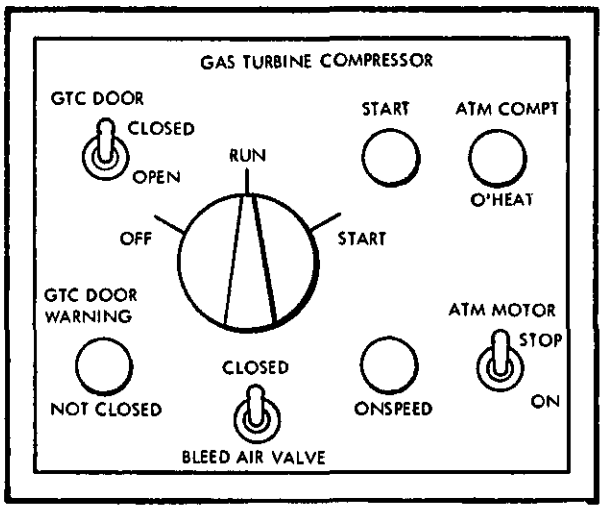


Figure 5. GTC/ATM Controls (Typical L-382)

366. What should be a setting on the cabin pressure controller prior to takeoff?
G70
1- 8.77 PSI differential.
L382 2- 500 FPM rate of climb.
3- Cruise flight level or slightly higher.
4- Cruise altitude or field elevation, whichever is lower.

367. Which is a proper control setting for the pressurization system during climb?
G70
1- Rate knob--300 ft./min.
DC6 2- "Flight" hand--Cruise PA +500 feet.
3- "Cabin" hand--Desired cabin altitude.
4- Rate knob--MAX.

368. During a 1,000 ft./min. climb, the pressurization rate control is adjusted to
G80 100 ft./min. causing maximum cabin differential pressure to be reached at
ALL FL200. If the airplane continues the climb at 1,000 ft./min. to FL250 without the pressurization controls being changed, the cabin will

1- climb at 100 ft./min.
2- not climb.
3- climb at more than 100 ft./min.
4- climb at less than 100 ft./min.

369. Which control should be adjusted if the cabin altitude is not climbing as fast
G80 as desired?

L382 1- Climb control to cause the relief valve to open faster.
2- Cabin altitude selector to cause the pneumatic duct pressure to decrease.
3- Cabin rate selector to cause the pneumatic duct pressure to decrease.
4- Cabin rate selector to cause the outflow valve to close slower.

370. Which step should be taken when changing from pressurized to nonpressurized
G80 flight while flying below 10,000 feet airplane altitude?
L382
1- Select AUX VENT.
2- Close all engine bleed valves.
3- Set the cabin altitude knob to airplane altitude.
4- Select AIR COND MAN PRESS and hold the manual pressure control switch in the INCREASE position.

371. If the cabin and cockpit temperature controllers fail outside the freon de-
G80 mand range, what is the correct procedure for starting the freon system?
L188
1- Turn off all heater switches, place the freon switch to OFF and depress the manual start switch.
2- Place the cabin and flight station automatic temperature selectors to full DECREASE, then depress the freon manual start switch and watch for a freon pressure rise.
3- Place the condenser door switch to full OPEN then depress the manual start switch.
4- Place either the cabin or flight station freon manual temperature control switch to INCR COOLING momentarily, then back to OFF, then depress the freon manual start switch.

372. What action should be taken if a cabin supercharger airflow rate is high and
G80 does not drop with a reduction of engine RPM?
DC6
1- Feather the propeller.
2- Place the cooling turbine switch OFF.
3- Manually decrease cabin altitude.
4- Open the emergency cabin altitude control.

373. If the outflow valve is adjusted to close too fast during climb, the cabin rate of
G80 climb will be

ALL 1- slower than desired.
2- faster than desired.
3- the same as airplane rate of climb above 5,000 feet.
4- the same as airplane rate of climb for the entire climb.

374. When operating the outflow manually, through use of the OUTFLOW VALVE switch,
G80 which rates should be used?

L188 1- 500 ft./min. rate of climb, or 300 ft./min. rate of descent.
2- 600 ft./min. rate of climb, or 500 ft./min. rate of descent.
3- 700 ft./min. rate of climb, or 600 ft./min. rate of descent.
4- 800 ft./min. rate of climb, or 300 ft./min. rate of descent.

375. Which selections are required to obtain freon cooling of the cockpit in the
G80 event of cockpit programmer failure?

L188 1- Freon master--OFF; Flt. sta. freon--INCR; Manual start switch--ACTUATE.
2- Freon master--ON; Flt. sta. freon--INCR; Manual start switch--ACTUATE.
3- Freon master--MANUAL; Flt. sta. freon--DECR; Manual start switch--AUTO.
4- Freon master--ON; Flt. sta. freon--DECR; Manual start switch--AUTO.

376. The freon condenser fan may be stopped in flight by
G80
1- opening the fan motor circuit
L188 breaker on priority bus A.
2- turning the fan switch to OFF.
3- placing the condenser door switch to CLOSE momentarily.
4- opening the scissors switch relay circuit breaker on the 186 circuit breaker panel.

377. What correction is made when the cabin heater backfire switch is activated?
G80
1- Mixing valve port C is closed.
DC6 2- Heater fuel and ignition are shut off.
3- Heater airflow is restricted, enriching the mixture.
4- Mixing valve port D is closed.

378. How should the pressurization controls be set during descent, with the air-con-
G80 ditioning master switch set for AIR COND MAN PRESS?

L382
1- Gradually decrease pressurization by reducing engine bleed air input to the cabin.
2- Hold the manual pressure control switch in DECREASE until descent is completed.
3- Intermittently position the manual pressure control switch to DECREASE to open the outflow valve.
4- Set the cabin altitude knob for the desired cabin altitude and set the rate knob to desired rate.

379. Which selection is used to decrease flight station air temperature if auto-
G80 matic controls are inoperative?

L382 1- Air-conditioning master switch--AUX VENT.
2- Flight deck temperature rheostat--COOL.
3- Flight deck air-conditioning shutoff switch--OFF.
4- Flight deck temperature control switch--COOL.

380. In the event that cabin supercharger surging occurs while cruising at low
G80 altitudes on a hot day, how can the malfunction be corrected?

DC6
1- Close the aftercooler flap door and use the cooling turbine exclusively for air-conditioning.
2- Cut off the air which is driving the expansion turbine.
3- Increase the back pressure on the duct between the superchargers and the cooling turbine.
4- Place the cooling turbine switch in the NORMAL position.

381. Which control positions are required when checking for cabin supercharger
G90 duct leakage by comparing duct pressure reading against chart values?

DC6
1- Cooling turbine--OFF; Manual temperature control--FULL COLD.
2- Cooling turbine--OFF; Manual temperature control--FULL HOT.
3- Cooling turbine--NORMAL; Manual temperature control--FULL COLD.
4- Cooling turbine--NORMAL; Manual temperature control--FULL HOT.

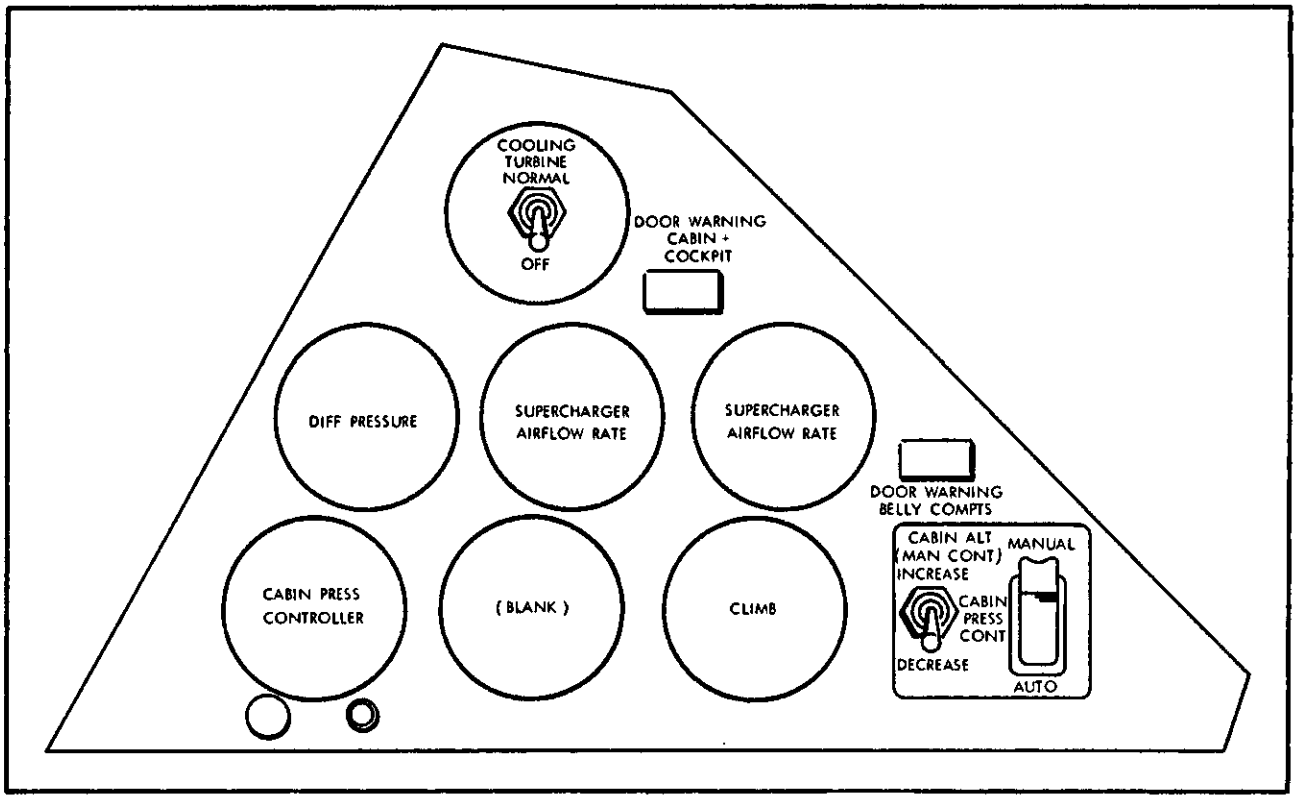


Figure 6. Pressurization Controls (Typical DC-6)

382. Which action should be taken if hot bleed air is leaking into the cargo compart-
G80 ment?

L382 1- Place the air-conditioning shutoff switch to--OFF.
2- Turn the master switch to--AIR COND MAN PRESS.
3- Operate the emergency depressurization switch.
4- Disconnect the faulty cabin supercharger.

383. What is the effect of actuating the emergency depressurization switch?
G90

1- Outflow and safety valves open, air-
L382 conditioning shutoff valves close.
2- Bleed valves close and outflow valve opens.
3- Emergency pressurization door opens.
4- Outflow valve opens, wing isolation valves close, and engine bleed valves open.

384. What action can be taken to control heat to the cockpit if the flight station pro-
G80 gram motor failed in the heat position?

L188 1- Cycle the floor and wall heaters switch ON and OFF.
2- Hold the cockpit manual temperature control switch in INCR or DECR until the desired degree of heat is obtained.
3- Alternate the air cy/cab duct heat switch between ON and OFF.
4- Cycle the duct heaters switch between AUTO and OFF.

385. What should be done if cabin pressure fluctuates at a high rate of change?
G90

1- Dump both engine-driven compressors.
L188 2- Use the outflow valve switch and reduce use of the cooling turbine.
3- Rotate the AUX VENT selector to 100% OPEN position.
4- Use the safety valve control knob to manually control cabin pressure.

386. What happens if the freon system is turned off with the expansion valves
G80 open, then shortly after turned back on?

L188
1- Nothing, this is the normal method of turning off the system.
2- Liquid freon would enter the compressor causing an excessive load and tripping the compressor motor protector.
3- The open expansion valves will allow contaminants to enter the system.
4- The freon system would be very inefficient, because the condenser would be full of liquid and could not cool the airflow around the condenser.

387. Which action should be taken if an EDC high oil temperature warning light comes
G90 on in flight?

L188
1- Open the oil cooler flap for the engine on which the EDC is mounted.
2- Increase use of the cooling turbine.
3- Dump the EDC; if the light remains on, disconnect the EDC.
4- Check the EDC oil pressure; if it is low, feather the propeller or disconnect the compressor.

388. Which action would be appropriate regarding a cabin supercharger which has an ab-
G90 normally high oil temperature?

DC6
1- Feather the propeller, disengage the supercharger clutch, then restart the engine.
2- Disengage the supercharger clutch, let the oil cool into the green band, then reengage at idle RPM.
3- Disengage the supercharger and feather the propeller; when the oil cools, reengage the supercharger and restart the engine.
4- Disengage the supercharger clutch from the engine and do not reengage.

389. If the outflow valve fails in the closed position, the cabin pressure may increase
G90 at an excessive rate. If it cannot be reduced by normal means, what action
L382 should be taken?

1- Actuate the emergency depressurization switch.
2- Pull the manual emergency handle.
3- Close the engine bleed valves one at a time.
4- Close the engine bleed valves and the crosswing isolation valve.

390. What would be the result of positioning the AUX VENT selector to OPEN-100%, when
G80 the cabin pressure differential is at its maximum limit?

L188
1- The cabin aux vent inlet valve would go full open but the flight station valve will not open until cabin pressure is less than 2.5 PSI.
2- Cabin pressure would escape out of the aux vent inlet valves.
3- The EDCs would be dumped, the outflow valve would open, and the freon condenser inlet door would open.
4- Ram air would immediately enter the cabin and overpressurize the structure.

391. What is the effect of pulling the master emergency depressurization control?

G90
1- Open the emergency pressure relief
DC6 valves and nose dump valve; declutch the superchargers and close the outflow valve.
2- Open the outflow valve, all relief valves, and nose dump valve; disconnect the superchargers.
3- Open the outflow valve and emergency pressure relief valves; declutch the superchargers.
4- Open the nose dump valve, decrease supercharger output to zero, and close all other pressurization control valves.

392. How is a cargo compartment overheat lockout condition reset?

G90
1- Place the fan switch OFF, then trip
L188 and reset the respective cargo compartment heat circuit breaker.
2- After the overheat light goes out, trip and reset the fan control circuit breaker.
3- The cargo compartment heater must be reset on the ground.
4- The overheat lockout switches will reset automatically after the switches have cooled.

393. Which unit(s) should be closed if the air-conditioning system output is not
G90 controllable automatically or manually, and hot air is entering the cabin?

L382
1- Emergency depressurization valve.
2- Engine bleed air valves.
3- Diverter valve.
4- Turbine bypass valve.

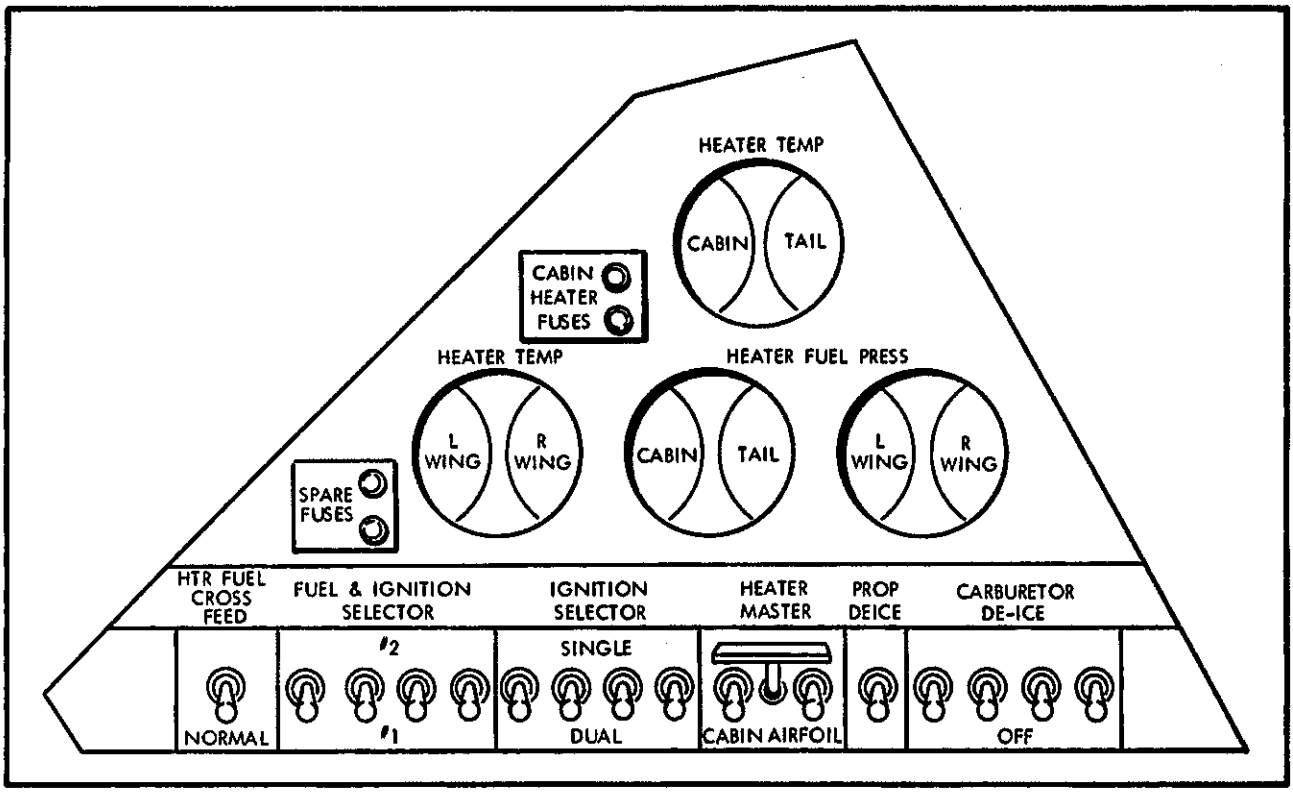


Figure 7. Heater Controls (Typical DC-6)

394. What should be done if the cabin differential pressure is more than 1.5 inches
G90 of mercury during the final approach to a landing?
L382

1- Adjust the cabin altitude selector and the rate knob to depressurize faster.
2- Close the engine bleed air valves.
3- Select AIR COND NO PRESS on the master switch.
4- Close the wing isolation valves.

395. Which action should be taken if the freon ccndenser pressure is below the desired
G90 minimum of 20 PSI?

L188 1- Select a warmer temperature for both cabin and cockpit.
2- Manually close the condenser door a small amount.
3- Select a cooler temperature for both cabin and cockpit.
4- Manually open the condenser door to flight open position.

396. In the event of failure of both the automatic and electrically operated pressuri-
G90 zation control systems, cabin pressure can be controlled or the cabin can be
L188 depressurized by the

1- cabin altitude selector.
2- manually-controlled safety valve.
3- outflow valve override switch.
4- barometric selector.

397. Which action should be taken if the aircraft interior is too hot with the freon
G90 system on and calling for full cold during flight?
L188

1- Place the aux vent control in an open position to admit cold outside air.
2- Place the engine bleed air valves in the OFF position.
3- Dump the EDC which is supplying hot air into the system.
4- Turn on either one or two cooling turbines as required.

398. What would be the effect of placing the air-conditioning master switch to the
G80 AUX VENT position during flight?

L382 1- Conditioned air is recirculated with bleed air and outflow valves closed.
2- Bleed air valves close; outflow and safety valves open to depressurize the airplane.
3- Compressors are dumped, the outflow valve is closed, and the safety relief valve is opened.
4- Pressurization remains normal until the airplane touches the ground, at which time all cabin pressure is suddenly dumped.

399. If a cabin compressor airflow or pressure ratio is too high, the flightcrew
G90 should

L188 1- disconnect the compressor and reconnect after a suitable cooling period.
2- depressurize the cabin.
3- shut down the engine to which the compressor is attached.
4- open the "dump" valve.

400. If a duct heater OVERHEAT light illuminates, the locked-out heater may be reset
G90 by (after it has cooled)

L188 1- tripping and resetting the respective duct heater control circuit breaker and turning off the duct heater switch or the fan switch.
2- actuating the switch at the heater, on the ground only.
3- turning off the cabin or flight station manual temperature control switch.
4- depressing the duct heater manual override switch on the auxiliary air-conditioning panel.

401. Which action should be taken if the freon condenser pressure is above the desired
G90 maximum of 100 PSI?

L188 1- Select INCR on both freon manual control switches.
2- Immediately place the freon system switch OFF.
3- Select INCR on both temperature selectors, then turn off the freon system switch when the compressor light goes out.
4- Place all freon switches OFF, then turn on the freon system switch when the compressor light comes on.

402. What should be done if cabin pressure fluctuation cannot be controlled by the
G90 automatic or manual pressure control switches?

DC6
1- Disconnect both cabin superchargers.
2- Place the cooling turbine switch in NORMAL.
3- Operate the emergency cabin altitude control crank.
4- Close both emergency cabin air shutoff valves.

403. In case of a complete pressurization system electrical failure, which compo-
G90 nent can be manually opened to reduce cabin pressure?

L382
1- Emergency depressurization door.
2- Outflow valve.
3- Pilot's side window.
4- Emergency depressurization switch.

404. Which action can be taken during flight to restore cabin heater operation after
G90 the dropout safety switch has actuated?

DC6 1- Place the switch in manual position.
2- Cycle the heater ignition switches OFF, then ON.
3- Place the crossfeed switch in NORMAL.
4- Replace the blower fuses after the heater has cooled.

405. What should be done if the freon condenser door remains in the GROUND OPEN
G90 position after takeoff?

L188 1- Recycle the landing gear down, then up.
2- Shut down the freon system.
3- Limit airspeed to a maximum of 300 knots.
4- Close the door with the manual control switch.

406. What is indicated if there is a deflection of the aileron bar of the autopilot
H10 trim indicator?

ALL 1- Degree of wing up or wing down deflection of the trim tabs.
2- Degree of control force being held on the ailerons by the autopilot.
3- Degree of deflection of the ailerons from the streamline position.
4- Hydraulic pressure applied to the aileron booster.

407. Which controls may be operated by the autopilot?

H10

ALL
1- Ailerons, elevators, elevator trim, and rudder.
2- Ailerons, rudder, and elevator trim.
3- Ailerons, rudder trim, and elevator trim.
4- Rudder and elevator trim only.

408. Which is an indication that the autopilot switch has automatically kicked off because of a malfunction?

H10

L382
1- Master warning light and AP annunciator will be ON.
2- Flashing light on pilot's instrument panel.
3- Altitude hold switch will disengage.
4- Beam coupler off light will be ON.

409. What is a function of the gas turbine compressor (GTC)?

I10

L382
1- Provide a source of air for ground operation of the bleed air system.
2- Provide a source of inflight emergency electrical power.
3- Supply supplemental bleed air for high altitude operations.
4- Supply auxiliary hydraulic brake pressure for parking and taxiing.

410. Prior to flight, when is the ATM generator normally turned ON?

I30

L382
1- After No. 3 engine is started.
2- After the GTC is started and on speed.
3- Before an external air supply is connected to the airplane's pneumatic system.
4- After all engines are started.

411. Which condition is indicated by a light on the gas turbine compressor control panel?

I40

L382
1- Start light ON; the GTC is accelerating above 35% RPM during a start.
2- Door warning light ON; the GTC intake door is not closed.
3- On speed light OUT; compressor and turbine speeds are normal for operation.
4- On speed light ON; air turbine motor is operating at normal speed.

412. When the autopilot altitude hold switch is placed in the ON position during flight, which condition will be satisfied by the autopilot?

H10

ALL
1- The indicated altitude set on the altimeter will be maintained.
2- The pressure altitude at the time of engaging the switch will be maintained.
3- The flight director command bar will indicate corrections necessary to hold a constant true altitude.
4- The aircraft will capture and hold the glidepath of the ILS.

413. Which action should be taken if the autopilot causes the airplane to roll abnormally around the longitudinal axis?

H10

L188
1- Pull the AILERON BOOST OFF handle.
2- Disengage the autopilot.
3- Turn off No. 1 hydraulic system.
4- Correct airplane attitude with the autopilot turn knob.

414. Which action must be taken for starting the gas turbine compressor?

I30

L382
1- Place the GTC bleed air switch ON.
2- Place the fuel and ignition switch ON.
3- Open the GTC air intake door.
4- Hold the control switch in START until the ON SPEED light comes on.

415. How should the air turbine motor be operated?

I30

L382
1- By using the GTC or engine bleed air as a source on the ground.
2- By using external air, the GTC, or air-conditioning system air on the ground.
3- By using engine bleed air or GTC air in an emergency during flight.
4- By using bleed air from any or all engines during flight.

416. Which action should be taken if an air turbine motor (ATM) compartment overheat warning light illuminates?

I40

L382
1- Close the right wing isolation valve.
2- Discharge the GTC fire extinguisher system.
3- Increase the speed of the ATM.
4- Turn off the gas turbine compressor.

417. Which condition is indicated if the autopilot autotrim warning light and the
H10 autotrim OFF flag appear continuously?

L188 1- Autopilot disengagement.
2- Failure of autopilot control of elevator deflection.
3- Failure of automatic and manual control of all trim tabs.
4- Lockout of the elevator tab autotrim system.

418. Which condition will not allow the autopilot to engage?
H10

1- Turn control knob in detent position.
L382 2- Trim indicator showing any one axis out of trim.
3- Radio beam coupler switch in the RANGE-LOC position.
4- Airspeed above 200 knots.

419. Which condition is required for low speed ground idle operation after landing?
I30

1- Oil cooler flaps--MANUAL OPEN.
L382 2- Bus tie switch--NORMAL.
3- ATM generator--ON.
4- Condition lever--LOW SPEED.

420. Which sequence should be used to stop the gas turbine compressor (GTC)?
I30

1- Bleed air valve--CLOSED; GTC door--
L382 CLOSED; GTC control switch--OFF.
2- Bleed air valve--CLOSED; GTC control switch--OFF; GTC door--CLOSED.
3- GTC control switch--OFF; GTC door--OPEN; Bleed air valve--CLOSED.
4- GTC door--OPEN; Bleed air valve--CLOSED; GTC control switch--OFF.

421. Which of the following units of electrical measurement indicates the real power
J10 output of the three-phase AC generator?

L188 1- KVA.
L382 2- KVAR.
3- KWR.
4- KW.

422. Which is a proper variation of Ohm's Law for DC electrical systems?
J10

1- E = I/R.
DC6 2- W = IxR.
3- W = ExI.
4- I = ExR.

423. Which condition will prevent engagement of the autopilot?
H10

1- Turn knob in detent position.
L188 2- No. 2 hydraulic pressure failure.
3- Flight reference selector in LOC/VOR position.
4- Autopilot emergency disconnect handle full in.

424. Which of the following is a definition of 60 KVA?
J10

1- 60 constant voltage amperes.
L188 2- 60,000 watts.
3- 60 kilowatts.
4- 60,000 volt amperes.

425. Which switch positions are required to connect an external power source to the
J20 aircraft's electrical system?

DC6 1- Battery selector switch--ON, generator switches--ON.
2- Battery selector switch--GND PWR; battery master switch--ON.
3- Ground power switch--ON; battery switch--OFF.
4- Battery master switch--GND PWR; ground power switch--ON.

426. What should be the output rating of the external ground power source?
J20

1- 28 plus or minus 0.5 volts DC.
DC6 2- 115/120 volts AC rectified to 24 volts DC.
3- 12-14 volts DC.
4- 26-29 volts DC, 40 amps.

427. What is indicated when the AC external power light is ON?
J20

1- Correct polarity.
L382 2- Correct phase sequence.
3- External power source is not suitable for use in the airplane.
4- External power plug is connected but not supplying the airplane.

428. When external DC power is being used, the battery is disconnected from all
J20 except which DC bus?

L382 1- Main DC.
2- Isolated DC.
3- Battery.
4- Mini Bus.

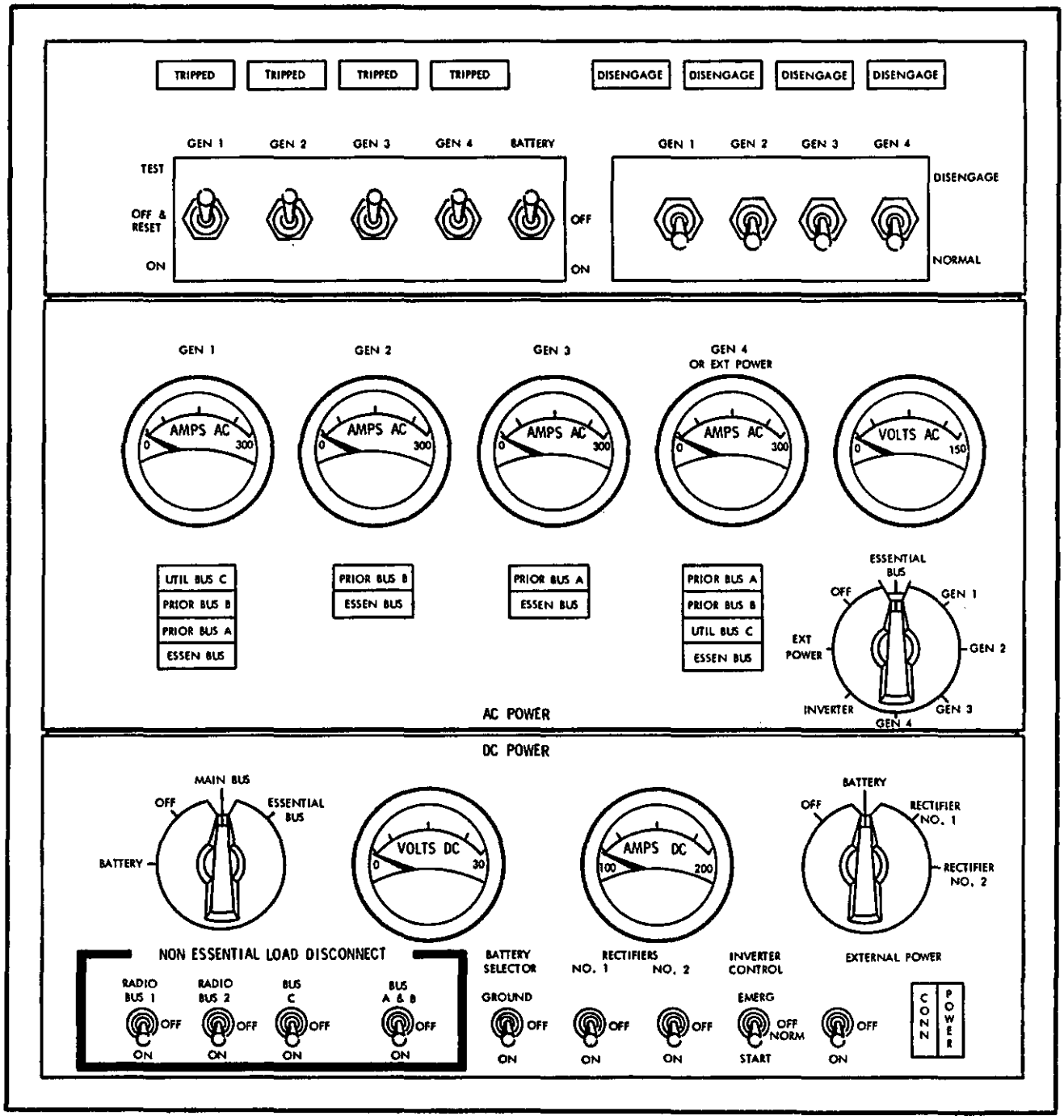


Figure 8. Electric Control Panel (Typical L-188)

429. The designation for the apparent power output of an AC generator is

J10

1- KW.
L188 2- KVAR.
L382 3- KVA.
4- KAW.

430. Which is a proper variation of Ohm's Law for DC electrical systems?

J10

1- W = E/I.
DC6 2- R = E/W.
3- I = RxE.
4- E = RxI.

431. What aircraft electrical power is required to connect an external power source to the aircraft's electrical system?

J20
L188

1- Main DC bus power.
2- Emergency inverter power.
3- Ground operation DC bus power only.
4- Essential DC bus power.

432. What is indicated by illumination of the ground power light?

J20

1- Ground power is being supplied to
DC6 the main bus.
2- Battery master and selector switches are properly positioned to accept ground power, but it is not plugged in.
3- Ground power is connected and is correct polarity.
4- Ground power is connected, and battery switches are properly positioned.

433. What is the duration of a fully-charged battery when operating the inverter?

J20

1- 5 minutes.
L188 2- 20 minutes.
3- 1 hour.
4- 2 hours.

434. During flight, current can flow through a reverse current relay from the

J30

1- main DC bus to the essential DC bus.
L382 2- main AC bus to the essential AC bus.
3- three-phase inverter to the essential DC bus.
4- essential AC bus to the essential DC bus.

435. Which of the following is a definition of 40 KVA?

J10

1- 40 constant voltage amperes.
L382 2- 40,000 watts.
3- 40 kilowatts.
4- 40,000 volt amperes.

436. Which condition is required before external AC power can be used?

J20

1- The battery switch must be OFF.
L382 2- The ATM generator switch must be OFF.
3- Engine-driven generator switches must be ON.
4- The bus tie switch must be in TIED position.

437. When should the flightcrew signal for the removal of ground power during the
J20 starting sequence?

L188 1- When bleed air manifold pressure has increased to 30 PSI.
2- When aircraft generators are supplying the AC busses.
3- After starting at least one engine on each side of the aircraft.
4- After all engines have been started.

438. During a normal starting procedure, when should the ground power be disconnected?

J20

1- When at least two generators are
DC6 producing normal voltage.
2- After all engines are started.
3- After the ground runup check.
4- When at least one hydraulic pump, one cabin supercharger, and one generator are operating normally.

439. What is the normal source of DC power?

J30 1- Two transformer-rectifiers.
2- 24-volt battery.
L382 3- Four transformer-rectifiers.
4- 28-volt battery.

440. What is the purpose of the generator paralleling system?

J30

1- To obtain equal generator voltages.
DC6 2- To obtain equal generator loads.
3- To adjust generator voltage, speed, and phase angle.
4- To connect all busses together when the generators have exactly the same (parallel) voltage output.

441. During preflight before the external power switch is turned ON, the selector
J20 should be placed in the EXTERNAL POWER position to check the output of the
L188 ground power unit. The AC meter should then indicate

1- 400 cps, 117 ± 5 volts.
2- 117 ± 5 volts.
3- 110/220 volts.
4- 400 cps, 115/220 volts.

442. When should the ground power plug normally be disconnected during the engine
J20 start procedure?

L382 1- After the GTC is operating.
2- When the first engine has stabilized in low RPM.
3- After two engines are running in high RPM.
4- When all engines are operating in low RPM.

443. Which component can be powered directly from the battery?
J20

1- ATM generator field.
L382 2- GTC starter.
3- Transformer-rectifier.
4- Instrument transformer.

444. Direct current (DC) power is supplied to the electrical system by
J30

1- two inverters.
L188 2- the aircraft's DC generators.
3- two transformers.
4- two transformer-rectifiers.

445. When is use of the bus tie switch effective?
J30

1- In the air with the gear up.
L382 2- On the ground.
3- Before engine starting only.
4- In the air with the gear down and locked.

446. Which of the following receives power from the 115/200 volt three-phase AC
J30 system and provides power to the essential DC bus?
L188
L382 1- Static exciter.
2- Transformer-rectifier.
3- Magnetic amplifier.
4- Rotary inverter.

447. When the ground crew connects the ground power unit, the CONN light illuminates
J20 but the POWER light does not. The output of the GPU is the proper voltage.
L188 The significance of this indication is that the ground power

1- output frequency is too high.
2- output is not of the proper phase.
3- output frequency is too low.
4- current is too high or too low.

448. During the transition from HIGH RPM to LOW RPM, when do the AC busses transfer?
J50

1- When No. 4 engine is stabilized at
L188 10,000 RPM.
2- As the generator switches are placed in RESET.
3- As each engine (No. 1, 2, or 3) is downshifted.
4- When all engines are stabilized at 10,000 RPM.

449. Which of the following is an indication of a discharged battery in a 28 volt DC
J20 electrical system?

DC6 1- Lower than normal average generator voltage.
2- Lower than normal total amperage draw.
3- Higher than normal average generator voltage.
4- Higher than normal total amperage draw.

450. The direct current system normally includes a reverse current contactor
J30 (relay) which protects the system against an excess current flow from
L188
L382 1- the rectifier to the essential DC bus.
2- a DC bus to the TR unit.
3- the battery to the TR unit.
4- an AC bus to the voltage regulator.

451. What is the purpose of the reverse current relay?
J30

1- Allow flow between two DC busses
L382 both ways on the ground.
2- Allow flow between two DC busses both ways in the air.
3- Prevent current flow between all DC busses on the ground.
4- Prevent current flow between all DC busses in the air.

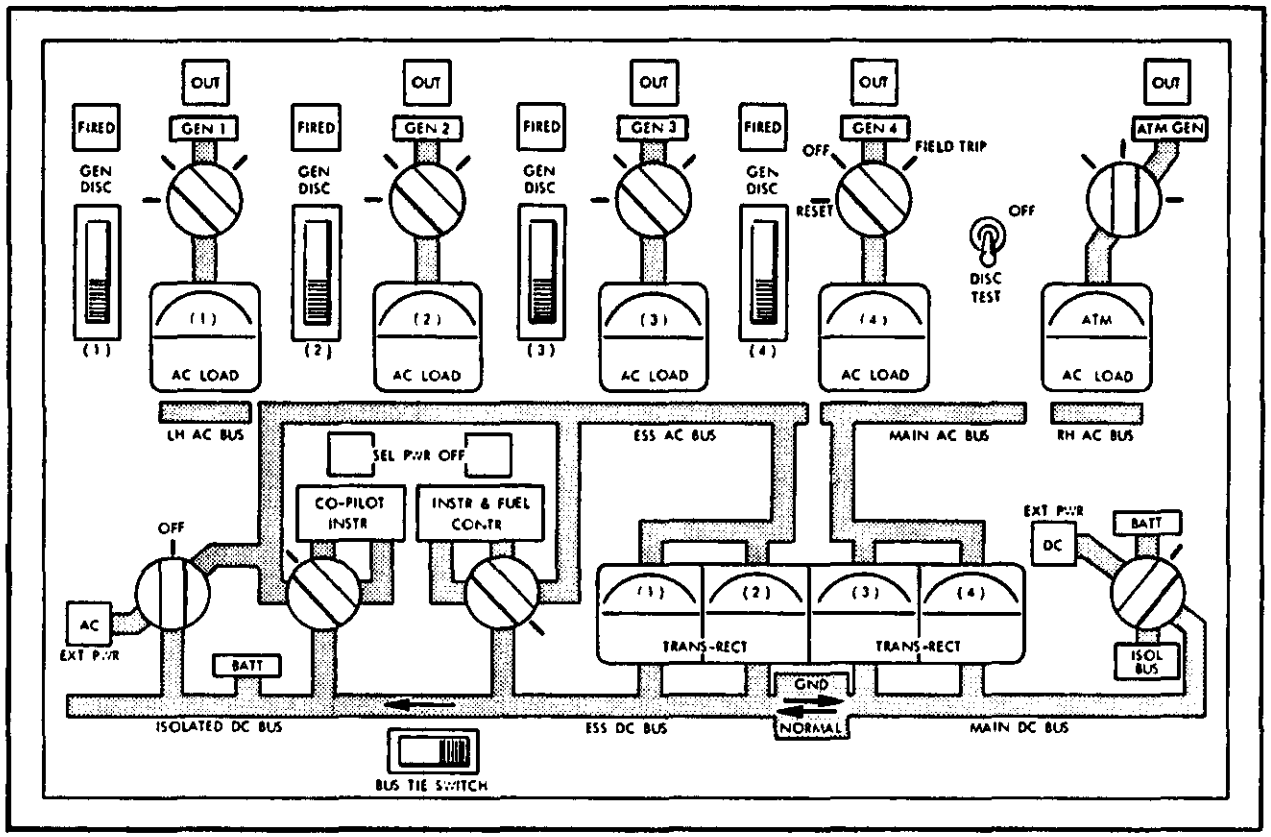


Figure 9. Electric Control Panel (Typical L-382)

452. What should be the rating of external electrical power sources?

J20

1- 110/220 volt, 30 KVA AC; 24
L382 volt, 36 ampere-hour DC.
2- 200/115 volt, 40 KVA AC; 28 volt, 400 amp DC.
3- 117/205 volt, 40 amp AC; 28 volt, 500 amp DC.
4- 115/200 volt, 40 KW AC; 30 volt, 30 KVA DC.

453. What is a function of the transformer-rectifier?

J30

1- Charge the battery only.
L188 2- Rectify 115 volt AC to 24 volt DC.
L382 3- Convert 115 volt AC to 28 volt DC.
4- Transform 28 volt DC to 3-phase 115/208 volt AC.

454. What is the auxiliary source of power for the 28 volt DC electrical system?

J20

1- Two 14 volt batteries in series.
DC6 2- Two 12 volt batteries in parallel.
3- Two 12 volt batteries in series.
4- Two 14 volt batteries in parallel.

455. What is a function of the reverse current relay?

J30

1- Prevent current flow from the generator to the bus.
DC6 2- Prevent current flow from the bus to the battery.
3- Prevent an operating generator feeding current to an inoperative generator.
4- Prevent one generator feeding excess current into a faulty circuit.

456. What is indicated when the DC external power light is ON?

J20

1- Connected and correct phase sequence.
L382 2- Correct voltage and amperage.
3- Correct polarity at the receptacle.
4- External power is applied to the main DC bus.

457. Each transformer-rectifier (TR) has a separate ON-OFF control switch. When
J30 this switch is placed in the OFF position

L188

1- the cooling fan is turned off which automatically turns off the TR output.
2- the TR output is turned off which automatically turns off the cooling fan.
3- the AC input to the TR is turned off which automatically turns off the cooling fan.
4- the TR output is disconnected from the DC busses, but the cooling fan continues to operate.

458. Which source of power is being used when the ground operation bus is the only one
J30 which is energized?

L188 1- The battery.
2- The ground power unit.
3- The emergency inverter.
4- No. 4 generator with the engine operating in LOW RPM.

459. Frequency of the 40 KVA generator is controlled by

J40

1- a hydraulic transmission.
L382 2- engine speed.
3- the DC constant speed motor.
4- the air turbine motor speed.

460. What is the purpose of the TEST position of the generator control switch?

J50

1- To check residual voltage of the
L188 generator.
2- To check generator voltage without a load being connected.
3- To check generator voltage, amperage, and frequency before connecting the generator to a bus.
4- To check generator frequency and phase before applying the generator's output to a bus in parallel operation with another generator.

461. How does the voltage regulator control the output of the DC generator?

J30

1- By adjusting current flow through
DC6 the field windings.
2- By increasing or decreasing resistance in the generator armature circuit.
3- By increasing or decreasing the speed of the drive shaft.
4- By opening the current limiter if generator voltage is excessive.

462. Which DC power source is deenergized when the nonessential load disconnect
J30 switches are placed in the OFF position?

L188 1- The main and essential DC busses.
2- The main DC bus only.
3- The essential DC bus only.
4- The main and ground operation DC busses.

463. Which switch selections are required to obtain power from the aircraft battery
J30 for engine starting?

DC6 1- Battery master--PLANE BATTERY; Battery selector--ON.
2- Battery master--AIRCRAFT BATTERY; Battery selector--BATTERY.
3- Battery master--ON; Battery selector--BATT and GND PWR.
4- Battery master--PLANE BATTERY; Battery selector--BATT and GND PWR.

464. Which actions are normally completed when the generator switch is placed to
J50 the ON position?

DC6 1- The field relay and the bus tie breaker are closed.
2- The reverse current relay is closed, and the voltage regulator is connected to the paralleling bus.
3- The field circuit breaker and the reverse current relay are closed.
4- The voltage regulator main contactor is closed and the field circuit breaker is closed.

465. Which part of the electrical system has the potential of being fed by any one of
J50 the four generators?

L188 1- Priority bus A.
2- Essential AC bus.
3- Ground operation bus.
4- Transformer-rectifier No. 2.

466. When is the battery disconnected from all busses except the battery bus?

J30

1- When external DC power is being
L382 used.
2- When the DC power switch is OFF.
3- When the emergency inverter is operating.
4- During flight with all engine-driven generators operating.

467. What is the normal output of the main inverter?

J40

1- 26 volt AC and 115 volt AC.
ALL 2- 115 volt/205 volt AC, 3-phase.
3- 110 volt AC and 28 volt DC.
4- 115 volt, 400 cycle AC.

468. Which is a feature of the generator switch?

J50

1- The RESET and FIELD TRIP positions
L382 are spring loaded.
2- The RESET position must always be used to reactivate the generator after it has been turned OFF.
3- The generator is always connected to a bus when the switch is ON.
4- The switch must be pulled out to select the FIELD TRIP position.

469. Which busses will be powered if only one engine-driven generator is operating?

J50

1- Essential AC and main AC.
L382 2- Right-hand AC and priority AC.
3- Essential AC and essential DC only.
4- Right-hand AC or left-hand AC and main AC.

470. What is indicated if the inverter compartment warning light is ON?

J50

1- Insufficient cooling airflow.
DC6 2- Overvoltage.
3- Inverter failure.
4- Electrical system fire.

471. Which of the electrical protective devices can be manually reset and held on
J50 after having been actuated by an excessive current flow?

DC6

1- Slow-acting fuses.
2- Voltage regulator.
3- Limit switches.
4- Nontrip-free circuit breakers.

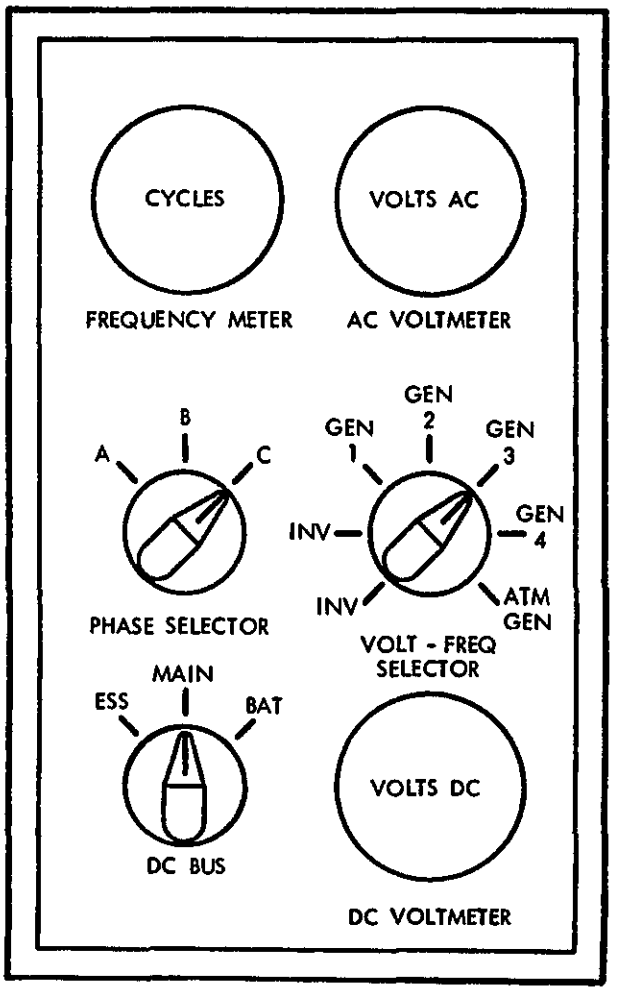


Figure 10. Ammeter-Voltmeter (Typical L-382)

472. Which position of the DC power switch will permit an external power source to
J30 charge the battery?

L382 1- EXT DC POWER.
2- OFF.
3- BATTERY.
4- TIED.

473. Which generator can supply any one of the four busses in flight?

J50

1- Generator No. 1 or generator No. 4.
L188 2- Generator No. 1 or generator No. 3.
3- Generator No. 2 or generator No. 4.
4- Generator No. 4 only.

474. Under which condition(s) will the battery be able to power the essential DC bus?

J30

1- Bus tie switch CLOSED, battery switch
L382 ON, in the air or on the ground.
2- Any time the battery switch is ON.
3- Bus tie switch CLOSED, DC power switch in BATTERY position, on the ground only.
4- Reverse current relay closed, DC power switch ON, on the ground only.

475. What maintains AC system frequency during normal flight operations?

J40

1- Constant speed characteristic of the
L188 engines.
2- Generator constant speed drive units.
3- Generator two-speed gear box.
4- Generator control units.

476. What is the purpose of the emergency inverter governor?

J40

1- Provide for rapid acceleration
DC6 during starting.
2- Maintain a constant frequency.
3- Maintain a constant voltage.
4- Regulate the current output.

477. What is the power source for the secondary bus?

J50

1- The generator which has been selec-
DC6 ted for essential power.
2- The emergency inverter.
3- The battery or the paralleling bus.
4- The main bus through a current limiter.

478. Which source of information requires the use of the selector switch?

J50

1- Frequency meter.
L188 2- Ammeter or loadmeter.
L382 3- Bus advisory lights.
4- AC voltmeter.

479. When checking the electrical system, what would be a satisfactory indication
J50 of engine instrument power?

DC6 1- 110 volt AC.
2- 115 volt AC.
3- 26 volt AC.
4- 30 volt AC.

480. Which is a feature of the electrical bus power system?

J50

1- A single generator may power all
L188 four AC busses in flight.
2- A maximum of two generators may power a single bus at the same time.
3- Generator No. 4 and the ground power source may feed all busses on a split basis, each powering two busses of the four busses.
4- A maximum of three generators may be powering the busses at any one time.

481. Which condition is indicated by a generator TRIPPED light being illuminated?

J50

1- The generator is deenergized.
L188 2- The generator's normal bus is de-energized.
3- A feeder fault has caused the generator's control relay to open.
4- An under-frequency trip of the generator has occurred.

482. How may a generator's field relay be tripped open?

J50

1- By an overvoltage condition.
L382 2- By moving the generator switch to the RESET position.
3- By a feeder fault condition.
4- By moving the generator switch to the OFF position.

483. What will cause a bus to shift to No. 4 generator on the ground?

J50

1- Shifting No. 4 engine to LOW RPM.
L188 2- Tripping a generator and then placing the switch in RESET.
3- Shifting No. 1, 2, or 3 engine to LOW RPM.
4- Advancing No. 4 power lever to flight idle position.

484. What is a normal setting for inverter switches during takeoff?

J60

1- Captain's instr.--UPPER; Engine
DC6 instr.--EMERGENCY; Copilot's instr.--LOWER.
2- Captain's instr., Copilot's instr., and engine instr.--UPPER.
3- Captain's instr.--UPPER; Copilot's instr.--LOWER; Engine instr.--STANDBY.
4- Captain's instr.--UPPER; Engine instr. and copilot's instr.--LOWER.

485. How many operating generators are required to supply all four AC electrical busses?

J50

L382
1- One or more engine-driven generators.
2- Two or more engine-driven generators.
3- Three engine-driven generators and the ATM generator.
4- One ATM generator and one engine-driven generator.

486. During low speed ground idle operation, which factor determines the frequency of the AC electrical supply?

J50

L382
1- Output speed of the constant speed drive unit.
2- Engine compressor RPM.
3- Engine gear box RPM.
4- Speed of the ATM generator.

487. Which type fault causes the bus to transfer, but automatically reinstates the faulty generator to its bus if the fault is only a temporary condition?

J50

L188
1- Undervoltage fault.
2- Over- or under-frequency fault.
3- Feeder fault or shorted bus.
4- Over or under amperage.

488. The AC electrical system is designed to isolate a generator from an individual bus unless the generator is operating with correct

J50

L188
1- voltage, amperage, and phase angle.
2- voltage and amperage.
3- amperage and generator speed.
4- voltage and frequency.

489. During normal flight operations, why should the inverter control switch be kept in the EMERGENCY position?

J60

L188
1- To keep the inverter running so that it will automatically power certain systems when essential DC power fails.
2- To prewarm the inverter amplifier so that the inverter will come on as soon as the switch is placed in the START position.
3- So that inverter output will be immediately available if essential AC bus power fails.
4- So that the loss of main DC bus power will cause the inverter to power the essential DC bus.

490. What is the significance of illumination of electrical system warning lights?

J50

L382
1- BUS OFF indicator light ON--bus is unpowered.
2- BUS OFF indicator light ON--bus is receiving inverter power.
3- GENERATOR OUT light OFF--generator switch turned off.
4- GENERATOR OUT light ON--generator relay open, or generator voltage is less than 50 to 90.

491. Assume that one AC generator develops an undervoltage condition. In this event, the bus associated with this generator will

J50

L188
1- supply the low voltage to operating units until the bus isolation switch is activated.
2- be automatically switched to receive power from another generator.
3- have zero voltage until the generator is restored to normal operation.
4- have zero voltage until it is manually switched to a standby generator.

492. Which indicators make use of the phase selector switch?

J50

L382
1- Voltmeter and AC loadmeter only.
2- Frequency meter and AC loadmeter only.
3- Voltmeter and frequency meter only.
4- Voltmeter, AC loadmeter, and frequency meter.

493. What is the power source required to drive the ATM generator?

J60

L382
1- The constant speed drive.
2- The GTC only.
3- Pneumatic system pressure.
4- Main DC bus or battery bus.

494. How can operation of the emergency inverter be checked?

J70

L188
1- Place the inverter switch to START, then to EMERG.
2- Switch off the generator which is supplying the essential AC bus.
3- Place the inverter switch to START and the voltmeter selector to INVERTER.
4- Place the inverter switch to EMERG and pull the INVERTER TEST circuit breaker.

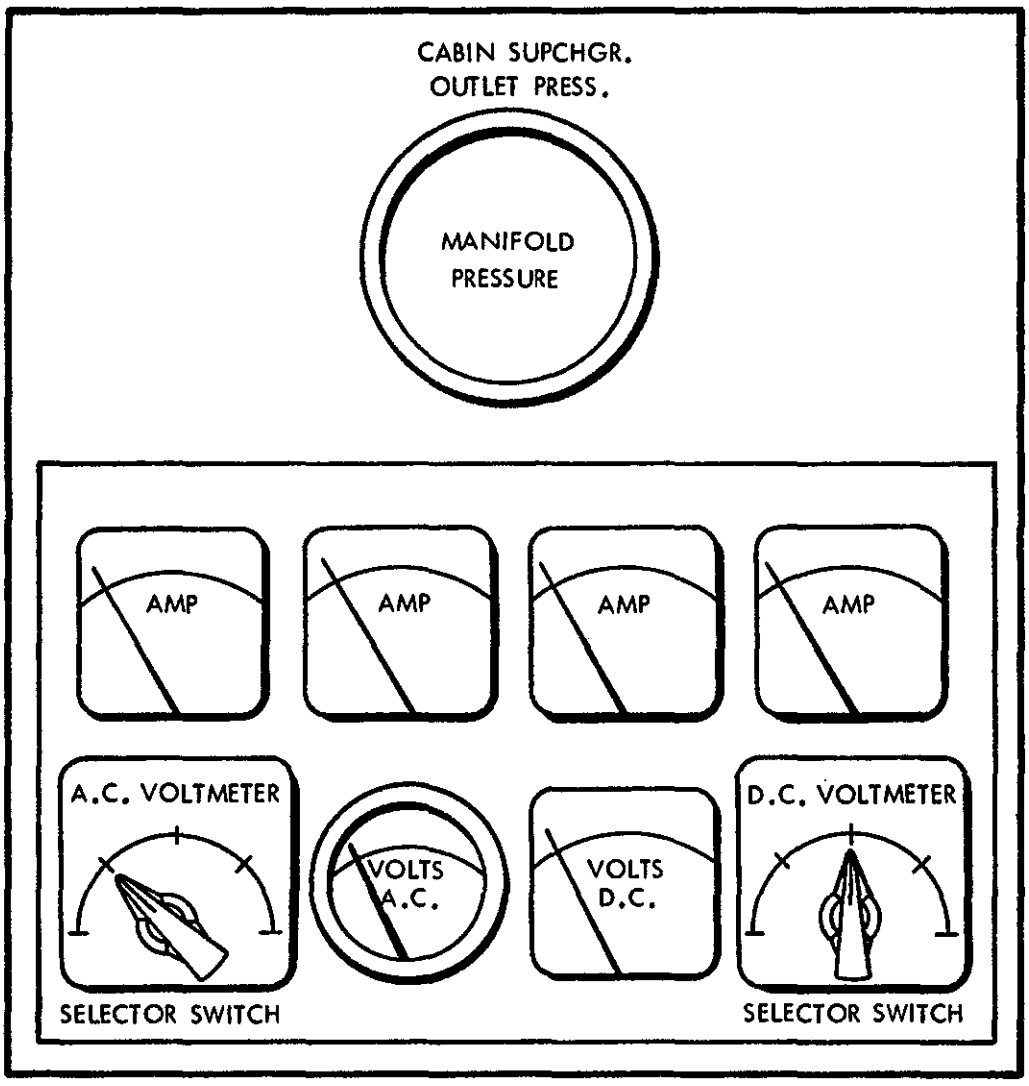


Figure 11. Ammeter-Voltmeter Panel (Typical DC-6)

495. Under which condition is the ATM generator under-frequency control activated?

J60

1- When the ATM generator is supplying
L382 more than one bus.
2- During all flight operations.
3- When cabin pressurization approaches the maximum limit.
4- During engine start.

496. Which component(s) cannot be powered from the emergency inverter?

J60

1- Engine instruments.
DC6 2- Gyro compass.
3- First officer's flight instruments.
4- Captain's flight instruments.

497. Which is a proper setting of the electrical system controls for takeoff?

J70

1- DC power switch--ISOLATED BUS.
L382 2- ATM generator switch--ON.
3- Copilot's inverter switch--ESSENTIAL AC BUS.
4- Bus tie switch--NORMAL.

498. When generators are operating in parallel, what is the maximum allowable
J70 difference between their outputs?

DC6 1- 30 amps.
2- 1/2 volt.
3- 30 watts.
4- Plus or minus 50 RPM.

499. Which component(s) show(s) the amount of electrical power being supplied to the
J50 aircraft's electrical system by the ground power unit?
L188

1- The CONN and POWER lights.
2- The AC voltmeter when EXT power is selected.
3- Generator No. 4 ammeter.
4- All four generator ammeters when EXT power is selected.

500. How is operation of the emergency inverter checked during preflight?
J60

1- Turn off both transformer-rectifiers.
L188 2- Trip the inverter test circuit breaker.
3- Place the inverter switch to OFF.
4- Place the bus A and B switch to OFF.

501. Which is the source of secondary AC power for the copilot's instrument sys-
J60 tem and the AC instrument and engine fuel control system?
L382

1- Battery operated static exciter.
2- No. 2 engine-driven AC generator.
3- Inverters and the isolated and essential DC busses.
4- The ATM generator.

502. What action is required to start the copilot's AC instrument inverter?
J60

1- Select essential AC bus power.
L382 2- Place the switch in standby; the inverter then starts automatically if essential AC bus power is not available.
3- Connect and select external AC power.
4- Select isolated DC bus power.

503. During the engine runup check at 1500--1700 RPM, generator operation is checked.
J70 At this RPM, the electrical instruments should show which operating condition of
DC6 the generators?

1- Off the bus and producing 28.5 volts.
2- Off the bus and producing less than 26 volts.
3- On the bus and producing approximately rated amperage.
4- On the bus and producing approximately equal amperage.

504. During ground check of the generators with engines running, which is a normal
J70 indication?

L382 1- ATM generator off; No. 2 generator assumes essential AC load bus.
2- ATM generator on; all busses transfer to the ATM generator.
3- Each transformer-rectifier shows an equal load on the DC voltmeter.
4- Each inverter produces an equal load on all three phases of its output.

505. After flight, in preparation for shutting down the last engine at an inter-
J70 mediate stop, the flight engineer should check
L188

1- ground power voltage and frequency.
2- operation of the automatic drag limiting (NTS) system.
3- operation of the emergency brake pump and brake accumulator pressure.
4- positive closing of the pressurization outflow valve.

506. In flight with generators Nos. 1, 2, and 3 turned OFF, No. 4 generator will sup-
J80 ply power to the

L188 1- essential AC bus only.
2- PRI BUS A and essential AC bus.
3- PRI BUS A, PRI BUS B, utility bus C, and essential AC bus.
4- PRI BUS A, PRI BUS B, and essential AC bus.

507. Which fault will cause the No. 4 GEN GEAR BOX and DISENGAGE lights to illuminate?
J80

1- No. 4 generator tripped off.
L188 2- No. 4 engine switched to high RPM.
3- No. 4 generator gear box bearing failure.
4- No. 4 generator gear box high oil temperature.

508. What trouble is indicated if the generator out light is ON but voltage and
J80 frequency of only one phase is normal after the generator switch has been
L382 placed to RESET?

1- Generator to bus relay is OPEN.
2- Generator mechanical or electrical failure.
3- Bus tie relay is OPEN.
4- Field relay for the generator is OPEN.

509. During takeoff, which setting of the electrical system controls is required?

J70

1- AC voltmeter selector--INVERTER.
L188 2- Inverter switch--EMERGENCY.
3- Nonessential load disconnects--OFF.
4- Generator switches--RESET.

510. What type failure is indicated if the SEL PWR OUT light is ON when the co-
J80 pilot's AC instrument switch is in NORMAL position?

L382

1- The instrument inverter has failed.
2- No power to the copilot's instrument bus.
3- Isolated DC bus power has failed.
4- No power to the copilot's instruments and engine fuel controls.

511. During flight, a bus advisory light goes out and the bus does not reappear under
J80 another generator. The bus is found to be deenergized but the generator voltage
L188 is normal (no TRIPPED light). This is caused by

1- a DPR trip.
2- a bus fault.
3- an undervoltage trip.
4- an overvoltage trip.

512. One DC generator is producing normal volts and zero amps while the other gen-
J80 erators are producing normal volts and 150 amps. What is a possible trouble
DC6 with the malfunctioning generator system?

1- Generator field circuit breaker has "popped."
2- Defective voltage regulator.
3- Generator undervoltage or overvoltage protective system has actuated.
4- Reverse current relay is open.

513. Which electrical power selection should be made during the electrical fire pro-
J90 cedure after turning OFF the nonessential load disconnect switches?

L188

1- Generators Nos. 2 and 3 OFF.
2- Inverter switch OFF; generators Nos. 1, 2, and 3 OFF.
3- Generators Nos. 2, 3, and one outboard OFF.
4- Battery switch and all but one generator OFF.

514. Which precaution must be observed regarding electrical system operation on the
J70 ground?

L382 1- Do not exceed 0.625 AC loadmeter indication.
2- Do not exceed 0.5 DC loadmeter indication.
3- The output of each generator must be limited to 20 KVA.
4- The output of each transformer-rectifier must be limited to a maximum of 24.5 volts.

515. How should electrical system operation be established prior to normal shutdown
J70 of the engines after landing?

L382 1- ATM generator--ON; External power--SELECTED; Bus tie switch--NORMAL; Engine generator switches--OFF.
2- GTC--ON SPEED; ATM--ON; Engine generator switches--OFF; Bus tie switch--TIED.
3- GTC--ON; ATM generator--ON; Inverter switches--ON.
4- GTC--ON SPEED; ATM and ATM generator--ON; Bus tie switch--TIED.

516. A generator is switched off after the overheat warning light comes on, but the
J80 light does not go out after a period allowed for cooling. The engine is then
DC6 shut down and the light goes out. What trouble is indicated by these symptoms?

1- A failure in the warning system.
2- A generator overload (amperage output).
3- A mechanical malfunctioning of the generator.
4- The field circuit breaker has tripped.

517. Assume there is smoke in the electrical equipment; you have turned off the bat-
J90 tery and generator switches and tripped all circuit breakers. Which components
DC6 should be turned on to isolate the faulty circuit?

1- The inverters and each circuit breaker one at a time.
2- The battery switch, each generator, and each circuit breaker one at a time.
3- The battery switch and each circuit breaker one at a time.
4- All generators but with the field circuit breakers off.

518. When should the generator switches be placed ON during the starting procedure?
J70

1- Before starting the engines.
DC6 2- After each engine is started.
3- After all engines are started.
4- When the generator output reaches 27.5 volts.

519. Before shutting down the last engine, the flight engineer should check
J70

1- the emergency AC power supply.
L188 2- that ground power is connected and producing correct voltage.
3- operation of the emergency brake pump and brake accumulator pressure.
4- positive closing of the pressurization outflow valve.

520. What would be the indication of inoperative inverters when throttles are ad-
J80 vanced for takeoff?

DC6 1- Intermittent warning horn.
2- Steady warning horn.
3- Flashing amber light on the captain's instrument panel.
4- Steady amber light on the captain's panel and a red light on the flight engineer's panel.

521. No. 3 generator is producing normal volts and zero amps while all other generators
J80 are producing normal volts and amps. When No. 3 generator switch is turned
DC6 OFF, the amperage output of the other generators increase. What is a probable trouble with No. 3 generator system?

1- Disconnected field circuit.
2- Reverse current relay is open.
3- Disconnected equalizing circuit.
4- Blown fuse in the ammeter circuit.

522. During cruising flight all four generators are producing 28.5 volts and 220
J80 amps. One generator is then shut off. How much electrical load must be elimi-
DC6 nated to prevent the remaining generators exceeding their rated limit of 250 amps?

1- 3.71 KW.
2- 9.69 KW.
3- 14.25 KW.
4- 1.99 KW.

523. What would be the cockpit indication of No. 4 generator gear box oil pressure
J80 falling below limits?

L188 1- Generator No. 4 TRIPPED light will illuminate.
2- No. 4 GEN GEAR BOX warning light and the DISENGAGE light will illuminate simultaneously.
3- No. 4 GEN MECH FAIL light will illuminate.
4- No. 4 GEN GEAR BOX LO PRESS warning light will illuminate.

524. What happens if one generator of the AC generator system develops an under- or
J80 over-frequency condition?

L188 1- Bus transfer occurs with a trip light being energized.
2- Bus is dropped, indicator light out, no trip light.
3- Bus transfer occurs without a trip light being energized.
4- Generator trip light illuminates, bus is dropped.

525. After which type of failure will it be impossible to transfer a particular
J80 electrical load to an alternative generator?
L188

1- Generator over- or under-frequency.
2- Feeder fault (generator to bus).
3- Generator overvoltage.
4- Bus fault.

526. What trouble is indicated if the generator OUT light is ON and voltage and fre-
J80 quency are normal after the generator switch has been turned OFF?
L382

1- Generator to bus relay is OPEN.
2- Field relay for the generator is OPEN.
3- Generator mechanical or electrical failure.
4- Bus tie relay is OPEN.

527. In the event of illumination of a generator bearing failure light confirmed by
J80 a loss of generator frequency, what is the first action to take?
L382

1- Generator switch--OFF.
2- Fire emergency control handle--PULL.
3- Engine condition lever--FEATHER.
4- Generator--DISCONNECT.

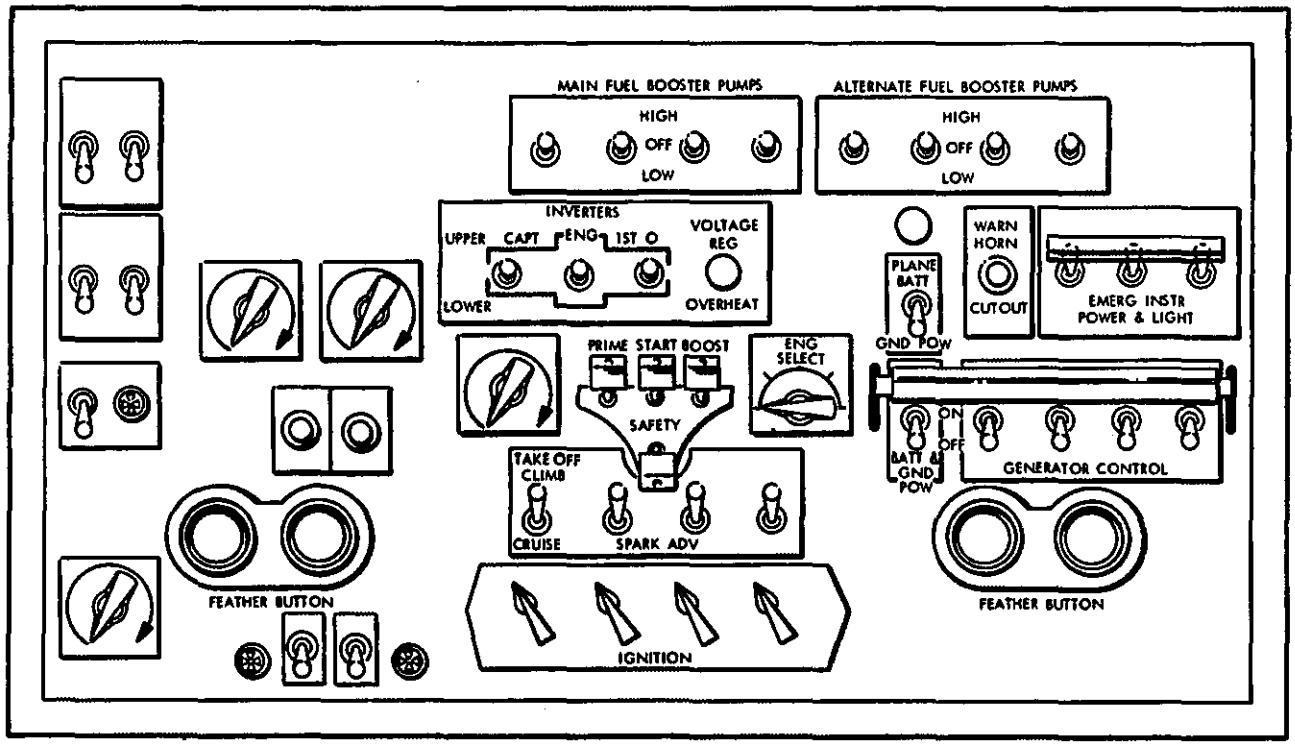


Figure 12. Overhead Switch Panel (Typical DC-6)

528. Which one of the following conditions will cause a generator TRIPPED light to
J80 illuminate?

L188 1- Generator gear box oil temperature exceeds limits.
2- Generator gear box oil pressure below limits.
3- Generator "feeder fault."
4- Illumination of the DISENGAGE light.

529. What procedure should be followed if a bus advisory light goes out and does not
J80 transfer while the generator is producing normal voltage with a TRIPPED light OFF?
L188

1- Trip the generator and the generator control circuit breaker.
2- Do not trip the generator control circuit breaker.
3- Place the appropriate nonessential load disconnect switch OFF (Bus C or Bus A and B).
4- Place the generator switch in OFF and RESET.

530. What is a probable source of trouble if a generator is producing zero amperage
J80 and residual voltage?

DC6 1- Faulty ammeter.
2- Reverse current relay main contactor points are stuck open.
3- Main feeder line is disconnected at the bus bar.
4- Generator field circuit breaker is open.

531. What precaution should be taken if there is a failure of one 40 KVA generator?
J80

1- Monitor the loads assumed by the re-
L382 maining generators.
2- Switch the essential AC bus to the generator with the least load.
3- Assure that the remaining generators are operating in parallel to each other.
4- The circuit breakers for the equipment items powered by the failed generator should be opened.

532. With an inflight electrical system failure, generators Nos. 1, 3, and 4 are
J80 turned OFF. What busses are still being powered from No. 2 generator?
L188

1- Bus A and essential AC bus.
2- Bus A and bus B.
3- Bus B and utility bus C.
4- Bus B and essential AC bus.

533. Which electrical power source will normally assume the load of the essential
J80 AC bus when No. 2 generator fails or is turned off during flight?
L382

1- No. 1 generator.
2- No. 3 generator.
3- No. 4 generator.
4- ATM generator.

534. What action should be taken if No. 3 GEN MECH FAIL warning light comes ON?
J90

1- Feather the No. 3 propeller.
L188 2- Disengage No. 3 generator.
3- Place No. 3 generator switch in the OFF position.
4- Disconnect all nonessential loads.

535. In the event of an electrical fire in flight, which of the following actions
J90 should be accomplished after the A and B bus circuit breakers are pulled?
L188

1- Inboards and one outboard generators OFF.
2- Booster shift controls OFF.
3- Emergency descent.
4- Fan/Defog switches OFF.

536. During the emergency procedure prescribed for a fuselage electrical fire, the bat-
J90 tery and generator switches are turned off. Which is true regarding the power-
DC6 plant and systems before the next emergency step is taken?

1- All electrical engine and propeller controls will remain in normal operation.
2- Engine speed will be governed at the previously set RPM.
3- All powerplant electrical instruments and controls are deactivated except in the fire detector system.
4- Engine speed will change to a preset cruising RPM, but the change will not be indicated on the tachometers.

537. What discrepancy is indicated by a bus transferring without a trip light being
J80 energized?

L188 1- Generator over- or under-frequency.
2- Bus fault (generator undervoltage caused by bus fault).
3- Generator feeder fault.
4- Failure of any of the bus transfer system relays.

538. In the event of an electrical fire in flight, which of the following actions
J90 should be accomplished before the A and B bus circuit breakers are pulled?
L188

1- Generators--OFF.
2- Inverters--EMERGENCY.
3- Battery--OFF.
4- Nonessential load disconnect--OFF.

539. What is the effect of altitude change on the duration of the crew oxygen system?
K10

1- Duration decreases with increased
ALL altitude when using 100% oxygen.
2- Duration remains constant with altitude change when using 100% oxygen, but decreases with altitude when using NORMAL oxygen.
3- Duration increases with increased altitude when using 100% oxygen.
4- Duration remains constant with altitude when using either 100% or NORMAL oxygen.

540. Which selection of the oxygen control lever is used to prevent flight deck air
K10 from entering the crew oxygen regulator?

L188 1- Diluter lever--100%.
L382 2- Supply lever--ON.
3- Emergency lever--NORMAL.
4- Supply lever--OFF.

541. How should the crew portable oxygen cylinder be used?
K10

1- Put on the demand mask, select sup-
ALL ply switch ON, and selector switch to 100%.
2- Plug in the constant flow mask and rotate the supply valve to ON.
3- Don the full face mask, turn the valve on top of the cylinder to OPEN.
4- Plug in the full face mask, rotate the valve on top of the cylinder to ON, and select 100% oxygen.

542. Which procedure should be used if it is determined that an electrical fire
J90 source is in a nacelle?

L382
1- Turn the generator switch OFF, then to RESET.
2- Operate the ATM generator and turn all engine-driven generators OFF.
3- Field trip the generator, then turn the switch to the OFF position.
4- Feather the propeller, leave the generator switch ON.

543. With the supply ON, what condition of oxygen flow should exist when the selec-
K10 tor on the regulator is placed in EMER-GENCY?

ALL
1- Continuous flow of diluted oxygen under positive pressure.
2- 100% oxygen available on demand.
3- Continuous flow of 100% oxygen under positive pressure.
4- Diluted oxygen available on demand.

544. Below which altitude is passenger oxygen not available through the integral
K20 system?

L188
1- 5,000-foot airplane altitude.
2- 8,000-foot cabin altitude.
3- 10,000-foot cabin altitude.
4- 14,000-foot airplane altitude.

545. What will cause the emergency exit lights to illuminate when their switches
K40 have been placed in the ARMED position?

L382
1- Removing the light from its mounting fixture.
2- Loss of essential AC bus power.
3- Loss of battery bus and essential DC bus power.
4- A deceleration force exceeding a positive 1G.

546. Which action should be taken to isolate a faulty electrical system if electrical
J90 fire or smoke is determined to be lo-cated in the fuselage?

L382
1- ATM and ATM generator--OFF; engine-driven generators--TRIP FIELD.
2- ATM and ATM generator--ON; engine-driven generators--OFF.
3- All generators--OFF; both in-verters--ON.
4- Essential AC bus--ON; all other busses--OFF.

547. During the preflight check of the oxygen mask and regulator, what is an indica-
K10 tion of proper operation with the regu-lator in 100% and the supply OFF?

ALL
1- Oxygen flow should be indicated while inhaling.
2- No air or oxygen available.
3- Ambient air is admitted through the regulator.
4- No oxygen flow, but filtered cockpit air is admitted through the regu-lator.

548. How will the position of the oxygen 100%-normal switch affect oxygen flow
K10 when the emergency switch is placed in the ON position?

ALL
1- With the switch in NORMAL, the oxy-gen fed to the mask will be diluted with cockpit air.
2- With the switch in 100%, the emer-gency switch has no effect on oxygen flow.
3- The 100%-normal switch has no effect on oxygen flow when the emergency switch is actuated.
4- The 100%-normal switch determines whether the pressurized oxygen fed to the mask is or is not diluted with nitrogen.

549. How are the portable oxygen units re-charged?

K10
1- By filling with liquid oxygen from
L382 the liquid oxygen converter.
2- By attaching a flex hose to the re-charging point and using system pressure (approximately 300 PSI).
3- Removing the unit from the airplane for recharging with high pressure liquid oxygen.
4- By attaching a flex hose to the re-charging point and using full system gaseous pressure (approximately 1,800 PSI).

550. Which type oxygen systems are used in transport category airplanes?

K20
1- Diluter demand for both crew and
DC6 passengers.
2- Constant flow for the crew and diluter demand for the passengers.
3- Diluter demand for the crew and con-stant flow for the passengers.
4- Constant flow for both crew and passengers.

551. When performing the cockpit preflight oxygen check, what condition should
K10 exist with the regulator in NORMAL and the supply ON?

ALL
1- Oxygen flow should be continuous until the regulator is placed in OFF position.
2- Ambient air should be available when inhaling, but no oxygen flow should be indicated.
3- Ambient air only should be available if the altitude is below 5,000 feet.
4- Oxygen flow should be indicated only while inhaling.

552. What is a disadvantage of using the EMERGENCY position on the diluter demand
K10 oxygen regulator?

ALL
1- Smoke in the flight deck may enter the mask.
2- The mask will receive an emergency mixture of oxygen and ambient air.
3- The mask wearer must inhale forcibly.
4- The oxygen supply will be depleted rapidly, even if the mask is not being worn.

553. How do you operate a carbon dioxide portable fire extinguisher?
K30

ALL
1- Raise the nozzle upward, aim at the base of the fire, and press the trigger.
2- Rotate the handle clockwise and depress the trigger.
3- Aim the nozzle at the fire and rotate the valve on top of the bottle.
4- Invert the cylinder and aim the extinguishant stream at the base of the fire.

554. What source provides power to operate the emergency exit lights?
K40

ALL
1- The aircraft battery.
2- Batteries contained in each light.
3- A transformer-rectifier located at each light mounting fixture.
4- The emergency inverter.

555. What exit should the flight engineer open prior to ditching?
K50

L382
1- Flightcrew door.
2- Forward overhead escape hatch.
3- Aft escape hatch.
4- Flight station hinged windows.

556. How are the crew oxygen regulators normally positioned in flight, when oxygen
K10 is not in use?

ALL
1- Supply on, diluter lever normal, emergency lever on.
2- Supply off, emergency lever off, diluter lever normal.
3- Supply on, diluter lever normal, emergency lever off.
4- Supply on, diluter lever 100% oxygen, emergency lever off.

557. Which is an indication that the liquid oxygen supply is nearly depleted?
K10

L382
1- Oxygen pressure gauge indicating 1,800 PSI or less.
2- LOX quantity gauge indicating 25 liters or less.
3- Oxygen quantity gauge does not decrease when the test switch is depressed.
4- Low level warning light is illuminated.

558. Which action should be taken when cabin oxygen is no longer needed?
K20

L188
1- Turn off the valves on both cabin oxygen bottles.
2- Manually turn off the valves at each passenger outlet which had been in use.
3- Depress the RESET and close the manual lever at the altitude control valve.
4- Remove all passenger masks which had been used and check that the altitude control valve has automatically closed.

559. During takeoff, the emergency exit light switch(es) should be in the
K40

ALL
1- OFF position.
2- ARMED position.
3- ON and TEST position.
4- DISARMED position.

560. What procedure should be followed before making ground contact during a belly
K50 landing?

L188
1- Nos. 2 and 3 fuel and ignition--OFF.
2- All four emergency shutdown handles--PULL.
3- Flaps--UP.
4- Hydraulic pump switches--OFF.

561. During preflight inspection, the oxygen controls are placed in NORMAL with the
K10 supply OFF. What is an indication of proper operation when the oxygen mask is
ALL being checked?

1- No air or oxygen is available.
2- Oxygen is available upon inhalation.
3- Cabin air is admitted through the relief valve in the mask.
4- Flight deck air is admitted through the regulator, but no oxygen.

562. The crew oxygen system bottle valve or line valve is closed and must be opened
K10 on preflight. In order to prevent overheating and possible fire, how should
ALL the valve be opened?

1- Only enough to cause an outlet pressure indication.
2- After all regulators have been set to EMERGENCY.
3- Slowly, all the way.
4- Rapidly, all the way.

563. What is the function of the heat exchanger in the liquid oxygen system?
K10

1- Heat the gaseous oxygen to cabin air
L382 temperature.
2- Provide heat to convert liquid oxygen to gaseous oxygen.
3- Remove heat from the surface of the liquid oxygen container.
4- Prevent freezing of moisture in oxygen lines in the event of loss of pressurization.

564. In the event of cabin decompression, the flight engineer should visually check to
K20 see that the passenger oxygen system has actuated when the cabin altitude reaches
L188 approximately

1- 8,000 feet.
2- 10,000 feet.
3- 12,000 feet.
4- 14,000 feet.

565. What procedure should be used prior to a gear-up emergency landing?
K50

1- Open the flightcrew door.
L382 2- Dump fuel down to a 15-minute supply.
3- Close all engine bleed valves.
4- Place all oxygen regulators in 100% position.

566. The percentage of oxygen supplied to the mask when the regulator is selected to
K10 normal depends on

ALL 1- aircraft altitude.
2- pressure in the supply bottle.
3- cabin altitude.
4- respiratory rate of the user.

567. In which cabin altitude range is it necessary to manually open the control
K20 valve to obtain oxygen flow through the cabin integral oxygen system?
L188

1- 5,000 feet--14,000 feet.
2- 8,000 feet--20,000 feet.
3- 8,000 feet--14,000 feet.
4- 10,000 feet--20,000 feet.

568. Which is an indication that one bottle of the cabin oxygen system has been dis-
K20 charged because of excessive bottle pressure?
L188

1- Red disc missing at overboard discharge location.
2- Pressure gauge at altitude control valve indicates less than 1,800 PSI.
3- Green disc missing at overboard discharge location.
4- No automatic oxygen flow when cabin altitude exceeds 10,000 feet.

569. How can first aid oxygen be obtained for passenger use at a cabin altitude of
K20 5,000 feet?

L188 1- Use the normal passenger outlet after manually opening the altitude control valve.
2- Use a continuous flow mask and the cabin portable bottle.
3- Use a demand mask and the cabin portable bottle with the regulator set for EMERGENCY.
4- Use the flight deck full face mask and either a portable bottle or the normal passenger oxygen outlet.

570. What will cause the emergency exit lights to come on with the switch in the
K40 ARMED position?

L188 1- Loss of main DC bus power.
2- Loss of essential AC bus power.
3- Removing the light from its mounting fixture.
4- Placing the inverter switch in the EMERGENCY position.

571. Which type portable fire extinguisher should NOT be used on a fire involving
K30 class "B" materials?

ALL 1- Carbon dioxide.
2- Foam.
3- Bromochloromethane.
4- Water.

572. How do you operate a water fire extinguisher?
K30

1- Remove the safety pin, direct the
L188 horn at the base of the fire, and
DC6 squeeze the trigger.
2- Remove the safety pin, rotate the discharge nozzle 90°, and squeeze the trigger.
3- Rotate the handle clockwise and depress the discharge lever.
4- Squeeze the trigger and direct water stream at the base of the fire.

573. After parking and before leaving the airplane, the emergency exit light
K40 switches should be in the

L188 1- OFF position.
2- ARMED position.
3- ON and TEST position.
4- DISARMED position.

574. Which actions are recommended for ditching?
K50

1- Dump fuel and depressurize by open-
L188 ing the main outflow valve.
DC6 2- Open flightcrew windows to depressurize and put the landing gear down.
3- Maintain pressurization and keep all outlet valves closed.
4- Dump all fuel from the inboard tanks and shut down the inboard engines.

575. How is the inflatable evacuation slide at the galley service door deployed for
K50 a ground evacuation?

L188 1- Pull the release handle, then open the door.
2- Open the door, attach the bar to the floor brackets, and kick the slide out of the door opening.
3- Pull the nitrogen bottle handle, the pressure will open the door and inflate the slide.
4- Open the door electrically or manually; the armed slide will inflate as the door opens.

576. After parking and engine shutdown, the emergency exit lights control should be
K40 placed in which position?

L382 1- DISARMED position.
2- EXTINGUISHED position.
3- ARMED position.
4- TEST position.

577. What is the recommended airspeed for ditching?
K50

1- 125% of 50% flap-stall speed.
L382 2- Touchdown speed.
3- 10 knots above 100% flap-stall speed.
4- 10 knots above 50% flap-stall speed.

578. Which action should be taken immediately before touchdown during an emergency
K50 gear-up landing?

DC6 1- Engine fire extinguishers--DISCHARGE.
2- Fuel valves--OFF.
3- Emergency exits and cabin doors--OPEN.
4- Electrical master bar--OFF.

579. How is the slide deployed at the door for passenger evacuation?
K50

1- Open the door manually, the slide
DC6 will deploy automatically.
2- Attach the slide straps to the doorframe wedges, open the door, and kick the slide out.
3- Pull the release handle after the door is open, so that the slide will inflate with nitrogen.
4- Open the door, pull the slide from the container, attach the straps to the doorframe, and push the slide out.

580. From which bus does the fire detection system receive power?
L10

1- Essential DC bus.
L188 2- Main DC bus.
L382 3- Essential AC bus.
4- Emergency inverter bus.

581. What is a proper definition of a fire zone in the engine nacelle?
L10

1- Zone 3--compressor section.
L188 2- Zone 1--compressor section.
3- Zone 2--tailpipe section.
4- Zone 1--combustion turbine section.

582. What is a normal indication when making a fire detection system test?

L10

1- When the switch is depressed, the
L188 bell will ring and all detector lights will illuminate immediately.
2- When the switch is depressed, all detector lights will illuminate after a time delay, but the bell will not ring.
3- As each test switch is depressed, the bell rings and the associated detector lights will illuminate after a time delay.
4- As each test switch is depressed, the associated detector light will illuminate immediately, but the bell will ring only for the first switch depressed.

583. When an engine fire warning occurs in flight, actuation of the cutout switch
L10 will

ALL 1- silence the bell and put the light out.
2- put the light out but the bell will continue to ring.
3- silence the bell but the light will remain on.
4- reset the light and the bell circuits in preparation for a second fire.

584. What is a most likely trouble if a Zone I fire warning light comes on?

L10

1- Broken exhaust stack.
DC6 2- Cracked baffle plate.
3- Broken engine fire seal ring.
4- Blown exhaust valve.

585. Lower cargo compartment fires are controlled by

L20

1- using a portable fire extinguisher.
L188 2- sealing to cause oxygen starvation.
3- the built-in fire extinguishing system.
4- cooling with freon 112.

586. What condition is necessary for arming an engine fire extinguisher?

L30

1- A fire signal must be present.
L382 2- The agent discharge switch must be pressed.
3- The warning cutout switch must be pressed.
4- The fire handle must be pulled.

587. How is an engine hot section overheat condition indicated?

L10

1- Illumination of the associated
L382 nacelle overheat warning light.
2- Steady illumination of the master warning light.
3- Steady light in the engine fire emergency handle.
4- Flashing red light in the engine fire emergency handle.

588. What feature of a thermocouple causes the fire warning system to actuate?

L10

1- Heat decreases its electrical re-
DC6 sistance.
2- The thermocouple expands when heated and forms an electrical ground for the warning light and bell circuits.
3- Heat increases its electrical resistance.
4- The thermocouple generates a small current when it becomes hot.

589. Which areas are protected by the fixed fire extinguisher system?

L20

1- Engine Zones I, II, and III, and ATM
L382 compartment.
2- GTC compartment and engine nacelles.
3- Wheel wells, engines, and gas turbine compartment.
4- Engine nacelles and cargo compartment.

590. What is the indication that a fire extinguisher bottle has been discharged
L20 from the flight compartment?

L382 1- Bottle low pressure light is ON.
2- Light in the fire emergency handle changes from steady to flashing.
3- Low pressure on the gauge at the extinguisher bottle.
4- Fire emergency handle being in the OUT position.

591. How is the engine fire extinguisher system armed?

L30

1- By pulling the emergency shutdown
L188 handle.
2- By moving the transfer switch to normal or transfer position.
3- By pressing and holding the agent discharge switch.
4- By actuating the bell silencing switch.

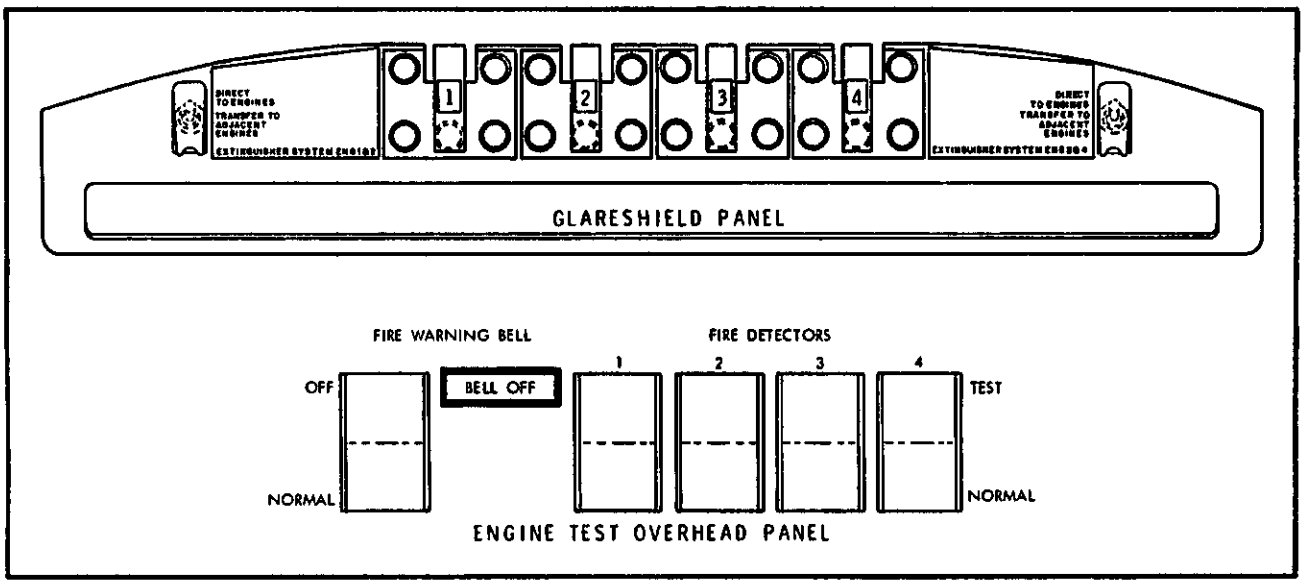


Figure 13. Fire Extinguisher Controls (Typical L-188)

592. The fire warning bell sounds but no fire warning light illuminates. How can you
L10 determine the location of the possible fire?
DC6

1- Press the fire warning light bulb covers. If a light comes on, it indicates the area of possible fire.
2- Check the carburetor air temperature gauges. If an engine fire has occurred, the CAT will be excessive.
3- Actuate each extinguisher in turn. When you have actuated the correct system, the bell will stop ringing.
4- Actuate the warning light test switch or buttons. A light which does not illuminate indicates the possible fire location.

593. Which are among the components affected when the emergency shutdown handle for
L20 No. 1 engine is pulled?

L188 1- Fuel control shutoff, oil shutoff valve, and EDC shutoff valve.
2- Fuel firewall shutoff, 14th-stage bleed air shutoff, and generator cooling air shutoff.
3- Propeller feathering, oil shutoff valve, and oil cooler air.
4- Generator cooling air shutoff, 14th stage bleed air shutoff, and cabin air shutoff valve.

594. What is an indication that the fire warning cutoff switch has been actuated?
L10

1- The fire detector light is flashing
L188 instead of steady.
2- A BELL OFF light is illuminated.
3- The fire warning system circuit breaker has popped out.
4- The warning bell is silent and the detector light is out.

595. What fire extinguishing agent is contained in the fixed fire extinguishing
L20 system?

L188 1- Bromotrifluromethane (FREON).
2- Bromochloromethane (CB).
3- Carbon dioxide (CO_2).
4- Dibromodifluromethane (DB).

596. Which power source is required for operation of the engine fire detector system?
L10

1- Secondary DC bus.
DC6 2- Battery only.
3- Thermocouple only.
4- 26 volt, 3-phase, AC transformer.

597. Which fire zone(s) are flooded with extinguishant when a discharge is made?
L20

1- Zones II and III only.
L188 2- Zones I, II, and III.
3- Zone I only.
4- Zones I and II only.

598. Which warning will NOT activate the master fire warning light?

L10

1- Nacelle overheat warning.
L382 2- Turbine overheat warning.
3- Engine fire warning.
4- GTC fire warning.

599. How is a fire detection system rearmed after having been activated by a fire?

L10

1- The reset switch must be used to
DC6 rearm the system.
2- The system resets automatically after cooling below warning temperatures.
3- The warning lights can be turned off and the bell silenced by the test switch.
4- The system resets automatically after a fire extinguisher has been emptied.

600. What is the proper sequence for discharging the fire extinguishing agent?

L30

1- Switch the bottle selector switch;
L188 pull the emergency shutdown handle; press the discharge button.
2- Pull the emergency shutdown handle; press the discharge button.
3- Pull the emergency shutdown handle and hold out; press the discharge button for at least 1 minute; change the bottle selector switch immediately.
4- Press the discharge switch; pull the emergency shutdown handle, and hold 30 seconds.

601. Which sequence should be used to discharge a fire extinguisher to an engine?

L30

1- Pull the fire emergency control
L382 handle; actuate the bottle selector switch; press the agent discharge switch.
2- Actuate the bottle selector switch; press the agent discharge switch; pull the fire emergency control handle and hold out.
3- Pull the fire emergency control handle; move the agent discharge switch to the No. 1 or No. 2 position.
4- Move the agent discharge switch to the No. 1 position and hold for 30 seconds; pull the fire emergency control handle, and hold out for 30 seconds.

602. Which type agent is used for the fire extinguishing system which protects the
L20 gas turbine compressor (GTC) compartment?

L382

1- Dry chemical.
2- Carbon dioxide (CO_2).
3- Bromochloromethane (CB).
4- Carbon tetrachloride.

603. Which fuselage areas are protected by the fire extinguisher cylinders located
L20 in the nose section?

DC6 1- Fwd. bag., aft bag., and hyd. acc. compt. only.
2- Fwd. bag., aft bag., hyd. acc. compt., heater compt., and tail anti-icing heater only.
3- Fwd. bag., aft bag., and main cabin heater only.
4- Fwd. bag., aft bag., hyd. acc. compt., and heater compt. only.

604. What is indicated when a red disc associated with the fire protection system
L20 is missing?

L188 1- The detection system thermocouple
DC6 had been activated by excessive heat.
2- Nitrogen must be added to the CO_2 containers.
3- Pressure in the extinguisher bottle had become excessive.
4- The system had been discharged from the flight deck.

605. Which procedure should be used to help depressurize when it is necessary to
L30 eliminate smoke or fumes from the flight station?

L382

1- Flight station emergency escape hatch--OPEN.
2- Engine bleed air valves--CLOSED.
3- Flight station clear vision window--OPEN.
4- Wing isolation valves--CLOSED.

606. What fire extinguishing agent is contained in the fixed fire extinguishing
L20 system?

DC6 1- Freon.
2- Dry chemical.
3- Carbon dioxide.
4- Bromochloromethane (CB).

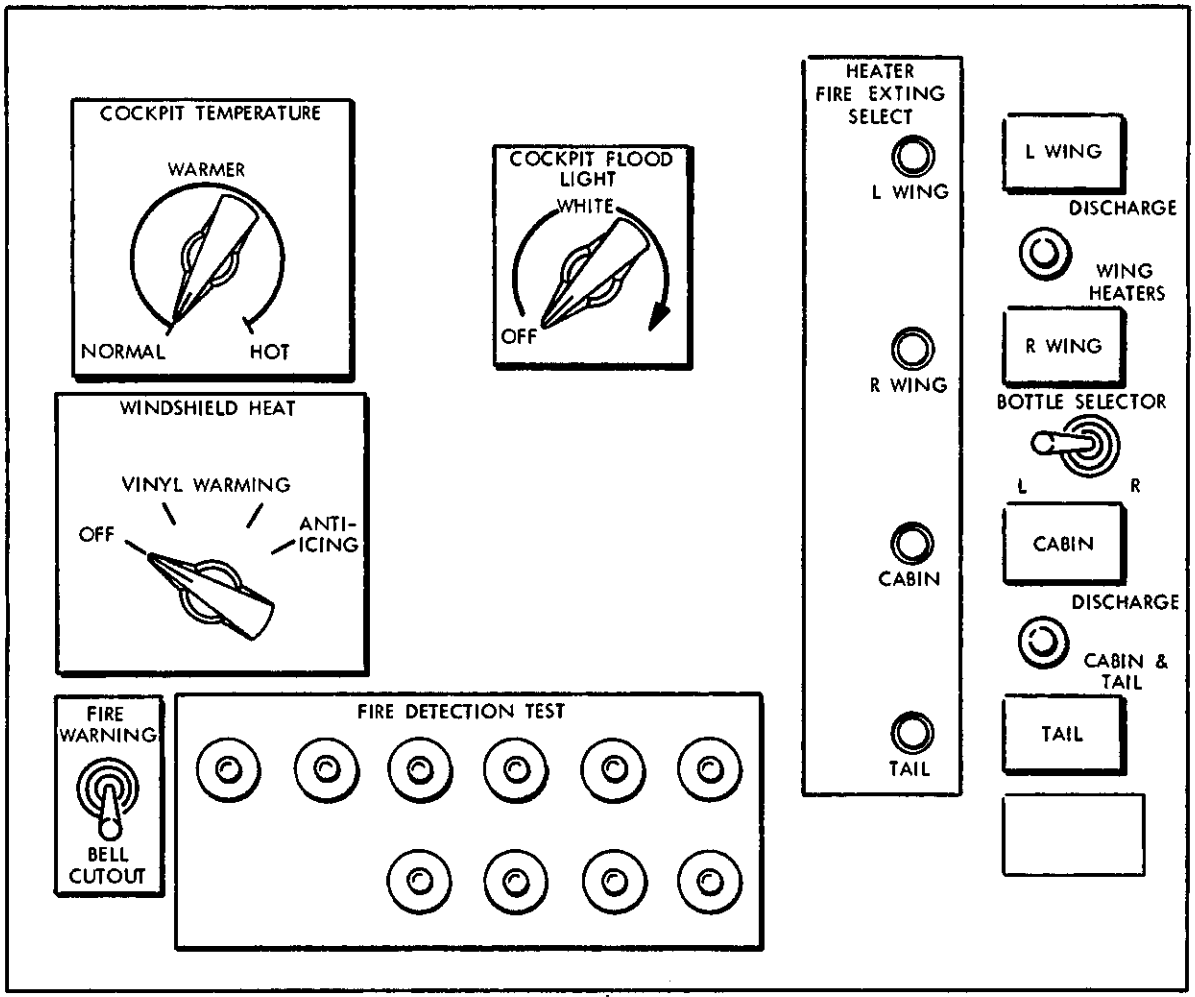


Figure 14. Heater Fire Controls (Typical DC-6)

607. Into which zone(s) of the powerplant can the fire extinguisher be discharged?
L20

1- Zones II and III only.
DC6 2- Zones I and II only.
3- Zones I, II, and III.
4- Zone II only.

608. When the GTC fire emergency control handle is pulled, which components are
L20 shut off?

L382 1- Fuel control, oil shutoff valve, and bleed air valve.
2- Fuel shutoff valve, bleed air valve, and oil shutoff valve.
3- Oil shutoff valve, ignition, and fuel control valve.
4- Bleed air valve, fuel control, ATM generator, and hydraulic shutoff valve.

609. In the fire extinguishing system, an indication that the maximum temperature at
L20 the bottle has been exceeded is

L188 1- a blown yellow indicator disc.
DC6 2- the extinguisher temperature gauge will read high.
3- a blown red indicator disc.
4- a low nitrogen precharge.

610. The elimination of a heavy concentration of smoke from the passenger compartment
L30 should be accomplished by

L188 1- first opening a flight deck window and then opening a cabin window.
2- turning on the recirculating fans of the air-conditioning system.
3- depressurizing after making an emergency descent.
4- lowering the cabin altitude.

611. What causes the DISCHARGED light for No. 1 fire extinguisher bottle to
L20 illuminate?

L188 1- Discharge of the bottle to No. 1 or No. 2 engine.
2- Discharge of the bottle to No. 1 engine or overboard.
3- Discharge of the bottle to an engine or bottle pressure less than 600 PSI.
4- Discharge of the bottle due to an overheat and high pressure.

612. What is indicated when a yellow disc associated with the fire protection sys-
L20 tem is missing?

DC6 1- The detection system thermocouple has been activated by excessive heat.
2- The system has been discharged from the flight deck.
3- Nitrogen must be added to the CO_2 containers.
4- Pressure in the extinguisher bottle has become excessive.

613. If the fire extinguishing system has been used on No. 1 engine, what action
L30 must be taken to discharge extinguishant to the aft baggage compartment?
DC6
1- Push the No. 1 engine selector full-in, pull the aft baggage selector full-out, then pull the handle for the other bank of extinguishant.
2- Pull the aft baggage selector full-out, then pull the handle for the other bank of extinguishant.
3- Pull the aft baggage selector to cut-off ventilating airflow to the compartment; do not discharge extinguishant.
4- Push the No. 1 engine selector in to the spring stop, pull the aft baggage selector out, then pull the handle for the second bank.

614. The elimination of a heavy concentration of smoke from the passenger compartment
L30 should be accomplished by

L188 1- opening a flight deck window and
DC6 then opening an emergency exit over the wing.
2- turning on the recirculating fans of the air-conditioning system.
3- lowering the cabin altitude.
4- opening an emergency exit over the wing after depressurizing.

615. Which action positions the fire extinguisher directional control valves and
L20 arms the agent discharge switch?

L382 1- Pulling an engine or GTC fire emergency control handle.
2- Pulling an engine fire emergency control handle and placing the switch in No. 1 or No. 2 position.
3- Pulling the GTC fire emergency control handle and pressing the agent discharge switch.
4- Pulling an engine or GTC fire emergency control handle and placing the switch in No. 1 position.

616. What happens when the engine emergency shutoff (fire selector) control is
L20 actuated?

DC6 1- Flow of fuel from the booster pump to the fuel pump is blocked.
2- The generator cooling air duct is opened.
3- Flow of all oil from the oil tank is blocked.
4- The hydraulic pump outlet (pressure) line is closed.

617. What should be done if an engine fire is not extinguished by discharge of the
L30 first bottle?

L382 1- Push in and repull the fire emergency handle, and press the discharge switch again.
2- Move the transfer switch to No. 2 position, and press the discharge switch.
3- Push in and repull the fire emergency handle, and move the bottle selector switch to the No. 2 position.
4- Hold the bottle selector switch in the position for the bottle which had not been fired.

618. Which procedure is proper for the elimination of smoke or fumes from the flight
L30 deck during pressurized flight?

L382 1- Cabin differential pressure--increase to maximum.
2- Engine bleed air switches--maximum bleed.
3- Cabin altitude--increase at maximum rate.
4- Air-conditioning master switch--AUX VENT.

619. If the agent from the normal fire protection system bottle does not extinguish a
L30 fire in No. 3 engine, a second attempt can be made by discharging the
L188

1- bottle in No. 4 engine pylon.
2- bottles in the left wing.
3- normal bottle for No. 4 engine.
4- alternate bottle for No. 2 engine.

620. Which steps are included in the fuselage fire procedure?
L30

A. Oxygen--100%
ALL B. Oxygen--Emergency
C. Pressurization--Emergency depressurization
D. Pressurization--Maximum differential

1- A and D.
2- B and C.
3- A and C.
4- B and D.

621. What should be done about electrical equipment not required to complete the
L30 smoke and fumes elimination procedure, if flammable fumes are present?
L382

1- They should be turned off at the switch.
2- Their electrical cable should be disconnected.
3- They should not be turned on or off until fumes are eliminated.
4- They should be turned off by pulling the circuit breaker.

622. Which action is required to discharge the second extinguisher to an engine which is
L30 on fire?

L188 1- Push in and repull the emergency shutdown handle, move the selector switch to TRANSFER, and press the discharge button of the engine having the fire.
2- Move the selector switch to TRANSFER, and press the discharge button of the adjacent engine to the one having the fire.
3- Move the selector switch to TRANSFER, and press the discharge button of the engine having the fire the second time.
4- Push in and repull the emergency shutdown handle, leave the selector switch in NORMAL position, and press the discharge button of the engine adjacent to the one having the fire.

623. Which condition requires that the fire extinguisher selector for an engine be
L30 pushed full-in after it had been pulled completely out?
DC6

1- If the second bank of extinguishant is to be discharged.
2- If the engine does not stop rotating, to restore lubrication.
3- If the bell and lights do not go out after the fire is extinguished.
4- If the bottles were not discharged and fire occurs in another area.

624. Which action should be taken during the passenger cabin smoke evacuation proce-
L30 dure?

DC6 1- Maintain a high degree of cabin pressurization and open the ports between the passenger cabin and the lower cargo compartments.
2- Maintain a small degree of cabin pressurization.
3- Open an emergency exit over the wing after depressurizing.
4- Open a flight compartment window and the pressurization emergency relief valves.

625. If a wing airfoil heater fire warning light illuminates while in cruise, which
L30 procedure should be followed?

DC6 1- All flight crewmembers must put on oxygen masks before the agent is discharged to the fire zone.
2- Immediately push in and hold the agent discharge button for the affected heater.
3- Turn off the master switch for the affected heater, depress the selector button, and depress the discharge button.
4- Turn off the master switch by pulling the gang bar and pull the discharge handle.

626. What is the first procedure for a wing fire?
L30

1- Close the wing isolation valve and
L382 engine bleed air valves for the engines on the affected wing.
2- Close all engine bleed valves.
3- Close the engine bleed valves only on the affected wing.
4- Side-slip the aircraft.

627. In the event of an underfloor cargo compartment fire, which of the following
L30 actions is accomplished AFTER turning the fan/defog switches off?
L188

1- Emergency descent to a safe altitude.
2- Crew smoke masks on and 100% oxygen.
3- Safety relief valve open as required.
4- Flight station door blocked open.

628. When combating a fire in a lower cargo compartment, which is an important item
L30 to perform before discharging the fire extinguisher?
DC6

1- Increase the flow of ventilating air in the compartment.
2- Depressurize by pulling the master emergency depressurization lever.
3- Switch all oxygen controls to the DEMAND position.
4- Turn off the fire detection system for the compartment.

629. Which is the preferred method of combating a brake fire on the ground?
L30

1- Spray warm water fog over the wheel
L188 and brake assembly.
2- Keep the engine running to blow out the fire.
3- Completely smother the gear with a foam extinguishing agent.
4- Use a dry chemical fire extinguisher.

630. Which precaution should be taken in the event of an overheated brake on the
L30 ground?

L382 1- Approach the wheel well from the fore or aft only.
2- Use a hand CO_2 fire extinguisher for cooling.
3- Discharge the GTC fire extinguisher.
4- Evacuate the aircraft via the overhead escape hatches only.

631. Which flight controls are interconnected through a mechanical linkage?
M10

1- Rudder and elevators.
L188 2- Ailerons and rudder.
3- Elevators and ailerons.
4- Flaps and ailerons.

632. In the event of a brake fire while on the ground, which action should be
L30 taken?

DC6 1- Discharge the appropriate engine CO_2 system after feathering the propeller.
2- Shut down all engines, evacuate the passengers, and combat the fire with CO_2 type hand fire extinguishers.
3- Maintain sufficient RPM on the engine in front of the fire to keep the flames under control.
4- Idle the engine in front of the fire and discharge the Zone III CO_2 system.

633. Which components are used to protect the flight control surfaces against wind
M10 gusts when the airplane is parked?

L188 1- Hydraulic booster packages.
2- Force link tabs.
3- Control surface external blocks.
4- Locking pins at the control columns and rudder pedals.

634. The trim tab on the left aileron is up and those on both elevators are down
M30 from the streamline position. What position should be shown on the indica-
ALL tors for the flight deck trim controls?

1- Nose up and right wing up.
2- Nose down and right wing up.
3- Nose down and right wing down.
4- Nose up and right wing down.

635. Placing the elevator trim tab power selector switch in the emergency position
M30 will render which switches inoperative?

L382 1- Control wheel switches only.
2- Pedestal switches only.
3- Pedestal and autopilot switches.
4- Control wheel and pedestal switches.

636. If the flaps are fully extended to final landing configuration, but the gear is
M40 not down and locked, the warning horn will sound
ALL

1- intermittently, and cannot be silenced by the cutout button.
2- steadily, and cannot be silenced by the cutout button.
3- steadily, until silenced by the cutout button.
4- intermittently, until silenced by the cutout button.

637. What protection is provided when the control surface lock is engaged?

M10

1- All flight controls, trim tabs, and
DC6 throttles are locked.
2- Control surfaces are held in neutral, and two throttles are restricted.
3- Control surfaces are locked in neutral, and all throttles are restricted.
4- All flight controls and trim tabs are locked, two throttles cannot be advanced beyond approximately the 1500 RPM position.

638. What is the normal source of power for the trim tab system?

M30

1- Mechanical.
L382 2- 115 volt AC motors.
3- 28 volt DC motors.
4- Hydraulic motors or actuators.

639. Which trim indicator will be deflected on a ground check when the primary
M30 flight controls are actuated in the cockpit?

DC6

1- Aileron trim indicator.
2- Rudder trim indicator.
3- Elevator trim indicator.
4- Autopilot three axis indicator.

640. What will be the effect of the loss of one hydraulic flap motor on the flap
M40 drive system?

L188 1- A flap asymmetry will occur because only one set of flaps will be driven.
2- No effect, because either flap hydraulic motor is capable of operating the flaps.
3- Flap system will not operate because of hydraulic lock created by the inoperative motor.
4- Flap extension speeds must be reduced by 20 knots to reduce airload on the flap, thus preventing the operative flap hydraulic motor from stalling.

641. What are indications that only one of the three flight control systems has
M50 lost hydraulic boost?

L382 1- One booster OFF light illuminated.
2- Four engine hydraulic pump lights illuminated.
3- Two booster OFF lights illuminated.
4- One booster switch in OFF position.

642. How are the flight control surfaces normally operated?

M10

1- By electric actuators.
L188 2- By hydraulic actuators.
L382 3- By manual force exerted through the control column directly to the control surface.
4- By tabs which exert aerodynamic force on the control surfaces.

643. While inspecting the control surfaces, you notice that the trim tabs on the
M30 left aileron and on both elevators are up. What position would you expect to
ALL find on the flight deck indicators?

1- Nose up and right wing up.
2- Nose down and left wing up.
3- Nose up and left wing up.
4- Nose down and right wing up.

644. What are the power sources for the flap system?

M40

1- Electric motors or manual crank.
L188 2- Hydraulic system No. 1 or electric motors.
3- Hydraulic system No. 2, electric motors, or manual crank.
4- Hydraulic system No. 1 or No. 2.

645. What are the power sources to operate the flaps?

M40

1- Normal--two engine-driven hydraulic
DC6 pumps; Emergency--mechanical hand-crank.
2- Normal--four electric-driven hydraulic pumps; Emergency--electric motor drive.
3- Normal--two engine-driven hydraulic pumps; Emergency--electric-driven hydraulic pump.
4- Normal--No. 2 or No. 3 hydraulic pump; Emergency--No. 1 or No. 4 hydraulic pump.

646. What is the effect of flap operation on the primary flight controls?

M40

1- Flaps down; rudder booster pressure
L382 is increased.
2- Flaps down; rudder booster pressure is decreased.
3- Flaps up; aileron travel is restricted.
4- Flaps up; elevator travel is restricted.

647. The loss of which hydraulic systems will affect the operation of the flight con-
M20 trols?

L382 1- Auxiliary and utility systems only.
2- Utility and booster systems only.
3- Auxiliary and booster systems only.
4- Auxiliary, utility, and booster systems.

648. Which flight control tabs are operated only by the trim tab controls?
M30

1- Rudder only.
DC6 2- Elevators only.
3- Ailerons and elevators only.
4- Ailerons, elevators, and rudder.

649. Which tab is ground adjustable only?

M30 1- Rudder.
2- Elevators.
L382 3- Right aileron.
4- Left aileron.

650. Which mechanism is used to prevent flap asymmetry?
M40

DC6 1- Hydraulic actuator brake.
2- Flap motor electric brake.
3- Followup system.
4- Cable bus system.

651. When the flap lever is placed in the full-down position, the flaps move to an
M50 intermediate setting and then stop due to an asymmetric condition. What should
L382 be done if this failure occurs during flight?

1- Lower the flaps by manually controlling the flap hydraulic selector valve.
2- Move the flap lever to the full-up position.
3- Adjust the flap lever to correspond to the position of the flaps.
4- Use the handcrank to move the flaps to the approach climb (50%) position.

652. Which control surface trim tabs can be actuated by both the autopilot and the
M30 respective trim control wheel?

L188 1- Ailerons and elevators.
DC6 2- Rudder only.
3- Elevators only.
4- Rudder and ailerons.

653. Which method is used to assist movement of the flight control surfaces?
M10

1- Hydraulic boosters.
DC6 2- Balance panels.
3- Autopilot servos.
4- Spring control tabs.

654. Which is an indication of a complete loss of power to the elevator tab motor?
M30

1- Both elevator booster lights illumi-
L382 nated.
2- Elevator tab power selector switch in OFF position.
3- Warning flag visible on the elevator trim tab position indicator.
4- No change in elevator tab position indicator when the switch on the pilot's flight control wheel is pressed.

655. What will be the warning indication if the flaps are in the UP position when
M40 the throttles are advanced for takeoff?

DC6 1- A steady horn.
2- A light in the flap handle and a steady horn.
3- A steady bell.
4- An intermittent horn.

656. What is the function of the flap asymmetry system?
M40

1- Prevents moving the flaps when the
L188 landing gear is coming up.
L382 2- Prevents lowering of the flaps at excessive airspeeds.
3- Assures that the flap angle is the same on both wings.
4- Assures that hydraulic pressure to the flap motors is not excessive.

657. What is the effect of the loss of one hydraulic system on operation of the
M50 flight controls?

L382 1- Travel of the control surface is reduced.
2- The pilot must exert double the normal force to obtain a particular airplane response in flight.
3- The control surface can be moved the normal amount, but speed of surface movement is slower.
4- Movement of the flight control and the control surface remains normal.

658. Which flight control is affected by the link force tab?

M30

L188
1- Ailerons.
2- Rudder.
3- Elevators.
4- Stabilizer.

659. What information is shown on one of the trim tab indicators?

M30

L382
1- Force being applied by the autopilot servo.
2- Degree of deflection of the horizontal stabilizer from neutral.
3- Angle between the trim tab and the left aileron.
4- Angle between the rudder tab and the vertical stabilizer.

660. What corrective action can be taken if the emergency flap brake valve actuates in flight?

M40

L382
1- The flaps can be lowered only.
2- The flaps can be raised only.
3- The valve must be overridden before the flaps are lowered for landing.
4- The valve can be overridden on the ground only.

661. What is the effect of the loss of one hydraulic system supply to the boosted flight controls?

M50

L188
1- Control surface travel is reduced.
2- Trim tabs become ineffective.
3- Control wheel, control column, and rudder pedal travel are all reduced.
4- Controls operate normally, but at reduced power.

662. Which action should be taken if there is a failure of the flap electrical control system?

M50

L382
1- Attach the handcrank, and move flaps to the desired position.
2- Move the flap lever to a position corresponding to the position of the flaps; do not attempt to move flaps again.
3- Depress or raise the button on the flap selector valve until flaps move to desired position.
4- Release the manual override on the emergency flap brake valve, then position the flap selector valve manually.

663. Which are the power sources for the flap system?

M40

L382
1- Normal--Auxiliary hydraulics; Emergency--Manual.
2- Normal--Utility hydraulics; Emergency--Booster hydraulics or handcrank.
3- Normal--Utility hydraulics; Emergency--Manual.
4- Normal--Booster or Utility hydraulics; Emergency--Electric.

664. What is rudder boost pressure with the flap lever between UP and 15%?

M40

L382
1- 1100--1600 PSI.
2- 2900--3200 PSI.
3- 2900--3300 PSI.
4- 1100--1400 PSI.

665. What is the function of the flap asymmetry system?

M40

L382
1- Warn the flightcrew that the flaps have not moved to the position selected by the flap lever.
2- Protect against split flaps during manual flap operations.
3- Provide information to the dual flap position gauge.
4- Protect against split flaps during normal flap operation.

666. Which action should be taken to disconnect a flight control booster system?

M50

L188
1- Pull the boost off handle, then pull the boost disconnect handle.
2- Turn off both hydraulic pumps, then pull the boost disconnect handle.
3- Pull the boost disconnect handle, then pull the boost off handle.
4- Turn off both hydraulic pumps, then pull the boost system circuit breakers.

667. How should a runaway trim tab be stopped, when the elevator trim tab power selector switch is in the emergency position?

M50

L382
1- By pulling the AC power circuit breaker.
2- By actuating the pilot's or copilot's switch to the opposite position.
3- By placing the tab selector switch to the OFF position.
4- By placing the tab power selector switch to normal.

668. What takes place when the flap asymmetry system actuates?

M40

1- Hydraulic pressure to operate the
L382 flap motor is removed.
2- The flaps are locked by electric brakes.
3- All four flaps are returned to the UP position.
4- Flap drive shafts are locked by the emergency flap brakes.

669. Asymmetrical flap protection is provided under which condition?

M40

1- Only during normal flap operation.
L382 2- Only in emergency operation.
3- With the flap control handle in the UP position.
4- Only when utility pressure has been lost and the flap control switch is in the normal position.

670. What happens when the elevator tab power selector is placed in EMERGENCY position?

M50

1- Elevator tab actuation is possible
L382 from the mechanical trim control wheel only.
2- The elevator tab can be controlled from switches on the pilot's flight control wheel only.
3- Trim system power source is changed from hydraulic to electric.
4- Elevator tab actuation is changed to a 28 volt DC system.

671. How should the flaps be operated after a failure of the flap system hydraulic
M50 pressure?

L382 1- Depress or raise the button on the flap selector valve.
2- Use the alternate flap electric control system.
3- They should not be moved from their position at the time of the failure.
4- Rotate and pull the manual shift handle, then use the handcrank to position the flaps.

672. Which limit is indicated by the maximum airspeed needle of the airspeed indica-
N10 tor on the ground?

L188 1- V_{NE}.
L382 2- M_{NE}.
3- V_{MO}.
4- M_{MO}.

673. What is the cockpit indication when a flight control has been deboosted?

M50

1- A single light on the annunciator
L188 panel is illuminated.
2- The BOOST OFF light is illuminated and the control is more difficult to move.
3- The master warning light is on and control movement travel is restricted.
4- The DEBOOST light is on, the annunciator FLIGHT CONTROL light is on, and the controls are stiffer.

674. Which is an indication of a flap asymmetry trip?

M50

1- Needles on the flap indicator are
L188 split.
2- Annunciator light ON and flap indicator not in agreement with flap lever.
3- Boost valve off light illuminated, and flaps do not respond to movement of the flap lever.
4- Asymmetry light ON, and flap lever will not move.

675. What actions should be taken to lower the flaps, using the emergency system?

M50

1- Flap lever--DOWN; hydraulic bypass--
DC6 ON; emergency hydraulic pump selector--SYSTEM; emergency hydraulic pump--ON.
2- Hydraulic bypass--OFF; emergency pump selector--ACCUMULATOR; flap lever--DOWN; emergency hydraulic pump--ON.
3- Emergency pump selector--FLAPS; flap lever--DOWN; emergency hydraulic pump--ON.
4- Hydraulic bypass--ON; flap lever--DOWN; emergency hydraulic pump--ON.

676. You check the static ports for being open and clean. In addition to the
N20 flight instruments, with which systems are these ports associated?

DC6

1- Autopilot, cabin pressure controller, and cabin differential pressure gauge.
2- Cabin pressure controller, flight recorder, and cabin altimeter.
3- Cabin pressure controller, autopilot, and cabin altimeter.
4- Autopilot, flight recorder, and cabin differential pressure gauge.

677. What should be done if a failure of the flap drive torque tube, during manual
M50 operation, results in a change in trim about the rolling axis?
L382
1- Release the asymmetrical flap brake valve and return the flaps to desired position.
2- Move the flap handle to the position the flaps are in and land with the condition.
3- Manually return the controllable flaps to the position assumed by the uncontrollable flaps.
4- Hold the flaps in position with the handcrank.

678. What action should be taken if the flaps lock in any position except up?
M50
1- Position the flap lever up.
L382 2- Leave the flap lever where it is.
3- Recycle the flap lever in an effort to get the flaps to the desired position.
4- Position the flap lever at the position corresponding to the flap position.

679. If you set the altimeter to field elevation, the barometric scale should read
N10
1- 29.92 inches of mercury.
ALL 2- field barometric setting.
3- local barometric pressure corrected for temperature.
4- altimeter setting.

680. Which instrument is operated by a combination of pitot and static pressure?
N20
1- Altimeter.
ALL 2- Airspeed indicator.
3- Vertical velocity indicator.
4- Rate of turn indicator.

681. In addition to the flight instruments, with which systems are the static ports
N20 associated?

L188 1- Cabin pressure control, air data sensor, and cabin altimeter.
2- Cabin pressure control, flight recorder, and cabin altimeter.
3- Air data sensor, cabin pressure control, and flight recorder.
4- Airspeed warning switch, flight recorder, and cabin pressure warning switch.

682. Which instrument operates by measuring only the weight of static atmospheric
N10 pressure?

ALL 1- Airspeed indicator.
2- Vertical velocity indicator.
3- Encoding altimeter.
4- Turn and bank indicator.

683. Which systems are affected when the autopilot pitot switch is placed in
N20 EMERGENCY?

L188 1- Autopilot, copilot's airspeed indicator, and flight recorder.
2- Autopilot, flight recorder, and cabin differential pressure indicator.
3- Autopilot, speed warning switch, and captain's airspeed indicator.
4- Autopilot, flight recorder, and speed warning switch.

684. Which is a feature of the airspeed limit system?
N30
1- The warning is cut out if the cap-
L382 tain's pitot-static switches are turned off.
2- The limiting Mach number decreases above 17,000 feet.
3- The limiting airspeed (CAS) increases slightly from sea level up to 17,000 feet.
4- The warning can be cut out by depressing the alarm bell cutout switch.

685. What factors are transcribed by the flight recorder?
N60
1- Indicated airspeed, pressure alti-
L188 tude, heading, vertical accelera-
L382 tion, and elapsed time.
2- Acceleration, indicated altitude, true airspeed, and compass heading.
3- Course, altitude, airspeed, vertical acceleration, and flight time.
4- Airspeed, altitude, time, heading, and rate of climb or descent.

686. Which is an indication of proper flight recorder operation when the switch is
N60 placed in test position?

L188 1- Amber light OUT.
2- Beep tone in interphone system.
3- Green light ON.
4- Steady tone in interphone system.

687. Which of the following is dependent upon operation of the remotely located flux
N10 gate valve?

DC6 1- Instantaneous vertical speed indicator (IVSI).
2- Automatic altitude hold.
3- Magnetic compass.
4- Radio magnetic direction indicator (RMI).

688. During the external preflight inspection, you observe covers over the pitot
N20 probes. Which of the following would be affected if the covers were not removed?

L188
L382 1- Airspeed, altimeter, and autopilot.
2- Flight recorder, autopilot, IVSI, and airspeed.
3- Flight recorder, airspeed, and autopilot.
4- Cabin differential, flight recorder, altimeter, IVSI, and airspeed.

689. Which item requires an input of normal static pressure only?

N20
1- Airspeed warning switch.
ALL 2- Cabin differential pressure switch.
3- Vertical velocity indicator.
4- Flight recorder.

690. What is the relationship between True Outside Air Temperature and Indicated
N50 Outside Air Temperature in cruising flight at high altitudes?

L188
L382 1- Indicated temperature is lower than true temperature.
2- Indicated temperature is higher than true temperature.
3- The difference between indicated and true temperature is greatest at low airspeeds.
4- The difference between indicated and true temperature is greatest at low altitudes.

691. What procedure can be used to obtain true OAT from indicated OAT?

N50
1- Add adiabatic compressibility error
L188 to indicated OAT.
L382 2- Add density altitude correction to indicated OAT.
3- Subtract adiabatic compressibility error from indicated OAT.
4- Subtract density altitude correction from indicated OAT.

692. Which instruments and equipment require the use of both pitot and static pres-
N20 sure?

L188 1- Flight recorder, altimeter, and rate
L382 of climb.
2- Altimeter, rate of climb, and airspeed indicator.
3- Autopilot, airspeed indicator, and altimeter.
4- Airspeed indicator and flight recorder.

693. What source is selected when the static selector is placed in the alternate
N20 position?

L188 1- Alternate flush static openings on the fuselage skin.
2- An alternate static pressure vent inside the tail cone.
3- An auxiliary pitot-static probe.
4- Dual flush static ports and an alternate pitot head.

694. What would be the indication on the Instantaneous Vertical Speed Indicator
N20 during entry into a 500 FPM actual descent from level flight if the normal
ALL static ports were iced over?

1- Initially a climb, then a descent at a rate in excess of 500 FPM.
2- The IVSI would remain at zero regardless of the actual rate of descent.
3- The IVSI pointer would indicate a descent, but at a rate less than 500 FPM.
4- The IVSI would indicate a descent of 500 FPM because its source of pressure is the alternate static ports.

695. Which signal alerts the flightcrew if the V_{MO} or M_{MO} is exceeded?

N30
1- A steady bell will ring.
L188 2- An interrupted bell will ring.
3- An interrupted horn will sound.
4- A steady horn will sound.

696. Which event is required to initiate operation of the flight recorder?

N60
1- External power connected and engines
L188 running.
2- Recorder switch turned on.
3- External power disconnected and engines running.
4- Battery switch turned on.

697. Which instruments or systems require an input of pitot pressure in addition to
N20 static pressure?

L188 1- Altimeter, airspeed indicator, and
L382 flight recorder.
2- Vertical speed indicator, airspeed indicator, and airspeed warning switch.
3- Airspeed indicator, flight recorder, and V_{MO} warning system.
4- Altimeter, rate of climb indicator, Machmeter, flight recorder, airspeed indicator, and V_{MO}/M_{MO} warning switch.

698. Which items are inoperative when the co-pilot's pitot and static shutoff valves
N20 are closed?

L382 1- Copilot's airspeed and altimeter.
2- Flight recorder and speed warning switch.
3- Cabin differential pressure gauge and copilot's airspeed.
4- Speed warning switch, copilot's pitot-static instruments, and flight recorder.

699. Which is a feature of the airspeed limit system?
N30

1- The limit is a constant Mach above
L188 12,000 feet.
2- The limiting airspeed V_{MO} decreases with altitude.
3- The warning can be silenced by a cutout switch.
4- The warning is cut out when the static source is switched to ALTERNATE.

700. Exceeding the V_{MO} airspeed limit is indicated by
N30

1- an aural alarm system.
L188 2- the stick shaker system.
L382 3- a visual warning signal.
4- a decrease in propeller RPM.

701. Which action starts the flight recorder?

N60 1- ATM generator turned ON with GTC operating.
L382 2- Battery switch turned ON.
3- Ground power or ATM generator removed from bus.
4- Flight recorder power switch turned ON.

702. What false indications would appear on the flight instruments if the static
N20 pressure line became disconnected inside a pressurized cabin during cruising
DC6 flight?

1- The altimeter would read high and the airspeed indicator would read high.
2- The altimeter would read low and the airspeed indicator would read high.
3- The altimeter would read low and the airspeed indicator would read low.
4- The altimeter would read high and the airspeed indicator would read low.

703. Which is a characteristic of the maximum permissible indicated airspeed limit?
N30

1- Remains constant at all pressure
DC6 altitudes.
2- Decreases with altitude above 16,000 feet.
3- Increases with altitude above 16,000 feet.
4- Increases with altitude up to 16,000 feet and remains constant above 16,000 feet.

704. Which factor is transcribed by the flight recorder?
N60

1- Density altitude.
L188 2- Groundspeed.
L382 3- Rate of climb or descent.
4- Pressure altitude.

705. What is a function of the fuel tank vent chamber?
010

1- Provide a positive supply of fuel to
DC6 the boost pumps.
2- Prevent fuel surges from damaging the walls of the fuel tank.
3- Provide an airspace for fuel returning from the carburetor vapor vents.
4- Prevent surging fuel from draining overboard during normal ground operations.

706. Fuel dumping is accomplished in flight by means of a
020

1- dump chute for each main fuel tank.
L188 2- discharge nozzle at each wingtip.
3- common manifold and defueling adapter.
4- dump chute in each wing.

707. Which factor is transcribed by the flight recorder?

N60

1- True airspeed.
L188 2- Groundspeed.
L382 3- Magnetic heading.
4- Magnetic course.

708. What signal indicates proper flight recorder operation prior to takeoff?

N60

1- Amber light OUT.
L382 2- Green light ON.
3- Audio tone ON.
4- Meter indicating in normal range.

709. What is the function of the fuel tank surge box?

010

1- Prevent fuel surges from damaging
L188 the walls of the fuel tank.
2- Provide a positive supply of fuel to the submerged boost pump.
3- Prevent fuel being lost overboard through the tank vents during taxiing.
4- Provide a supply of fuel to the scavenge pump during all normal airplane flight attitudes.

710. Which pressure is indicated on the fuel pressure gauge?

010

1- Pressure in the right crossfeed man-
L188 ifold.
L382 2- Output pressure of each boost and scavenge pump.
3- Pressure in the dump and refueling manifold.
4- Output pressure of the dump pumps.

711. When changing from a straight tank to engine fuel selection, to a crossfeed
030 selection of No. 1 tank to Nos. 1 and 2 engines and No. 4 tank to Nos. 3 and 4
L188 engines, the sequence should be:

1- crossfeed valves ON, Nos. 2 and 3 tanks OFF, check fuel pressure, boost pumps ON.
2- check fuel pressure, crossfeed valves ON, Nos. 2 and 3 tanks OFF, boost pumps ON.
3- boost pumps ON, crossfeed valves ON, check fuel pressure, Nos. 2 and 3 tanks OFF.
4- boost pumps ON, check fuel pressure, Nos. 2 and 3 tanks OFF, crossfeed valves ON.

712. Which fuel tanks incorporate bladder cells?

010

1- Auxiliary tanks only.
L382 2- Auxiliary and external tanks only.
3- External tanks only.
4- Main, auxiliary, and external tanks.

713. What is the purpose of the check valves in the fuel system supply pipes?

010

1- Prevent fuel transfer from tank to
DC6 tank.
2- Prevent fuel venting from carburetor to tank.
3- Permit suction feed of fuel in event of boost pump failure.
4- Permit fuel venting overboard in event of thermal expansion of fuel in the fuel supply pipes.

714. How will the fuel quantity gauge and the drip or sight gauge readings compare if
030 the fuel temperature is higher than standard?

L188

1- The quantity gauge will read higher than the drip or sight gauge.
2- The quantity gauge will read lower than the drip or sight gauge.
3- Both will read the same and will be correct.
4- Both will read the same and will be incorrect.

715. Which is a general rule for in-flight fuel tank management?

030

1- Always empty the main tanks first in
DC6 cruise.
2- Do not transfer fuel from tank to tank.
3- Do not use main tanks for landing.
4- Always empty the outboard tanks first in cruise.

716. What happens when the crossfeed primer valve is depressed?

030

1- Crossfeed valves for the four main
L382 tanks are opened.
2- Fuel in the crossfeed manifold is pressurized to 22 PSI.
3- Fuel and air are pumped from the crossfeed manifold to No. 2 main tank.
4- The crossfeed manifold and the refueling manifold are primed with fuel from No. 4 main tank.

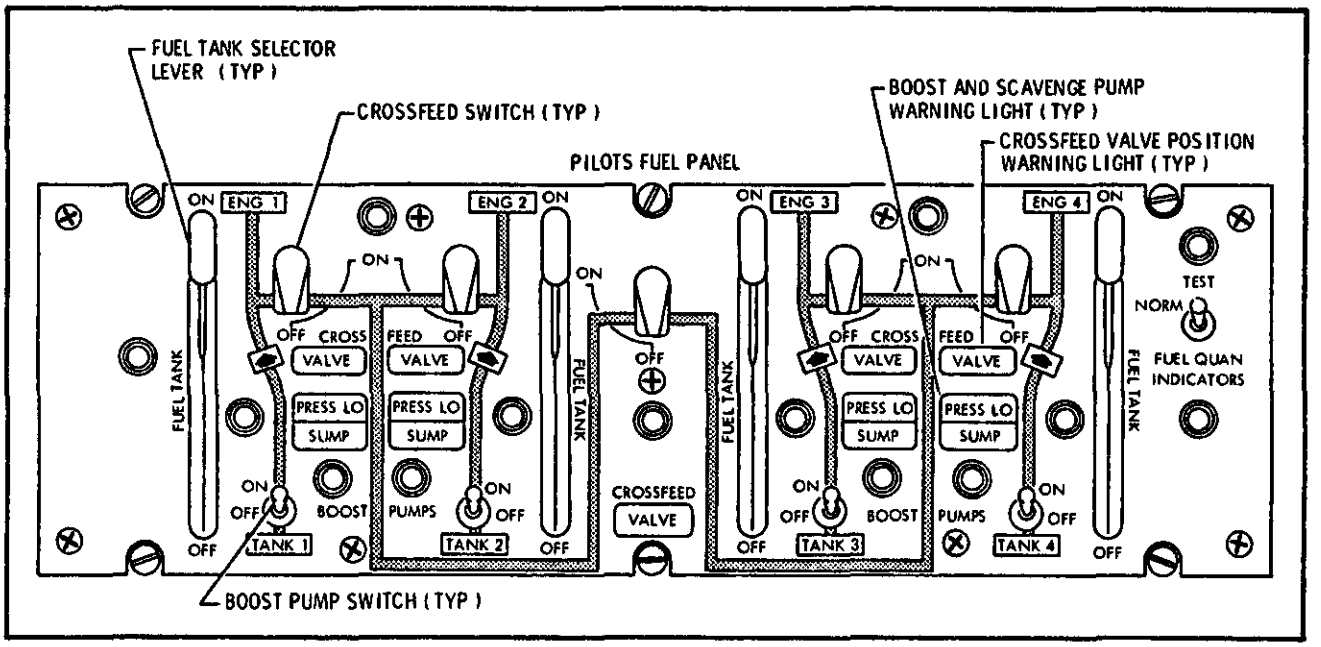


Figure 15. Fuel System Controls (Typical L-188)

717. What is the purpose of the fuel scavenge pump?

010

1- To assist in dumping fuel.
L188 2- To provide a positive pressure to the inlet of the tank boost pump.
3- To keep the tank surge box full.
4- To transfer fuel from one tank to another.

718. What is the function of the standpipes in the fuel tanks?

020

1- Prevent drawing water or sediment
DC6 into the fuel pumps.
2- Retain a reserve of 45 minutes' fuel in each main and alternate tank.
3- Provide a separate fuel supply for the combustion heaters.
4- Retain a reserve of fuel in main tanks after dumping.

719. When should the fuel boost pumps be operated in LOW boost?

030

1- During engine starts and takeoff.
DC6 2- During takeoff and landing.
3- During climbs above 10,000 feet.
4- During fuel dumping operations.

720. Which pressure is shown on the fuel pressure gauge?

010

1- Pressure in the crossfeed manifold.
DC6 2- Output of boost pumps or engine-driven pump.
3- Output of boost pumps or gravity feed pressure.
4- Volume of fuel flow from carburetor to engine.

721. When the test switch for a fuel quantity gauge is actuated, the gauge should

030

1- stop at the full tank position.
ALL 2- change toward the zero position.
3- change indications continuously until the test switch is released.
4- indicate the total fuel load in the tanks.

722. Which fuel system setting is required for takeoff?

030

1- All boost pumps ON.
L382 2- Crossfeed separation valve OPEN.
3- Auxiliary and external tank bypass OPEN.
4- All crossfeed valves CLOSED.

723. Which fuel system pumps provide cooling fluid for the hydraulic system heat exchangers?

010

L188
1- Tanks No. 2 and 3 boost pumps.
2- Tank No. 2 boost and scavenge pumps.
3- Tanks Nos. 2 and 3 scavenge pumps.
4- Tanks Nos. 1 and 2 sump pumps.

724. Which is an indication of proper operation when the fuel quantity test switch is held in the TEST position?

030

L188
1- All eight fuel quantity gauges drive toward zero.
2- All eight fuel quantity gauges drive toward full.
3- Cockpit gauges drive toward zero; nacelle gauges drive toward full.
4- Cockpit gauges drive toward full; nacelle gauges drive toward zero.

725. Which is a requirement of the normal fuel management procedure?

030

L382
1- Takeoff and landing--main or auxiliary tanks.
2- Climb, cruise, and descent--external, auxiliary, and main tanks.
3- Climb, cruise, and descent--main tanks only.
4- Takeoff and landing--main tanks only.

726. What operation requires the use of cross-ship crossfeed procedures?

030

DC6
1- Feeding both engines on one side from one tank.
2- Normal operation for takeoff and landing.
3- Transfer of fuel from one wing to the other.
4- Feeding all operating engines from one tank.

727. What selection is necessary to read No. 1 system fuel pressure on the fuel crossfeed pressure indicator?

030

L188
1- No. 1 tank selector and No. 1 crossfeed valves ON only.
2- No. 1 tank selector, No. 1 crossfeed, and cross-ship crossfeed valves ON.
3- No. 1 crossfeed valve ON only.
4- No. 1 tank selector, No. 1 firewall shutoff, No. 1 crossfeed, and cross-ship crossfeed valves ON.

728. What is the function of the fuel system jet eductor pump?

010

L382
1- Evacuate the main tanks during dumping.
2- Return fuel from the vent tank to the main or auxiliary tank.
3- Keep the boost pumps supplied with fuel at any airplane flight attitude.
4- Use bleed air to keep fuel from escaping out the tank vent system.

729. What is the normal fuel management procedure when a flight is made with all tanks full?

030

L188
1- Feed each engine from its respective tank for the entire flight.
2- Crossfeed from tanks Nos. 1 and 4 during cruise until all tanks have equal fuel loads.
3- Crossfeed from tanks Nos. 2 and 3 during cruise until all tanks have equal fuel loads.
4- Feed each engine from its respective tank unless a malfunction causes an imbalance, then crossfeed as needed.

730. What control settings are required if the crossfeed valves are OPEN during descent and landing?

030

L382
1- Main tank pumps ON and crossfeed separation CLOSED.
2- Crossfeed primer switches ON.
3- Auxiliary tank boost pumps ON.
4- Main tank pumps OFF, auxiliary or external tank pumps ON, and crossfeed separation CLOSED.

731. What action should be taken to prevent spilling auxiliary fuel out the vent system during taxiing?

030

L382
1- Auxiliary tank boost pumps OFF.
2- Auxiliary tank crossfeed valves OPEN.
3- Auxiliary tank crossfeed valves CLOSED.
4- Auxiliary tank boost pumps ON.

732. Which fuel measurement can be accurately made by the fuel quantity indicators located in the cockpit?

030

L188
1- Usable gallons, ground or flight.
2- Usable gallons during flight only.
3- Usable pounds, ground or flight.
4- Usable pounds during flight only.

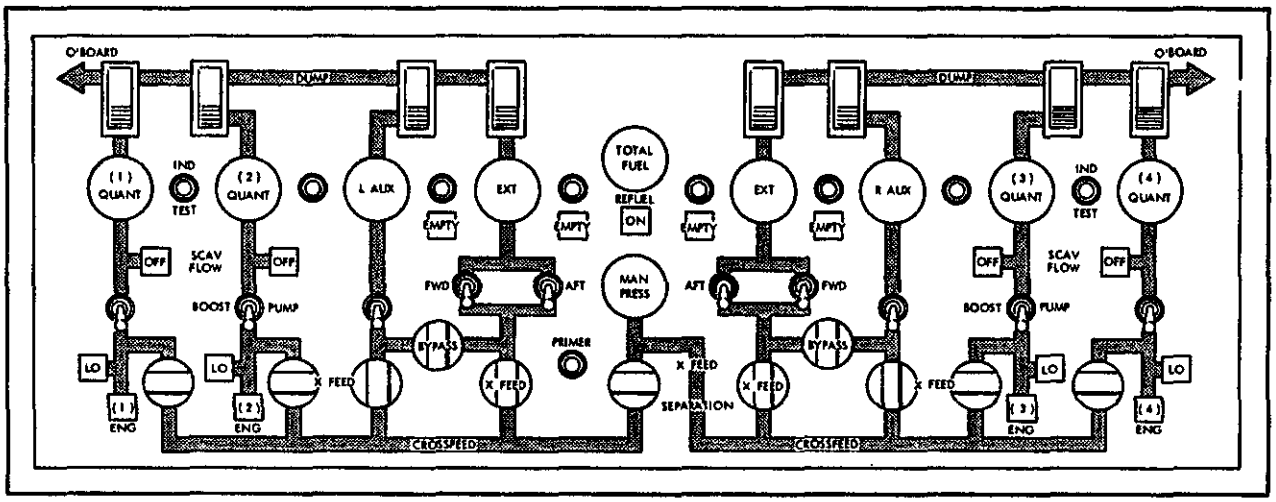


Figure 16. Fuel System Controls (Typical L-382)

733. Which is not a permissible fuel imbalance condition for landing?

030

1- Difference between tanks Nos. 1 and
L188 4--4,500 lbs.
2- Difference between tanks Nos. 1 and 4--450 lbs.
3- Difference between tanks Nos. 2 and 3--4,500 lbs.
4- Difference between tanks Nos. 2 and 3--450 lbs.

734. Which is a normal indication when checking the boost pumps by using the fuel
030 pressure indicators?

L382 1- Main pump pressure 15--24 PSI.
2- Main or auxiliary pump pressure 28--40 PSI.
3- External pump pressure 15--24 PSI.
4- Main or external pump pressure 28--40 PSI.

735. Which conditions are required before the auxiliary tank empty light will illumi-
030 nate when the tank fuel level is depleted?

L382

1- Aux tank crossfeed and pump switches ON.
2- Aux tank pump switch ON and crossfeed separation valve CLOSED.
3- Bypass switch and crossfeed separation switch OPEN.
4- Aux tank pump switch, crossfeed switch, and bypass switch ON.

736. Which valves in the fuel system are electrically operated?

010

1- Tank selector valves.
L188 2- Emergency shutoff valves.
3- Crossfeed valves.
4- Fuel dump valves.

737. Which fuel tanks contain dump pumps?

020 1- External tanks.
2- Auxiliary tanks.
L382 3- Main tanks.
4- Vent tanks.

738. What is the recommended procedure for using the electric fuel boost pumps?

030

1- LOW--when selecting a new fuel
DC6 supply.
2- HIGH--for engine starts.
3- LOW--for all climbs below 10,000 feet.
4- HIGH--for all takeoffs and initial climb.

739. What is indicated when a crossfeed valve light is illuminated.

030

1- The valve is open.
L188 2- The valve is closed.
3- The valve and the position of the valve switch do not agree.
4- The valve is in an intermediate position.

740. When should the fuel boost pumps be normally operated?
030

1- During all engine operations.
L188 2- During all operations except takeoff.
3- During all operations except taxi.
4- During all operations except cruise at low altitudes (below 10,000 feet).

741. What temperature may be read on the fuel temperature gauge?
030

1- Tank No. 1 only.
L188 2- Tank No. 4 only.
3- All fuel filters only.
4- All main fuel filters and Tank No. 1.

742. What units of measurement are indicated by the fuel system gauges?
030

1- Fuel quantity--pounds; fuel flow--
L382 pounds per hour per engine.
DC6 2- Fuel quantity--gallons; fuel flow--total pounds per hour.
3- Fuel quantity--usable pounds; fuel flow--pounds per minute per engine.
4- Fuel quantity--usable gallons; fuel flow--total gallons per minute.

743. Which device is used to determine that a fuel tank boost pump is producing pres-
030 sure when the switch is on?

L188 1- Fuel flowmeter.
2- Fuel pump warning light.
3- Boost pump pressure gauge.
4- Crossfeed manifold pressure gauge.

744. What is indicated when the fuel pressure warning light is ON?
030

1- Pressure at the boost pump is less
DC6 than 22 PSI.
2- Pressure at the boost pump is less than 18.5 PSI.
3- Pressure at the carburetor is less than 22 PSI.
4- Pressure at the carburetor is less than 18.5 PSI.

745. Which device is used to determine that a tank scavenge pump is operating?
040

1- Crossfeed manifold pressure gauge.
L188 2- Sump pump pressure warning light.
3- Fuel flowmeter.
4- Engine-driven boost pump pressure warning light.

746. Which fuel tank load distribution is permissible in flight?
030

1- Right wing main tank fuel 3,000 lbs.
L382 more than left wing main tank fuel.
2- Inboard fuel 1,000 lbs. more than outboard fuel.
3- Outboard fuel 1,000 lbs. more than inboard fuel.
4- Left auxiliary full, right auxiliary empty; balanced by left external empty, right external full.

747. When the main and auxiliary crossfeed fuel valves are OPEN and boost pumps are
033 ON, which tank(s) will be feeding the engine?
L382

1- Both the main tank and auxiliary tank equally.
2- The main tank.
3- The auxiliary tank.
4- The external tank.

748. What will be indicated when there is a power failure to one fuel tank quantity
040 gauge?

L382 1- The gauge reading will immediately drop to zero.
2- The gauge reading will drop to zero when the test switch is pressed.
3- The totalizer reading will not include the quantity shown on the inoperative tank gauge.
4- The totalizer reading will drop to zero when the tank gauge drops to zero.

749. What action should be taken if a fuel boost pump failure occurs?
040

1- Leave the pump switch on to assure
L382 scavenge pump operation.
2- Crossfeed fuel from another tank for the remainder of the flight.
3- Pull the associated circuit breakers and turn off the pump switch.
4- Dump fuel from the tank to prevent a lateral unbalance.

750. When does boost pump failure during rapid climb cause a gradual loss of power on
040 the engine?

L382 1- At any altitude.
2- Above 5,000 feet.
3- Between 5,000 and 10,000 feet.
4- Between 12,000 and 20,000 feet.

751. What condition is indicated when the engine-driven boost pump low pressure
040 light comes on in flight, if the boost pump switch has been turned off?
L188

1- The scavenge pump is still operating.
2- Cavitation of the engine-driven pump.
3- The tank crossfeed valve is closed.
4- Clogging of the fuel filter.

752. Which problem is indicated by rapid fluctuation of fuel pressure, fuel flow,
040 and engine power during cruising flight?

DC6 1- Vapor lock.
2- Carburetor ice.
3- Hydraulic lock.
4- Fuel ice.

753. What is the effect of failure of a main tank fuel boost pump?
040

1- The engine cannot be operated in
L382 cruising flight above 12,000 feet because of air in the fuel.
2- Fuel cannot be drawn from the tank to feed the associated engine.
3- Fuel cannot be dumped from the tank.
4- Fuel cannot be crossfed from the tank to another engine.

754. What happens when the fuel dump red handles are pulled out?
040

1- Dump chutes are extended only.
L188 2- Dump chutes are retracted.
3- Dump chutes are returned to drain position and dump valves are closed.
4- Dump chutes are extended and dump valves are opened.

755. Which fuel dumping procedure is recommended?
040

1- Gear and flaps UP, dump control
DC6 handle to OPEN; after dumping, control handle to CLOSE.
2- Flaps DOWN, dump control handle to DRAIN; after dumping, control handle to CLOSE.
3- Gear and flaps DOWN, dump control handle to OPEN; after dumping, control handle to DRAIN, then to CLOSE.
4- Gear and flaps UP, dump control handle to OPEN; after dumping, control handle to DRAIN, then to CLOSE.

756. Which is an indication of a main tank boost pump failure in flight?
040

1- Fuel pressure gauge indication de-
L382 crease.
2- Fuel pump low pressure warning light illuminated.
3- Fuel flowmeter indication decrease.
4- Boost pump operating light going out.

757. Which action should be taken in the event of failure of a sump pump in an inboard
040 fuel tank?

L188 1- Do not use fuel from the tank.
2- Turn off the tank boost pump.
3- Turn off the affected hydraulic system pump.
4- Close the tank shutoff valve.

758. What action should be taken if fuel pressure drops to zero and the warning
040 light comes ON but the engine continues to run smoothly?
DC6

1- Place the boost pump switch in HIGH.
2- Shut down the engine.
3- Operate the engine at reduced throttle.
4- Select a fuel tank which has adequate fuel.

759. Which precaution should be observed during the fuel dumping procedure?
040

1- Tank to engine fuel configuration.
L382 2- All electrical systems off.
3- Bleed air system off.
4- Fuel boost pumps and dump pumps off.

760. Which action should be taken if the dump valve of an auxiliary tank does not open
040 when the fuel level must be reduced rapidly?
L382

1- Use crossfeed procedures to feed fuel to all four engines from the auxiliary tank.
2- Place the bypass switch OPEN and the external tank dump switch to DUMP.
3- Transfer the fuel to the external tank and dump the excess through the external tank dump system.
4- Place the crossfeed valves for the auxiliary and external tank OPEN and the external tank dump switch to DUMP.

761. What is indicated by illumination of the fuel low pressure warning light?

040
L382
1- The scavenge pump in the tank is inoperative.
2- The fuel tank valve is closed.
3- The engine fuel supply pressure is less than 8 PSI.
4- The engine fuel supply pressure is 22 PSI or less.

762. Which is an indication of fuel boost pump failure?

040
L382
1- Main tank pump--tank low level light ON.
2- Auxiliary tank pump--tank empty light ON.
3- External tank pump--low pressure warning light ON.
4- Main or auxiliary tank pump--scavenge flow light ON.

763. When is the bypass valve switch used?

040 L382
1- When transferring fuel from external to main tanks.
2- When feeding an engine from two tanks at a time.
3- When an external or auxiliary boost pump has failed.
4- When an external or auxiliary crossfeed valve has failed.

764. Which action is required to terminate fuel dumping?

040
L188
1- Pull the close handles to the drain position.
2- Push the red dump handles back to the OFF position.
3- Pull the retract handles full OUT and then push them back to OFF position.
4- Place the tank boost pump switches OFF.

765. Which sequence should be followed to dump fuel?

040
L382
1- Boost pump--ON; Dump switch--DUMP; Boost pump--OFF; Dump switch--NORMAL.
2- Dump switch--DUMP; Dump switch--DRAIN; Dump switch--NORMAL.
3- Dump switch--DUMP; Dump switch--NORMAL.
4- Boost pump--ON; Dump switch--DUMP; Dump switch--OFF; Boost pump--OFF.

766. What action is required if a main tank scavenge flow off light illuminates?

040
L382
1- Place the boost pump switch OFF and pull the boost pump circuit breakers.
2- Continue normal operation if in cruising flight.
3- Place the scavenge pump switch OFF.
4- Place the bypass valve switch ON to allow normal boost pump operation.

767. What is the first step if an engine fails in flight due to zero fuel pressure?

040
DC6
1- Place the boost pump switch in HIGH.
2- Switch to an alternate fuel tank.
3- Retard the throttle.
4- Feather the propeller.

768. What is a required part of the fuel dumping procedure?

040
L188
1- Flaps must be lowered to the 78° position.
2- Place controls in DRAIN for 2 minutes after dumping.
3- Crossfeed valves must be OPEN during dumping.
4- Dump chutes must be left DOWN after dumping.

769. Which action should be accomplished prior to dumping fuel?

040
DC6
1- Switch fuel boost pumps to HIGH BOOST position.
2- Place the fuel selector valves to MAIN TANKS ON.
3- Position all crossfeed valves--ON.
4- Turn all electrical switches--OFF.

770. Which hydraulic pump does not have an associated warning light to indicate low pressure output?

P10
L382
1- Utility system suction boost pump.
2- Auxiliary system pump.
3- Booster system engine-driven pump.
4- Booster system suction boost pump.

771. The hydraulic system incorporates

P10
L188
1- two AC motor-driven pumps only.
2- three AC motor-driven pumps only.
3- three DC motor- and one AC motor-driven pumps.
4- three AC motor- and one DC motor-driven pumps.

772. What happens in the fuel system when an engine fire emergency handle is pulled?

040

1- The cable operated fire emergency
L382 valve is closed.
2- The boost pump is deactivated and tank valve is closed.
3- The fire emergency and crossfeed valves for the engine are closed.
4- The electric motor-operated firewall shutoff valve is closed.

773. What is shown on the hydraulic pressure indicator?

P10

1- No. 1 and No. 2 system fluid pres-
L188 sures.
2- Output pressure of individual pumps.
3- Pressure on the air side of the system accumulators.
4- Pressure of the AC and DC pumps.

774. Where are the pumps for the booster hydraulic system located?

P10

1- Engines Nos. 2 and 3.
L382 2- Engine-driven pumps on engines Nos. 3 and 4; electric motor-driven pump in cargo compartment.
3- Electric pump and hand pump in cargo compartment.
4- Variable volume pumps driven by engines Nos. 3 and 4; hydraulic motor-driven pump in cargo compartment.

775. How is the direct current hydraulic pump activated?

P10

1- Placing the No. 1B pump switch ON.
L188 2- By the brake accumulator pressure reducing to less than 2,200 PSI with the ground tow switch ON.
3- By the No. 1 system pressure reducing to less than 2,200 PSI with the ground tow switch OFF.
4- Placing the No. 2 system pump switch ON.

776. Which hydraulic system incorporates a cooler?

P10

1- Utility system cooler located in
L382 No. 2 fuel tank.
2- Booster system cooler located in No. 3 fuel tank.
3- Auxiliary system cooler located in No. 3 fuel tank.
4- Auxiliary system cooler located in cargo compartment.

777. What type hydraulic pumps are installed on the airplane?

P10

1- Three AC motor-driven pumps.
DC6 2- Two engine-driven pumps and one AC motor-driven pump.
3- Two engine-driven pumps and one DC motor-driven pump.
4- Three engine-driven pumps.

778. Which pumps can be supplied with fluid from the system No. 1 reservoir?

P10

1- AC pump No. 1 only.
L188 2- AC pumps Nos. 1 and 1A only.
3- Pumps Nos. 1, 1A, and 1B only.
4- Pumps Nos. 1, 2, 1B, and 2B.

779. Which pumps supply pressure for the utility hydraulic system?

P10

1- No. 1 and No. 2 engine-driven hydrau-
L382 lic pumps.
2- No. 3 and No. 4 engine-driven hydraulic pumps.
3- The electric motor-driven pumps.
4- Two engine-driven pumps with a hand pump to provide emergency operation.

780. What mechanism is used to retract the main landing gear?

P20

1- Hydraulic cylinders retract the gear
L382 upward and forward.
2- Hydraulic motors retract the gear upward and forward.
3- Hydraulic motors retract the gear straight upward.
4- Hydraulic cylinders retract the gear straight upward.

781. In which landing gear lever position is it normal to have three green lights and
P20 one red light illuminated?

L188 1- UP.
2- NEUTRAL.
3- DOWN.
4- EMERGENCY DOWN.

782. Which sources may supply pressure for operation of the hydraulic brakes?

P30

1- Pump No. 1, 1A, or 1B.
L188 2- Pumps Nos. 1 and 2.
3- System No. 1 and the air bottle.
4- The system accumulator and the brake accumulator.

783. If hydraulic system pressure is 3,000 PSI and accumulator preload is 1,500
P10 PSI, what is the accumulator air pressure when the system is pressurized?
L188
L382 1- 2,000 PSI.
2- 3,000 PSI.
3- 1,500 PSI.
4- 4,500 PSI.

784. Where are the hydraulic pumps located?

P10 1- Engines Nos. 2 and 3.
2- Engines Nos. 1, 2, 3, and 4.
L188 3- AC pumps on engines Nos. 2 and 3; DC pumps in lower fuselage.
4- All AC and DC pumps in lower fuselage.

785. What is the function of the hydraulic suction boost pump?
P10
1- Provide pressure to return fluid to
L382 the reservoir.
2- Provide fluid under pressure to the engine-driven pumps.
3- Act as a backup pressure source in event of an engine pump failure.
4- Maintain a level of fluid in the reservoir to prevent engine pump cavitation.

786. What is the source of air pressure for the hydraulic reservoir?
P10
1- Engine-driven air pumps.
DC6 2- Venturi Tee.
3- Engine No. 2 or 3 bleed air system.
4- Nitrogen preload.

787. Which systems are operated by the booster hydraulic system?
P10
1- Flight controls.
L382 2- Flap motors.
3- Nose landing gear emergency extension.
4- Emergency brakes.

788. What is the function of the landing gear lever lock release?
P20
1- Permit moving the lever to UP.
L382 2- Permit moving the lever to NEUTRAL.
3- Permit moving the lever to DOWN.
4- Permit moving the lever to EMERGENCY DOWN.

789. Where can the pressure output of the hydraulic hand pump be determined?
P10
1- The flight deck auxiliary system
L382 pressure gauge only.
2- Normal brake pressure gauge.
3- The cargo compartment auxiliary system pressure gauge only.
4- Both auxiliary system pressure gauges.

790. Where are the variable volume pumps for the utility hydraulic system located?
P10
1- Engines Nos. 1 and 2.
L382 2- Cargo compartment.
3- Engines Nos. 2 and 3.
4- Two on the engines and one in the cargo compartment.

791. Which control directs hydraulic pump pressure directly back to the reservoir?
P10
1- Fire extinguisher selector.
DC6 2- Auxiliary pump selector valve control lever.
3- Hand shutoff valve.
4- System bypass lever.

792. Which hydraulic system provides power for landing gear retraction?
P20
1- Main and nose gear--System No. 1.
L188 2- Main gear--System No. 1; Nose gear--System No. 2.
3- Main and nose gear--System No. 2.
4- Main gear--System No. 2; Nose gear--System No. 1.

793. What is a feature of the main gear latch visual indicator?
P20
1- Indicates that the down latch bungee
DC6 cylinder has locked the gear.
2- Visible from the flight compartment window when gear is locked down.
3- Requires removal of main cabin viewing port in floor.
4- Indicates that the gear is locked either up or down.

794. Which condition is required to obtain hydraulic pressure at the brakes?
P30
1- Shock struts compressed.
DC6 2- Landing gear lever down.
3- Selector lever in BRAKES position.
4- Hydraulic pressure from either engine-driven pump.

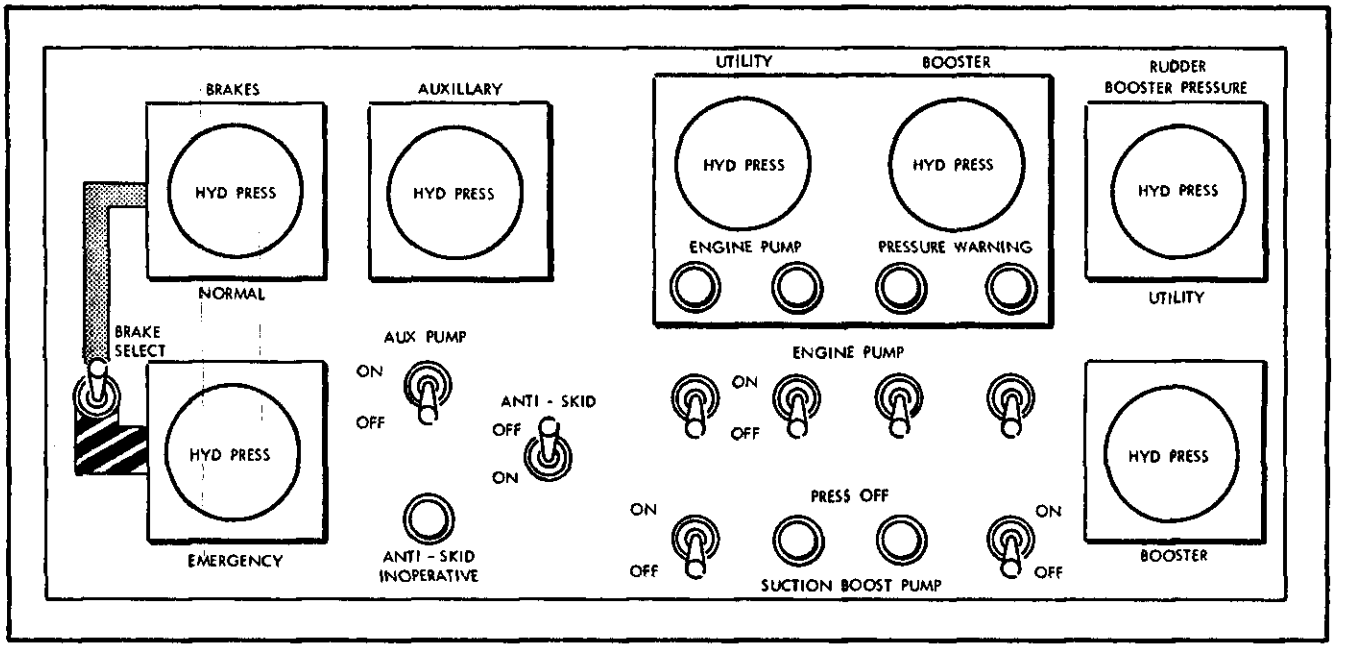


Figure 17. Hydraulic System Controls (Typical L-382)

795. What is indicated on the system pressure gauge?

P10

1- Main accumulator air pressure.
DC6 2- Pressure available to the windshield wipers.
3- Pressure available at the reservoir.
4- Nose wheel steering accumulator air pressure.

796. Which control(s) can close the shutoff valve on the outlet of an engine-driven
P10 pump?

L382 1- Engine pump switch and fire emergency handle.
2- Engine pump switch and suction boost pump switch.
3- Engine pump switch only.
4- Fire emergency switch only.

797. Which is a feature of all three landing gear assemblies?

P20

1- Steering cables.
L188 2- Shock strut actuated down-locks.
3- Multiple disc brakes.
4- Electric up-latch mechanism.

798. Which system uses No. 2 hydraulic pump output as a backup pressure source?

P10

1- Landing gear system.
L188 2- Nose gear steering.
3- Wing flap system.
4- Windshield wiper system.

799. Which is a normal action of the landing gear system when the gear lever is moved
P20 from NEUTRAL to DOWN?

L188 1- Gear is extended by free fall.
2- Up-locks are released by hydraulic pressure.
3- Down-locks are engaged only when the lever is placed in EMERGENCY DOWN.
4- Hydraulic pressure is only used to engage the down-locks.

800. What is indicated by the brake pressure gauge?

P30

1- Brake accumulator air pressure.
DC6 2- Pressure supplied to the brakes.
3- Brake accumulator hydraulic pressure.
4- Pressure at the brake lockout or de-booster cylinder.

801. Which component is operated by the utility hydraulic system?

P10

1- Aft cargo door and ramp.
L382 2- Emergency brakes.
3- Wing flap motor.
4- Main gear emergency extension system.

802. Which is a feature of the landing gear mechanism?

P20

1- The nose gear up-lock is normally
L382 released by a cable-operated device.
2- The main gear retraction system uses four hydraulic motor and jack screw assemblies.
3- The nose gear retraction system uses one hydraulic motor.
4- The main gear up-locks are hydraulic brake devices.

803. Which is an indication that the nose gear is locked up?

P20

1- The green light is ON.
L382 2- The indicator shows the word UP.
3- The red light in the landing gear lever is illuminated.
4- The indicator shows a striped pattern.

804. What pressure source will operate the brakes in event of a DC electrical power
P30 failure?

L382 1- The hydraulic system which had been selected by the brake pressure selector switch prior to the failure.
2- Either utility or auxiliary pressure, whichever is higher.
3- AC motor-driven suction boost pump pressure.
4- Accumulator pressure only until the accumulator is depleted.

805. What is the purpose of the lockout cylinder associated with the landing gear?

P30

1- Prevent mixing of hydraulic fluid
DC6 and nitrogen in the event the emergency brakes are used.
2- Allow the landing gear doors to open or close in the proper sequence.
3- Ensure that the landing gear will lock in the down position when it has been lowered by a free fall.
4- Prevent the loss of hydraulic system pressure in the event of a brake line failure.

806. Which system can only receive power from the auxiliary hydraulic pump?

P10

1- Main cabin cargo doors.
DC6 2- Windshield wipers.
3- Parking brakes.
4- Belly compartment cargo doors.

807. Which system or component is affected by the main gear squat switch during take-
P20 off?

DC6 1- Water injection.
2- Landing gear warning lights.
3- Automatic feathering.
4- Landing gear control lever safety latch.

808. Which action causes the landing gear up-locks to be released?

P20

1- Moving the gear lever out of UP posi-
DC6 tion--cables actuate the lock.
2- Moving the gear lever below NEUTRAL--hydraulic pressure actuates the lock.
3- Moving the gear lever full DOWN--hydraulic cylinder actuates the lock.
4- Moving the gear lever below NEUTRAL--cables actuate the lock.

809. There is normal brake hydraulic pressure on one side of the brake shuttle valve;
P30 the other side of this valve has:

L188 1- Air pressure.
2- Spring tension.
3- Static hydraulic fluid.
4- No. 2 hydraulic system pressure.

810. Which indication is shown on the normal brake pressure gauge?

P30

1- Same as that shown on the utility
L382 system pressure gauge.
2- Same as that shown on the auxiliary system pressure gauge.
3- Pressure at the antiskid valve.
4- Pressure at the brake.

811. Which is an indication of proper antiskid operation?

P30

	Gear Down Approach	Touchdown
L382 1-	Lights OUT	Lights OUT
2-	Lights OUT	Lights ON
3-	Lights ON	Lights OUT
4-	Lights ON	Lights ON

812. Which hydraulic pressure source is used for normal operation of the landing
P20 gear?

L188 1- Auxiliary hydraulic system motor-driven pump.
2- Booster hydraulic supply system.
3- Auxiliary supply system hand pump.
4- Utility hydraulic supply system.

813. Which sources supply pressure for operation of the hydraulic brakes?
P30

1- Utility and auxiliary systems.
L382 2- Utility system and the air bottle.
3- Normal brake accumulator and booster brake accumulator.
4- Auxiliary system hand pump or electric pump only.

814. What is a feature of the modulating type emergency air brake control valve?
P30

1- The valve will modulate the air
L188 pressure ON and OFF until the aircraft has stopped.
2- The valve will meter air pressure to the brakes in direct proportion to the amount of control handle movement.
3- The valve recirculates the air back to the emergency air bottle.
4- The valve acts like an antiskid system to prevent locking of the brakes.

815. What is indicated on the brake pressure gauge?
P30

1- Accumulator air pressure and emer-
L188 gency bottle air pressure.
2- Accumulator fluid pressure and emergency bottle fluid pressure.
3- Accumulator air pressure and emergency bottle fluid pressure.
4- Accumulator fluid pressure and emergency bottle air pressure.

816. Which conditions permit nose wheel power steering to operate?
P40

1- Nose strut extended and system No. 1
L188 or No. 2 hydraulic pressure.
2- Nose strut compressed and gear lever in NEUTRAL or DOWN.
3- System No. 1 hydraulic pressure, gear lever DOWN or EMERGENCY DOWN, and centering cam engaged.
4- System No. 1 hydraulic pressure and gear lever in DOWN detent or below.

817. What is the purpose of the brake lockout cylinder?
P30

1- Serves as a brake pressure debooster.
L188 2- Maintains the correct brake clearances by compensating for wear.
3- Acts as a fluid block to minimize fluid loss in case of a brake failure.
4- Prevents application of hydraulic brakes and air brakes at the same time.

818. Which is a feature of the air brake system?
P30

1- Differential braking is available
DC6 for taxiing.
2- The control valve handle is safetied in the HOLD position.
3- Holding the handle ON provides maximum braking efficiency at all three landing gears.
4- Air released from the brakes is exhausted overboard.

819. Which is an indication of a normal antiskid test?
P30

1- Test switch FWD; left and right for-
L382 ward test lights ON until the test switch is released.
2- Test switch ON; antiskid inoperative light ON.
3- Test switch ON; antiskid inoperative light OFF.
4- Test switch FWD; left and right forward test light momentarily ON after the switch is released.

820. What is the source of power to open the aft cargo door and ramp?
P50

1- Auxiliary system pressure or manual
L382 crank.
2- Electric motor-driven pump or manual crank.
3- AC electric motors.
4- Electric motor-driven hydraulic pump or a hand pump.

821. Which problem is indicated if the hydraulic pump suction gauge shows an ex-
P60 cessively negative pressure?

L188 1- Contaminated or blocked filter.
2- Excessive reservoir pressure.
3- Impending pump failure.
4- Reservoir filter is bypassing.

822. Which statement is appropriate when checking the brake wear indicator pins?

P30

1- The brakes should be set.
L188 2- The brakes should be off.
DC6 3- Indication is the same with brakes set or off.
4- One engine must be running to supply adequate pressure to the brakes.

823. What happens when a skid is detected during landing with the brakes applied?

P30

1- Hydraulic brake pressure is reduced
L382 only on the wheel which is reducing speed.
2- Brakes are released on all four wheels.
3- Brakes are released on the right or left pair of wheels, whichever are skidding.
4- Hydraulic brake pressure is reduced on the wheel which is increasing speed.

824. What deactivates the nose wheel steering after landing gear retraction?

P40

1- Orifice check valves in the steering
ALL cylinders.
2- Landing gear selector (control) valve and strut centering cam.
3- Mechanical lock in the steering wheel.
4- Mechanical lock on the steering control cables.

825. How should the hydraulic cooling pump be used during cruising flight?

P50

1- OFF--when No. 2 and No. 3 boost pump
L188 switches are ON.
2- COOLING--at all times that an AC hydraulic pump is ON.
3- COOLING--only when both No. 2 and No. 3 boost pump switches are OFF.
4- OFF--unless the overtemperature light comes ON and always ON before beginning descent.

826. Which condition causes illumination of the engine-driven hydraulic pump light?

P60

1- Pump switch OFF.
L382 2- Pump output pressure 2,000 PSI or below.
3- Suction boost pump switch OFF.
4- Suction boost pump output pressure 10 PSI or below.

827. What is the effect of setting the parking brake with the antiskid switch ON?

P30

1- The parking brakes will not hold.
L382 2- If the parked wheel skids on ice or snow, the brake will release.
3- The antiskid system will be deenergized.
4- Brake accumulator pressure will drop to zero.

828. Which is a feature of the nose wheel steering system?

P40

1- Steering power is available from the
L382 utility system only.
2- If the gear has been extended by auxiliary pressure, limited steering is available.
3- Power steering can be used to turn the nose wheel 78° right or left of center.
4- Shimmy damping is accomplished by the centering cam.

829. Which action operates the in-flight braking system?

P50

1- Moving the gear lever to NEUTRAL.
L188 2- Moving the gear lever to UP.
3- Depressing the brake pedals after the gear is up.
4- Pulling the parking brake lever.

830. What is an operating feature of the windshield wipers?

P50

1- Full or partial stoppage of one
DC6 blade will not interfere with operation of the other blade.
2- When hydraulic operation fails, electric operation can be used.
3- The wiper control allows the selection of: PARK, SLOW, or FAST.
4- Each blade can be operated independently by a variable speed control valve.

831. What problem is indicated if a System No. 1 low pressure annunciator light is
P60 illuminated?

L188 1- System pressure is low.
2- The reservoir in system No. 1 has low fluid supply.
3- The associated pump output pressure is low.
4- The direct current motor-driven pump has failed.

832. Which feature of the nose gear system tends to return the gear to center during a taxi turn?
P40

L188 1- Centering cam.
DC6 2- Steering accumulator pressure.
3- Castering effect.
4- Steering wheel return spring.

833. Which statement is true concerning the hydraulic system?
P50

1- The auxiliary hydraulic system can
L382 supply fluid to the emergency brake system with normal antiskid protection.
2- Normal hydraulic system operating pressure is 3,000 PSI to 3,550 PSI.
3- The suction boost pumps must be ON before starting the engines.
4- The auxiliary hydraulic system can supply fluid for emergency flap extension in flight.

834. What is the effect if the hydraulic suction boost pump is turned OFF during
P60 flight?

L382 1- The associated system will lose all pressure.
2- The reservoir will overfill and vent into the cargo compartment.
3- The associated system pressure will be lowered by 100 to 200 PSI.
4- Hydraulic fluid temperature will increase.

835. What action should be taken if System No. 1 hydraulic pressure is steady at
P60 3,000 PSI during cruising flight?

L188 1- Turn OFF both system No. 1 pumps.
2- Operate windshield wipers to absorb the excess pressure.
3- Operate the system normally unless there is an overheat indication; in that case, shut off the system.
4- Determine the faulty pump and place its switch OFF.

836. Due to engine failure, the utility hydraulic system is lost. Which airplane
P60 operating function is not available by normal, auxiliary, or manual means?
L382

1- Wing flap extension.
2- Hydraulic brakes.
3- Nose wheel steering and antiskid.
4- Flight controls hydraulic boost.

837. What is the purpose of placing the hydraulic system in the bypass (OFF) posi-
P50 tion?

DC6 1- To reduce system wear when operation of hydraulic units is not desired.
2- To reduce system pressure in event of return line leakage.
3- To bypass the engine-driven pumps in event of pump case leakage.
4- To assure adequate fluid and pressure to the flap actuators when fluid level is low.

838. Which action should be taken to place the windshield wiper blades in the parked
P50 position?

L188 1- Place the windshield wiper control knob in PARK position.
2- Operate the wiper at slow speed; quickly rotate control OFF when the blades reach PARK.
3- Turn off the No. 1B pump, the blades will spring back to PARK.
4- Place the wiper control in NEUTRAL; wind pressure will move wiper blades to PARK.

839. Which action should be taken if the utility hydraulic system pressure is high,
P60 above 3,500 PSI?

L382 1- Place both utility pump switches OFF.
2- Place the utility suction boost pump switch OFF.
3- Determine the faulty pump and place its pump switch OFF.
4- Shut down the engine after the faulty pump has been identified.

840. Which selection is desired to minimize fluid or pressure loss during a hydrau-
P60 lic system failure?

DC6 1- Flap lever--5°.
2- Landing gear lever--UP.
3- Hydraulic bypass--DOWN.
4- Emergency hydraulic pump selector valve lever--PRESSURE ACCUMULATOR.

841. Which systems may be lowered by rotating an emergency handcrank?
P60

1- All landing gear and flaps.
L382 2- Main and nose landing gear.
3- Right and left main landing gear.
4- Nose landing gear and flaps.

842. Which action should be taken if hydraulic pump No. 1A experiences a thermal
P60 trip during flight?

L188 1- Operate No. 1 system on pump No. 1 only.
2- Turn OFF pump No. 1A until it cools, then use the pump for short periods to prevent overheating.
3- Operate No. 1 system on pump No. 1B only.
4- Press the thermal reset button on pump No. 1A and use the pump as a backup for pumps Nos. 1 and 1B.

843. Which is an indication of the failure of one hydraulic pump?
P60
1- Pump low pressure light ON.
DC6 2- System pressure gauge indication LOW.
3- Reservoir fluid level LOW.
4- Reduced rate of pressure buildup during operation.

844. Which functions are not available after the loss of both AC pumps in the No. 1
P60 hydraulic system?

L188 1- Hydraulic brakes.
2- Landing gear extension.
3- Windshield wipers.
4- Flight control boost.

845. What condition is indicated if a red warning button has popped out on a hy-
P60 draulic system in-line filter?

L382 1- The filter is being bypassed.
2- The associated pump is not producing pressure.
3- The associated system pressure will be high.
4- The filter is clogged or partially clogged.

846. The accumulator in the normal brake system, when fully charged with hydraulic
P60 fluid, is capable of supplying pressure for how many brake applications?
L382
1- 0.
2- 1.
3- 2.
4- 3.

847. Which condition requires pulling the GEAR SELECTOR VALVE EMERGENCY CONTROL
P60 HANDLE located in the cabin floor?

L188 1- Loss of system No. 1 hydraulic pressure.
2- Loss of system No. 1 and system No. 2 hydraulic pressure.
3- Failure of cable system between gear lever and gear selector valve.
4- Gear selector valve jammed in UP or NEUTRAL position.

848. What method is used to lower the main landing gear if normal hydraulic pres-
P60 sure to the gear is lost?

L382 1- Use the auxiliary system hand pump.
2- Move the landing gear lever to emergency down and allow the gear to free fall.
3- Pull the emergency engaging handles and use the handcrank.
4- Press the DOWN button on the landing gear selector valve.

849. What may be the effect of not completely turning OFF the windshield wiper control
P60 knob?

L188 1- The DC operated hydraulic pump may fail to operate the stairs.
2- The wiper motor may burn up.
3- Hydraulic fluid may be lost overboard through the wiper system.
4- Flight control boost may gradually bleed off to zero.

850. What is the procedure in the event of a brake failure during taxi?
P60
1- Brake selector switch--ON, AUX hy-
L382 draulic pump--ON.
2- AUX hydraulic pump--ON, brake selector switch--EMERGENCY.
3- ATM and generator--ON, brake selector switch--EMERGENCY.
4- ATM--ON, brake selector switch--EMERGENCY.

851. What type system is used for control of ice on the wing leading edges?
Q10
1- Bleed air deicing system.
L382 2- Anti-icing using heated air from the bleed air system.
3- Electric anti-icing using the alternating current system.
4- Inflated boot-type deicing system.

852. What action should be taken to lower the landing gear if normal hydraulic pressure has been lost?

P60

L188
1- Place the landing gear lever in EMERGENCY DOWN.
2- Pull the gear selector emergency control handle in the cabin floor.
3- Turn off the hydraulic pump switches, then place the gear lever in DOWN to free fall the gear.
4- Use emergency hydraulic pressure from the DC electric pump, and lower the gear by placing the gear lever in NEUTRAL.

853. How should the nose landing gear be operated if it does not extend by the normal method?

P60

L382
1- Use the emergency handcrank.
2- Move the NLG emergency extension valve handle to EMERGENCY and pull the nose gear emergency release.
3- Place the landing gear lever DOWN and operate the electric motor-driven hydraulic pump.
4- Move the NLG emergency extension valve handle to EMERGENCY and operate either one of the auxiliary system pumps.

854. How is the passenger stairway and door actuated for evacuation from the inside in event of failure of the normal power systems?

P60

L188
1- Stairs and door both opened by handcrank.
2- Door opened by manually lifting, stair extending by manually pushing out.
3- Door opened by handcrank, stair extended by manually pushing out.
4- Stairs and door both opened by accumulator pressure and hydraulic actuators.

855. Which source is used for the anti-ice, deice system?

Q10

L188
1- Engine and airfoils--14th-stage bleed air.
2- Engine--10th-stage bleed air; airfoils--14th-stage bleed air.
3- Engine and airfoils--10th-stage bleed air.
4- Engine--14th-stage bleed air; airfoils--turbine section heat exchanger.

856. What happens if the landing gear is lowered by emergency action?

P60

L188
DC6
1- Pressure is routed to the down side of the actuator overpowering the bungee up-lock.
2- The emergency DC hydraulic pump supplies pressure to release the landing gear up-locks.
3- The rivets in the landing gear locks are sheared.
4- The landing gear up-locks are released.

857. What action must be taken before using the emergency extension wrench to manually extend the main landing gear?

P60

L382
1- Actuate the emergency engaging handles.
2- Remove the pressure sealed doors.
3- Build up pressure in the utility system.
4- Actuate the auxiliary hydraulic system pump.

858. Which action should be taken if a main gear down-latch fails to engage?

P60

DC6
1- Use full nitrogen bottle pressure for emergency gear extension.
2- Place the gear lever above NEUTRAL, then return to DOWN.
3- Use the emergency pump with the selector in ACCUMULATOR.
4- Place the gear lever in EMERGENCY position.

859. Which method is used to control ice on the wing and empennage surfaces?

Q10

DC6
1- Inflated boot-type deicing system.
2- Electrically heated rubber leading edge strips.
3- Combustion heater thermal anti-icing system.
4- Engine bleed air type anti-icing system.

860. Which is a source of heat in the engine anti-icing system?

Q20

L382
1- Compressor section hot air for the engine's own inlet guide vanes.
2- Compressor section hot air for the engine's own inlet scoop.
3- Bleed air system hot air for the engine's inlet guide vanes.
4- Bleed air system hot air for the engine's extension shaft housing.

861. How should trapped fluid pressure be relieved when the landing gear is lowered
P60 while the selector valve is jammed in the UP position?

L188
1- Place the gear selector lever in EMERGENCY DOWN.
2- Operate the flight controls or flaps.
3- Operate the nose wheel steering wheel.
4- Place all hydraulic pump switches OFF.

862. What means is used to control temperature of the wing and empennage leading
Q10 edges?

L382 1- Automatic modulation of the engine bleed valves.
2- Temperature selector control in the cockpit.
3- Automatic cycling of the wing isolation valves by thermo-switches.
4- Automatic cycling of the anti-icing shutoff valves by thermo-switches.

863. Which empennage area temperature indications are combined on one temperature
Q10 gauge?

L382 1- Right and left horizontal stabilizers.
2- Upper and lower vertical fins.
3- Right horizontal stabilizer and vertical fin base.
4- Right horizontal stabilizer and vertical fin tip.

864. What is indicated by illumination of an engine ICING light?

Q20
1- Ice is forming on the engine inlet
L188 guide vanes.
2- The engine anti-ice switch is ON but anti-icing hot air is not available.
3- Ice is forming on the engine inlet scoop.
4- Hot air has actuated thermisters in the anti-icing system.

865. What is the source of heat for the windshield defogging system?

Q40
1- Cockpit main air supply.
L188 2- Engine 14th-stage bleed air.
3- Electric heating coils.
4- Current flow through the conductive coating on the vinyl layer.

866. The electrical solenoid controls for the engine airscoop anti-icing system are
Q20 designed to

L188 1- remain (or change to) OFF if elec-
L382 trical power fails.
2- remain (or change to) ON if electrical power fails.
3- turn OFF automatically if engine bleed air loss is excessive.
4- turn ON automatically if icing conditions exist.

867. What is a feature of the alcohol deicing system?

Q20
1- Each engine has its own system and
DC6 supply tank.
2- Continuous operation is required in atmospheric conditions where visible moisture is present.
3- Alcohol is utilized to protect the carburetor air filter screen.
4- Alcohol is provided to each carburetor by a single electric motor-driven pump.

868. The purpose of the override switch on the windshield heat panel is to

Q40
1- shut off the heater in event of
L188 failure of the normal operating switch.
2- start operation in the event the heaters will not operate when the switch is turned on due to low temperature or high resistance.
3- increase the heat to the windshield during extreme icing conditions.
4- decrease the heat to the windshield in case of excess temperature.

869. Which action should be taken to start the windshield heat when very cold
Q40 (-43°C. or colder) conditions exist?

L382 1- Place the windshield heat switch in NORMAL, and cycle the cold start switch 5 seconds ON and 10 seconds OFF.
2- Place the windshield heat switch in HIGH until the system cycles OFF, then place the switch in NORMAL.
3- Place the windshield heat switch in HIGH, and cycle the cold start switch 10 seconds ON and 5 seconds OFF.
4- Place the windshield heat switch in HIGH until windshield temperature reaches 10°C., then place in NORMAL.

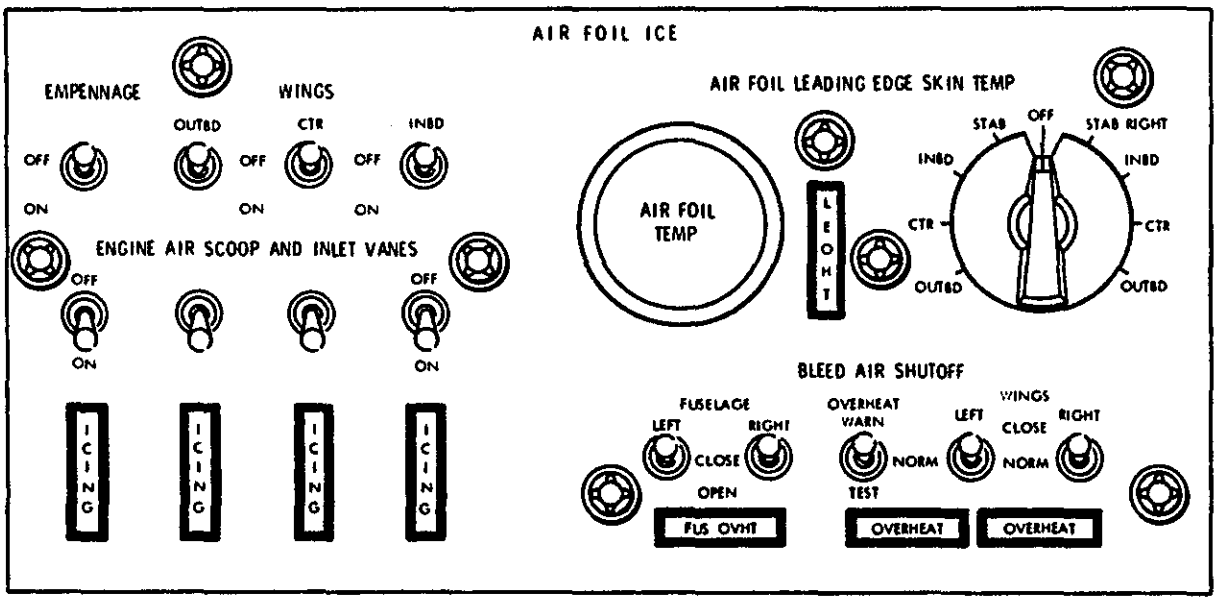


Figure 18. Airfoil Ice Controls (Typical L-188)

870. How should the pitot heat warning light be checked?

Q30

1- The light should go OUT when the
L188 heater switch is turned ON.
2- With the switch ON, pulling the pitot heat circuit breaker should put the light OUT.
3- With the switch ON, pulling the pitot heat circuit breaker should put the light ON.
4- Pressing the TEST switch should put the light ON.

871. What means is used for anti-icing of the two forward windshields?

Q40

1- Isopropyl alcohol spray.
DC6 2- Electric windshield wipers.
3- Hot air from the cabin heater or superchargers.
4- Electrostatic thermopane.

872. What is the purpose of heating cockpit windows prior to all takeoffs?

Q40

1- Heat removes moisture between the
ALL vinyl layers, thereby improving visibility.
2- The application of heat assists in making the windows shatterproof.
3- The application of heat removes the frost and ice accumulation from the windows.
4- Heat is applied prior to takeoff, because the cold window would crack if heat were applied at altitude.

873. How should the pitot heat system be used?

Q30

1- ON for all operations from takeoff
L188 to landing.
2- ON 5 minutes before takeoff at 5°C. or colder.
3- OFF for all ground operations.
4- OFF unless visible moisture is present.

874. Changing the flight deck windshield heat switch from LOW to HIGH alters the oper-
Q40 ation of the electric heating system by increasing the

L188

L382 1- voltage applied to the heating coils.
2- power applied to the conductive coating.
3- OAT at which automatic operation begins.
4- maximum window temperature.

875. How long should deicing be applied to the empennage during heavy icing con-
Q60 ditions?

L188 1- Until visual inspection shows all ice on leading edges has been melted.
2- Until leading edge temperature reaches +10°C.
3- Same period of time required to de-ice the wing leading edges.
4- Continuously until the ICING light goes out or the LEOHT light illuminates.

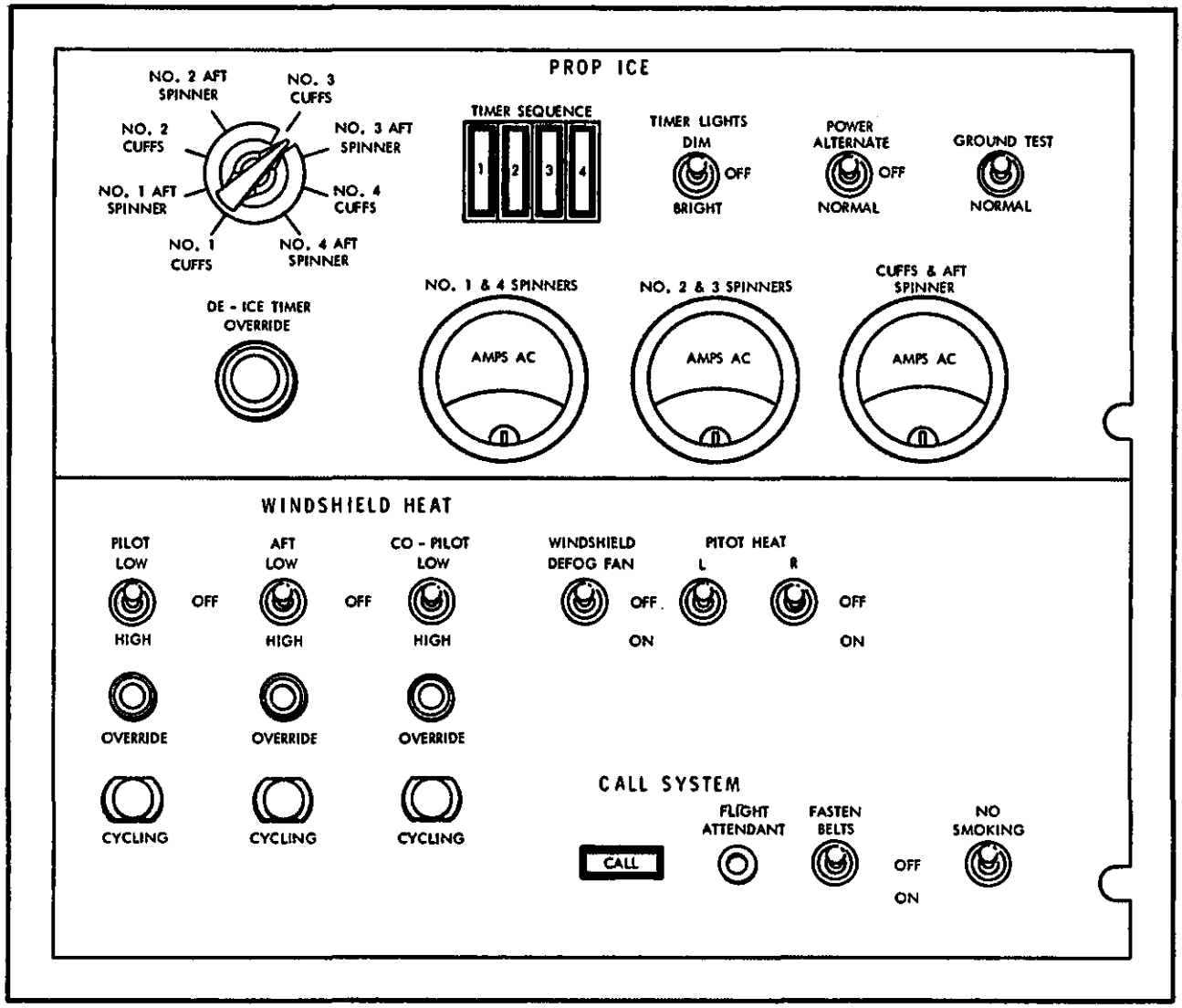


Figure 19. Ice Control Panel (Typical L-188)

876. How is the stall warning transmitter deicing system actuated?

Q30

L382

1- Automatically when DC power is available.
2- Placing the pilot's pitot heat switch ON.
3- Placing the copilot's pitot heat switch ON.
4- Placing the angle of attack transmitter heat switch ON.

877. Which is a normal indication on the windshield cycling lights?

Q40

L188

1- The three lights should flash in sequence.
2- When the switch is placed in HIGH, the light remains ON.
3- The lights come ON to indicate a failure.
4- When the override switch is pushed, the light remains ON.

878. Which is an indication that pitot heat is operating?

Q30

1- Both switches ON and the failure
L188 lights OUT.
2- An increase on the OAT gauge.
3- An increase on the anti-icing ammeters.
4- Both pitot heater lights ON.

879. What is the purpose of using windshield heat when the aircraft is not operating
Q40 in icing conditions?

ALL 1- Prevent separation of the vinyl and glass layers by inducing expansion of the vinyl.
2- Prevent glass cracking due to temperature differences between the inside and the outside.
3- Prevent the buildup of static electricity on the windshield due to friction of the outside air.
4- Increase the impact resistance quality of the vinyl layer.

880. Which action should be taken to obtain maximum heat at the windshield?

Q40

1- Place all cabin cold air outlets in
DC6 OPEN position.
2- Place the flight compartment heat control in full HOT.
3- Place the windshield heat switch in HIGH position.
4- Place the windshield heat selector in ANTI-ICING.

881. Which systems are anti-iced by electric power?

Q50

1- Windshields, props, radome, and
L188 static ports.
2- Engine inlet scoops, cockpit windows, and pitot-static probes.
3- Props, pitot heads, and windshields.
4- Radome, windshields, pitot probes, static ports, and props.

882. How should airfoil deicing be operated?

Q60 1- Wings should be deiced first, one wing at a time.
L188 2- The empennage should be deiced first.
3- All surfaces should be deiced simultaneously to reduce engine bleed time to a minimum.
4- Wings should be deiced first, one pair of sections at a time.

883. How should the pitot heat switches be used?

Q30

1- Safetied ON at all times.
L382 2- OFF for all ground operations except systems operation check.
3- ON from before takeoff check to after landing check.
4- OFF unless visible moisture is present.

884. Which is a requirement regarding the windshield heat system?

Q40

1- Should not be used when outside air
L382 temperature is above +27°C.
2- Should not be used at flight altitudes above 10,000 feet.
3- Indicated airspeed is restricted to 187 knots or less below 10,000 feet, if heat is not used.
4- Must be operating for all takeoffs.

885. Which is a feature of the radome anti-icing system?

Q50

1- The system will automatically come
L382 on with the switch in MANUAL when ice accumulates on the aircraft.
2- Ground operation of the system is not permitted.
3- Electric heating elements automatically come on if the switch is in AUTO, prop anti-ice is in AUTO, and ice is detected.
4- An overheat condition is indicated by illumination of the RADOME warning annunciator.

886. Which control actuates the radome anti-icing system?

Q50

1- Pitot heater switch.
DC6 2- Windshield heat selector switch.
3- Radome deicing switch.
4- Airfoil anti-icing heater switch.

887. How should the airfoil AI system normally be used?

Q60

1- During freezing precipitation but
DC6 not takeoff and landing.
2- ON for a sufficient time to crack off accumulated ice, then OFF until ice forms again.
3- Continuously when outside air temperature is +5°C. or less.
4- ON at least 5 minutes before entering a known icing condition.

888. Which units, in addition to pitot and static pressure ports, are heated when
Q30 the pitot heat switch is turned ON?

DC6 1- Scoop leading edges and splitters.
2- Radio antenna masts.
3- Fluid drains and flight deck windows.
4- Autopilot static air vent.

889. Which operating rule applies to the windshield heat system?
Q40

1- Heat should not be used above 10,000
L188 feet.
2- Use LOW before HIGH to prevent thermal shock.
3- Use HIGH for quick warmup, then LOW in cold weather.
4- Heat should not be used during ground operations.

890. Which systems are anti-iced by electric power?
Q50

1- Windshield, props, pitot tubes, and
L382 angle of attack transmitter.
2- Radome, windshield, props, pitot tubes, and static ports.
3- Engine inlet scoops, windshield, and pitot-static probes.
4- Radome, angle of attack transmitter, windshield, and props.

891. What happens if the left BLEED AIR SHUT-OFF WINGS switch is placed in CLOSE
Q60 position?

L188 1- Deicing air to the empennage is shut off.
2- Engines Nos. 3 and 4 bleed air can be used to deice left wing sections.
3- All engine bleed air for deicing the left wing is cut off.
4- All left wing deice modulating valves are shut off.

892. Which is a requirement for operation of the airfoil AI system on the ground?
Q60

1- Engines Nos. 2 and 4 operating.
DC6 2- Ground blower switch ON.
3- Engine No. 2 or 3 operating or an external source of ventilation air.
4- Heater fuel and ignition switch in No. 2 position.

893. Which anti-ice or deice operation is not permissible?
Q60

1- Wing and empennage deicing on the
L188 ground.
2- Engine anti-icing during takeoff.
3- Windshield anti-icing in HIGH during takeoff.
4- Engine anti-icing or wing deicing during landing approach.

894. What is an indication of normal operation when the anti-icing overheat warn-
Q60 ing switch is placed in TEST position?

L188 1- The fuselage overheat light, both wing overheat lights, and an annunciator panel light illuminate.
2- The leading edge overheat and fuselage overheat lights illuminate.
3- Four engine icing lights and the leading edge overheat lights illuminate.
4- The annunciator panel ICE CONT OVHT and the LEOHT lights illuminate.

895. When the engine inlet anti-icing system is switched ON or OFF, there should be a
Q60 positive indication on the

L382 1- tachometer.
2- pneumatic duct pressure gauge.
3- torquemeter.
4- ammeter.

896. What is indicated by illumination of the WINGS OVERHEAT light?
Q70

1- Overheat of engine bleed air inside
L188 of the wing anti-ice ducting.
2- Overheat of the air in the wing leading edge.
3- Overheat of the leading edge skin.
4- Closing and lockout of the wing anti-ice system valves due to fire.

897. Which action should be taken if the fuselage overheat warning light comes ON in
Q70 flight?

L188 1- Turn OFF the empennage deicing switch.
2- Place both WINGS switches in the OFF position.
3- Turn OFF the FUSELAGE isolation switches one at a time, to determine the source of hot air.
4- Place all engine bleed switches in OFF position.

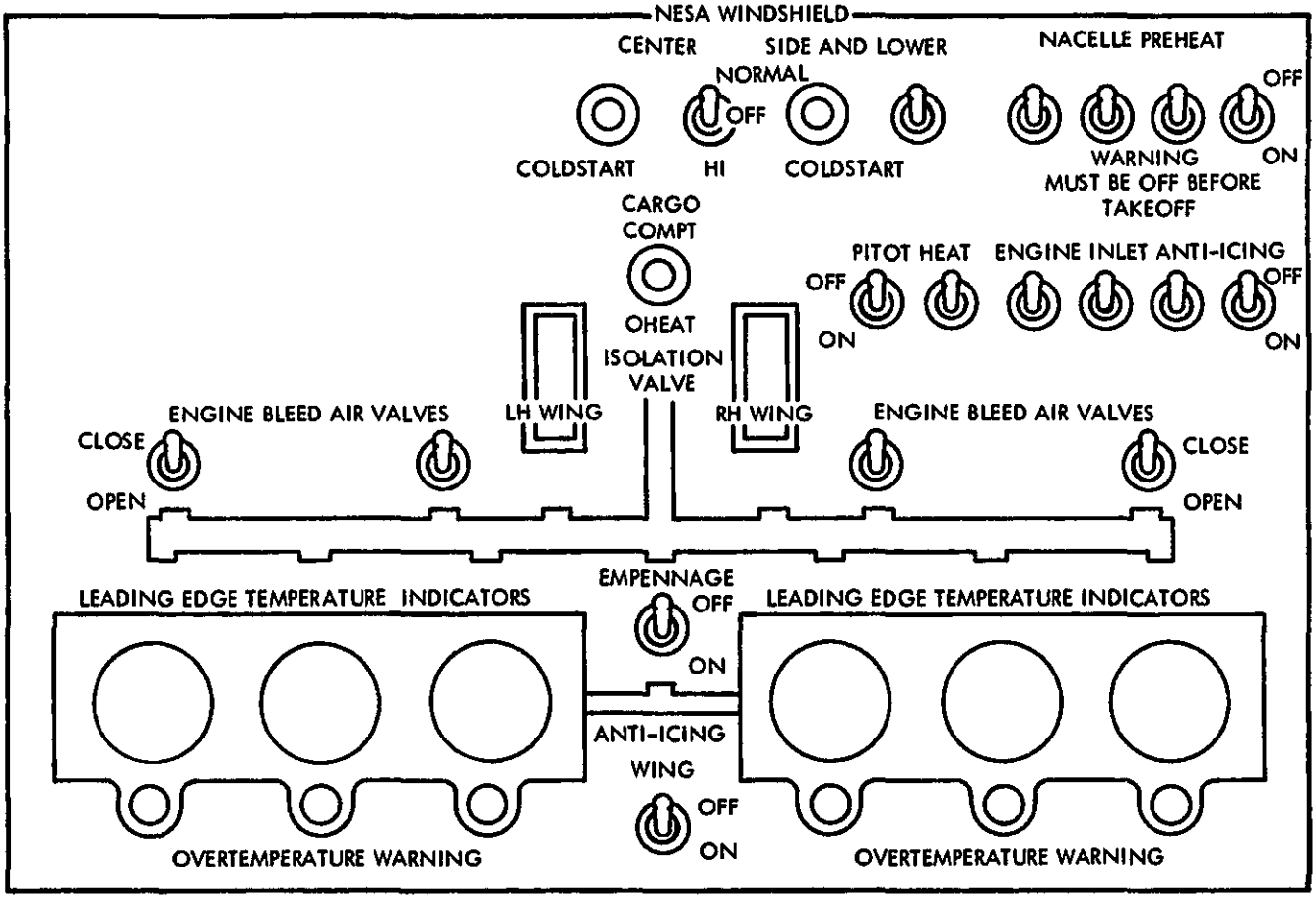


Figure 20. Ice Control Panel (Typical L-382)

898. What action should be taken if ice is forming on the windshield when the heat-
Q40 ing system is ON?

L382 1- Hold the coldstart switches ON.
2- Place the windshield heat switches in HIGH.
3- Place the defogging switch ON.
4- Actuate the windshield wipers.

899. Which condition lever(s) must be in the run position to energize the ice detec-
Q60 tor system?

L382 1- No. 1 or 4.
2- No. 2 or 3.
3- All four engines.
4- Any one engine.

900. How should the engine icing control system be used?
Q60

1- Turn on the system before entering
L188 icing conditions, and continue system operation during flight in these conditions.
2- Turn on the system only when the ICING light for the associated engine is ON.
3- Use the system only the amount required to keep engine inlet temperature at approximately +4°C.
4- Operate as an anti-icing system on all flights, from before takeoff until after landing.

901. Which is an indication of the pitot heat being turned ON?

Q30

1- An increase on the outside air temperature indicator.

DC6 2- A 6--9 amperage draw indication for each pitot-static heater.

3- The pitot heat indicator light going on.

4- A 6--9 volt momentary drop.

902. Which action is required if flight is conducted at 5,000 feet pressure altitude with windshield heat inoperative?

Q40

L188 1- Airspeed should be above 240 KIAS.

2- Cabin pressure should be reduced to ZERO differential.

3- The defogging system should be ON prior to descent.

4- Operate the windshield wipers continuously.

903. The wing and empennage anti-ice system is normally placed in the

Q60

1- HIGH HEAT position during the entire

L188 flight.

2- LOW HEAT position during the entire flight.

3- ON position periodically to remove accumulated ice.

4- HIGH HEAT position when the flight is in icing conditions.

904. Which indicators should be monitored while using the airfoil anti-icing system?

Q60

L382 1- Leading edge temperature indicators and overtemperature warning lights.

2- Airfoil temperature indicators and anti-icing ammeter.

3- Overtemperature warning lights and cycling lights.

4- Deicing ammeters, wing and empennage temperature indicators, and overtemperature warning lights.

905. What is an indication of proper operation of the airfoil AI system during flight?

Q60

DC6 1- Heater temperature 210°--260°C.

2- Fuel pressure 20--26 PSI.

3- Amber backfire light ON.

4- Airfoil heater master switch positioned ON and green light illuminated.

906. Which use should be made of engine bleed air when operating the airfoil deicing system?

Q60

L188 1- Use bleed air only from the two engines on the same side as the wing being deiced.

2- Engine bleed air use should be reduced to a minimum during deicing to prevent too great an engine power loss.

3- Use bleed air from all four engines if they are operating.

4- Crossbleed air from either one of the inboard engines as required.

907. How should the airfoil deicing system be checked on the ground with the engines running?

Q60

L188 1- Operate the airfoil deicing sections one at a time, and check for a temperature rise on the temperature gauge.

2- Close all engine bleed valve switches, then observe variations in ammeter indications as airfoil deice switches are placed ON then OFF.

3- Open one engine bleed valve, then briefly place all airfoil deice switches on at once, and observe the power loss on the selected engine.

4- Pressurize the manifold, then close all bleed valves; observe a rapid manifold pressure drop as selected deicing switches are placed ON.

908. What happens to the engine when bleed air is used for anti-icing?

Q60

1- An increase of TIT.

L188 2- A decrease of fuel flow.

3- An increase of fuel flow.

4- An increase of engine oil temperature.

909. Which selection should be made for the airfoil anti-icing system during a take-off in freezing rain?

Q60

L188 1- System should be ON to prevent pos-

L382 sible freezing of flap retraction mechanism.

2- System should be ON to prevent loss of lift due to frost formation.

3- System should be OFF to prevent engine horsepower loss.

4- System should be OFF to prevent reduction of heated air available to the engine anti-icing system.

910. How is the airfoil anti-icing system normally operated during icing con-
Q60 ditions?

L382 1- Wing and tail systems turned on periodically to remove accumulated ice.
2- Wing and tail systems turned on alternately to prevent shedded wing ice damaging tail surfaces.
3- Wing system on after ice accumulates; tail system on continuously to prevent ice accumulation.
4- Wing and tail systems continuously on during flight.

911. What restriction is placed on the use of the leading edge anti-icing system dur-
Q60 ing ground operation?

L382 1- Do not turn ON the anti-icing system on the ground.
2- Limit ground testing to no more than 30 seconds.
3- Wing anti-icing can be tested on the ground but the empennage system cannot be tested.
4- During icing conditions the system should be placed ON only while the airplane is taxiing.

912. What should be done in the event that a wing overheat warning indication occurs?
Q70
1- The cooling system for that wing
L188 should be activated.
2- The fire extinguishing system should be discharged into the nacelles on that side of the aircraft.
3- The anti-icing system in that wing should be shut off.
4. The bleed air systems of both engines on that side of the aircraft should be opened.

913. Which method should be used to verify the opening of engine anti-ice valves if
Q70 the indicator light fails to illuminate?

L188 1- Cross-check the HP indicator with other HP indicators.
2- Check for appropriate reading on the manifold pressure gauge.
3- Turn the associated anti-ice switch OFF and back ON, and observe HP and FF indications.
4- Select the appropriate engine, and observe the temperature gauge changes when the associated switch is turned OFF and ON.

914. Which is the normal fuel source for the airfoil heaters?
Q60
1- All heaters from No. 3 Main.
DC6 2- Left wing heater No. 2 Main; right wing and tail heaters No. 3 Main.
3- All heaters from No. 2 Main.
4- Right wing heater No. 3 Main; left wing and tail heaters No. 2 Main.

915. How should the engine nose cowl ice control system be used?
Q60
1- As an anti-icing system to prevent
L188 excessive water ingestion.
L382 2- As an anti-icing system to prevent compressor damage from ice.
3- As a deicing system to reduce engine power losses.
4- As a deicing system to reduce the electrical power load.

916. When should the carburetor alcohol system be used?
Q60
1- When there is an unexplained de-
DC6 crease of manifold pressure.
2- Before entering known icing conditions.
3- When carburetor heat is unable to remove or prevent ice formation.
4- Only if the application of carburetor heat causes an excessive BMEP drop.

917. How can engine anti-icing (AI) system hot air be immediately obtained?
Q60
1- Prop and engine AI master--MANUAL;
L382 engine inlet AI switch--AUTO.
2- Prop and engine AI master--MANUAL; engine inlet AI switch--ON.
3- Engine inlet AI switch--ON; engine bleed air switch--ON.
4- Prop and engine AI master--AUTO; engine inlet AI switch--AUTO; engine bleed air switch--ON.

918. What is indicated by illumination of a leading edge overtemperature warning
Q70 light?

L382 1- Overheat of the bleed air inside the anti-icing duct.
2- Smoke or fire in the particular leading edge segment.
3- Overheat of the leading edge skin.
4- Hot air leaking from an anti-icing duct in the wing.

919. Which action should be taken to extinguish the ice detector NO ICE light?

Q60

1- Place the engine inlet AI switch to
L382 OFF.
2- Place the prop and engine AI master switch to AUTO.
3- Place the prop and engine AI master switch to RESET.
4- Place the engine inlet AI switch to ON.

920. What action should be taken if the right wing area OVERHEAT warning light comes
Q70 on?

L188 1- Turn off the right wing OUTBD, CTR, and INBD deicing control switches.
2- Turn off the bleed switches for engines Nos. 3 and 4.
3- Turn off engine anti-ice for engines Nos. 3 and 4, and the right fuselage switch.
4- Turn off the right WING'S switch and, as a double-check, the right fuselage switch, and engines Nos. 3 and 4 bleed switches.

921. Which action should be taken if the tail anti-icing temperature gauge indicates
Q70 normal operating temperature, but the associated fuel pressure gauge indicates
DC6 zero?

1- Place the airfoil heater master switch OFF.
2- Continue anti-icing operation; monitor temperature.
3- Place the alternate fuel and ignition switch ON.
4- Place the cabin heater master switch OFF.

922. Which inputs are recorded on the voice recorder?

R50

1- Captain, first officer, and flight
ALL engineer audio panels; and cockpit area microphone.
2- Both pilot microphones, ATC communications, all general flight deck conversation, and flight attendant handsets.
3- All flight deck crewmember audio panels and passenger address (PA) microphones.
4- Captain, first officer, and flight engineer microphones; passenger address (PA) handset; and flight attendant handsets.

923. Which condition is required for proper operation of the ice detection system?

Q60

1- Prop and engine anti-ice master
L382 switch--RESET.
2- Ice accumulation at the stall warning system transmitter.
3- Prop or engine inlet anti-icing switches--AUTO.
4- Engine No. 2 or engine No. 3 operating.

924. What should be done if the leading edge overheat warning light comes ON?

Q70

1- Turn off the deicing switch associ-
L188 ated with the particular overheat light.
2- Place both WINGS switches in the OFF position.
3- Turn off empennage and all wings deicing control switches; check temperature gauge to locate overheated section.
4- Discontinue all deicing by placing all four engine bleed switches in the OFF position.

925. Which action can be taken to maintain wing deicing while preventing bleed air
Q70 entering the pressurized area?

L188 1- Close both fuselage switches.
2- Close both wings switches.
3- Place the empennage anti-icing switch OFF.
4- Place the engine anti-icing switches OFF.

926. If arcing of the pilot's windshield requires removal of all heat, the normal
Q70 operating procedure is to

L188 1- reduce cabin pressure to 5 PSI.
2- limit airspeed to 240K below 10,000 feet.
3- limit airspeed to 240K at all altitudes.
4- return heat to windshield when descending through 10,000 feet.

927. Which system provides for communication between the flight deck and external
R30 ground personnel?

ALL 1- Service interphone system.
2- PA system.
3- Selective calling system (SELCAL).
4- VHF communication system.

928. Which action should be taken if the right outboard leading edge overheat
Q70 light remains ON and temperature gauge remains hot after the wing anti-icing
L382 switch has been turned OFF?

1- Close both wing isolation valves.
2- Place the right wing isolation valve and No. 4 engine bleed valve OFF.
3- Close the empennage anti-icing valve.
4- Place the right wing isolation valve and Nos. 3 and 4 engine bleed valves OFF.

929. What procedure must be followed if both the inner and outer panes of the wind-
Q70 shield crack during flight?

L382 1- The cabin differential pressure must be reduced to 10 inches of mercury or less.
2- The cabin differential pressure must be reduced to zero.
3- The cabin altitude must be reduced to sea level.
4- An emergency descent and immediate landing must be accomplished.

930. What action can be taken to operate the airfoil anti-icing system manually if
Q70 the temperature remains above limits during automatic operation?
DC6

1- Turn the heater master switch ON and OFF as required.
2- Manually turn the fuel and ignition switch ON and OFF as required.
3- Select cabin supercharger air and place the heater switches OFF.
4- Move the airfoil anti-icing temperature selector to a cooler position.

931. Which radar mode selection is used to monitor heavy storm areas?
R20

1- TEST.
ALL 2- CONTOUR.
3- MAP.
4- STANDBY.

932. Which system provides a warning when the airplane has an altitude loss after
R60 takeoff before reaching 700 feet AGL?

L188 1- Altitude alert system.
L382 2- Radio altimeter.
3- Ground proximity warning system.
4- Instrument comparator warning system.

933. What is the effect of the loss of essential DC power on engine anti-icing?
Q70

1- Engine anti-icing is turned ON.
L188 2- Engine anti-icing is turned OFF.
3- Engine anti-icing valves position will remain the same as before the power failure.
4- Engine anti-icing valves are controlled by a thermister to open or close, depending on existing OAT.

934. Which action should be taken after turning the master switch OFF in event of
Q70 airfoil heater backfiring?

DC6 1- Do not attempt to operate the system during flight.
2- Place the master switch back ON after temperature drops below the red line on the gauge.
3- Select the alternate fuel and ignition, then place the master switch ON.
4- Replace the heater fuses, then place the master switch ON.

935. Which positions of the weather radar mode selector are safe to use during re-
R20 fueling or in congested ramp areas?

ALL 1- TEST or STANDBY.
2- STANDBY or CONTOUR.
3- STANDBY, NORMAL, or TEST with antenna tilt 15° DOWN.
4- NORMAL, CONTOUR, or MAP with antenna tilt 15° UP.

936. When can you erase the voice recorder tape?
R50

1- Any time DC power is available.
ALL 2- When the airplane is parked with external power ON.
3- Only when the emergency AC bus is powered.
4- Only after the parking brake is set and controls are locked.

937. Which flight condition causes the ground proximity warning system to provide
R60 aural and visual warnings?

L188 1- Off the localizer on an ILS approach.
L382 2- Descent below the minimum descent altitude (MDA).
3- Airplane attitude approaching a stall.
4- Low on the glide slope.

938. The radar is required for entry into instrument conditions in 5 minutes; where
R20 should the radar mode selector be positioned?
ALL

1- MAP.
2- OFF.
3- STANDBY.
4- WARMUP.

939. Which is a feature of the public address (PA) system?
R40

1- The crewmember interphone system
ALL must be ON for PA operation.
2- The flight deck microphone has priority over the stewardess microphone.
3- One speaker is located in the nose wheel well.
4- A microphone jack is located in the main wheel well.

940. Which is a feature of the cockpit voice recorder?
R50

1- The airplane must be on the ground
ALL to completely erase the tape.
2- The last 1 hour of recording is retained on the tape.
3- The tape automatically erases when external electrical power is connected to the airplane system.
4- To test the recorder, press the monitor button and listen to the recording for 5 seconds.

941. The flight compartment voice recorder system
R50

1- automatically erases upon landing
L188 when the nose gear is compressed.
L382 2- retains the total flight recording up to 6 hours.
3- retains only the last 1/2 hour of recording.
4- may be erased in flight by depressing the erase switch for 7 seconds.

942. What is a feature of the engine bleed air valves?
S10

1- Electric motor-operated valves.
L382 2- Allow airflow only from engine to pneumatic system.
3- Allow airflow only from pneumatic system to engine.
4- Pressure actuated, solenoid controlled valves.

943. Which is a feature of the cockpit voice recorder?
R50

1- The tape can be erased at any time
ALL by using the test switch.
2- Recorded voices can be checked for volume and tone by activating the test switch before takeoff.
3- The tape should be removed at the end of each flight and a clean tape installed during the following preflight.
4- Full contents of the tape can be deleted only on the ground by using the erase switch.

944. What type signal indicates satisfactory operation of the voice recorder when the
R50 test button is depressed during the cockpit preflight inspection?
ALL

1- Slow (6 per min.) BEEP tone in the interphone headset.
2- Steady audio tone in the loud speaker.
3- Audio playback of voice pickup from the previous flight.
4- Meter reading in the acceptable range.

945. Which sources may supply the bleed air (pneumatic) system?
S10

1- Engine compressor, gas turbine com-
L382 pressor, or external pressure source.
2- Engine 14th-stage bleed manifold and the GTC only.
3- Engine 14th-stage bleed manifold and the ATM only.
4- Engine turbine stage, external pressure source, or APU compressor.

946. How are the wing bleed air isolation valves operated?
S40

1- Opened and closed manually.
L382 2- Opened and closed electromechanically.
3- Opened electromechanically.
4- Opened manually.

947. Which factor has the effect of decreasing takeoff BMEP when rated takeoff MAP
T10 and RPM are applied?

DC6 1- Use of low blower.
2- Use of water injection (ADI).
3- Dry air.
4- High humidity.

948. Which statement is true regarding the flight compartment voice recording
R50 system?

ALL 1- Voice recording is NOT interrupted during the test sequence of the recorder.
2- Voice recording is interrupted during the test sequence of the recorder.
3- The tape can be erased any time the nose gear shock strut is extended.
4- The last 1/2 hour of recording can be erased when the gear is retracted.

949. Which units or systems operate on heat from the bleed air (pneumatic) system?
S40
1- Leading edge anti-icing and engine
L382 starters.
2- Refrigeration units and radome anti-icing system.
3- Engine scoop anti-icing and empennage anti-icing.
4- Cockpit heat system and propeller anti-icing system.

950. What is indicated if bleed pressure does not drop during a bleed pressure decay
S50 check?

L382 1- Engine bleed pressure is too high.
2- Wing bleed air isolation valve is leaking.
3- Engine bleed air valve is leaking.
4- Air is trapped between the two wing bleed air isolation valves.

951. Which part(s) of the bleed air (pneumatic) system are operated when a fire
S50 emergency handle is pulled?

L382 1- Wing anti-icing valves and wing bleed air isolation valve.
2- Engine air inlet scoop anti-icing valve only.
3- Engine bleed air valve and wing bleed air isolation valve.
4- Engine bleed air valves only.

952. What is the piston displacement of an 18 cylinder engine with a bore of 5.75
T10 inches and a stroke of 6.00 inches?

DC6 1- 2,804 cubic inches.
2- 621 cubic inches.
3- 3,070 cubic inches.
4- 2,798 cubic inches.

953. What will be the effect of a decrease in air density with a fixed throttle set-
T10 ting above 65° coordinator setting at a constant RPM?
L188
L382 1- Increase of mass airflow through the engine.
2- Decrease of mass airflow through the engine.
3- Increase of fuel flow.
4- Decrease of turbine inlet temperature.

954. How will engine performance be affected if constant RPM and constant MAP are
T10 maintained in a climb from sea level to critical altitude?
DC6
1- Brake horsepower will gradually decrease.
2- Brake horsepower will gradually increase.
3- Throttle position remains fixed.
4- Throttle position will be gradually closed.

955. Which function or system is controlled by the 5th- and 10th- stage compressor
T10 air bleed valves?

L188 1- Engine bleed air to the anti-icing
L382 system.
2- Engine bleed air to the starting system.
3- Compressor unloading during starting and low RPM operations.
4- Compressor air for cabin pressurization.

956. What is a definition of BMEP?

T10 1- The torque delivered to the pro-
peller reduction gearing at maximum
DC6 rated RPM.
2- The portion of combustion chamber pressure that produces useful power at the propeller shaft.
3- The total average pressure produced in the combustion chamber.
4- Indicated horsepower less friction horsepower.

957. Which operating range is associated with the power lever range from flight idle
T10 to maximum reverse?

L188 1- Flight idle range.
L382 2- Taxi or BETA range.
3- Pitch change range.
4- Temperature controlling range.

958. What undesirable condition can be caused by the use of bleed air for engine air-
T10 scoop anti-icing?

L188 1- Reduction of turbine inlet tempera-
L382 ture.
2- Reduction of cabin compressor inlet pressure.
3- Reduction of cabin temperature.
4- Reduction of shaft horsepower.

959. If the temperature is below standard, how does density altitude (DA) compare to
T10 pressure altitude (PA), and what is the effect on the turboprop engine?

L188
L382 1- DA is lower than PA and power or thrust is less than that expected at standard temperature.
2- DA is higher than PA and power or thrust is greater than that expected at standard temperature.
3- DA is higher than PA and power or thrust is less than that expected at standard temperature.
4- DA is lower than PA and power or thrust is greater than that expected at standard temperature.

960. What use is made of the final compressor stage bleed air?

T10
1- Anti-icing of the inlet guide vanes.
L188 2- Anti-icing of the wing leading edges
L382 and deicing of the inlet guide vanes.
3- Unloading the compressor during starting.
4- Air-conditioning hot air.

961. How are the cylinders identified on the R-2800 engine?

T10
1- No. 1 cylinder is at the top front
DC6 row.
2- No. 10 cylinder is at the bottom front row.
3- Master rods are located in cylinders Nos. 1 and 9.
4- Cylinders Nos. 1 through 9 are located in the rear row.

962. Which is directly controlled by movement of the power lever (throttle) during
T10 taxi operations?

L188 1- Propeller blade angle.
L382 2- Fuel pump pressure.
3- Turbine temperature limit.
4- Compressor RPM.

963. What is the effect of changes in ambient air density and temperature on turboprop
T10 engines?

L188 1- The thrust decreases as the tempera-
L382 ture increases.
2- The thrust increases as the temperature increases.
3- Airflow volume through the engine decreases as air density increases.
4- Airflow volume through the engine increases as air density decreases.

964. Which components unload the engine compressor during starting?

T10
1- 5th- and 10th-stage air bleed valves.
L188 2- 5th-stage air bleed valves.
L382 3- 5th- and 14th-stage air bleed valves.
4- 14th-stage air bleed valves.

965. Which formula indicates the power output (neglecting propeller losses) of a tur-
T10 boprop engine?

L188 1- Shaft horsepower + jet thrust
L382 (lbs.) = total horsepower.
2- Shaft horsepower + jet horsepower = total equivalent shaft horsepower.
3- Equivalent shaft horsepower + jet horsepower = shaft horsepower.
4- Equivalent shaft horsepower + jet thrust (lbs.) = shaft horsepower.

966. An engine has a .575:1 propeller reduction gear ratio and a three bladed pro-
T10 peller. During a starting attempt the crew allows 18 blades to rotate past a
DC6 particular point before turning on the ignition. How many revolutions of the crankshaft have taken place during this time?

1- Six revolutions and a partial revolution.
2- Ten revolutions and a partial revolution.
3- Eight revolutions.
4- Three revolutions and a partial revolution.

967. What is the term used to describe the range from flight idle to full reverse?

T10
1- BETA range.
L188 2- Flight idle range.
L382 3- Reverse range.
4- Pitch change range.

968. Which engine component is not actuated by oil pressure?

T10

1- Two-speed supercharger clutch.
DC6 2- Torquemeter transmitter.
3- Propeller reduction gearing.
4- Spark advance piston assembly.

969. What causes turboprop engine compressor stall?

T10

1- Insufficient fuel flow during accel-
L188 eration.
L382 2- Excessive EPR for the particular RPM.
3- Back flow of air from the combustion chambers.
4- Excessive angle of attack on the compressor blades.

970. What is the effect on cylinder head temperature when the engine is operating in
T10 a cruise mixture setting 12 BMEP below the best power mixture setting?

DC6

1- CHTs are relatively hot because the mixture burns too rapidly.
2- CHTs are relatively hot because the mixture burns too slowly.
3- CHTs are relatively cool because of excess fuel in the mixture.
4- CHTs are relatively cool because of excess air in the mixture.

971. What are the normal in-flight RPM limits?

T20 1- 94--100%.
2- 96.5--105%.
L382 3- 97--103%.
4- 98--102%.

972. Which engine instrument is not reliant upon power from the aircraft's AC or DC
T20 electrical system?

L188 1- Engine tachometer.
2- Turbine inlet temperature.
3- Engine oil temperature.
4- Exhaust gas temperature.

973. Which units provide an input to the engine coordinator?

T20

1- Throttle and temperature datum con-
L382 trol.
2- Condition lever and throttle.
3- Power lever and propeller governor.
4- Thermocouples and condition lever.

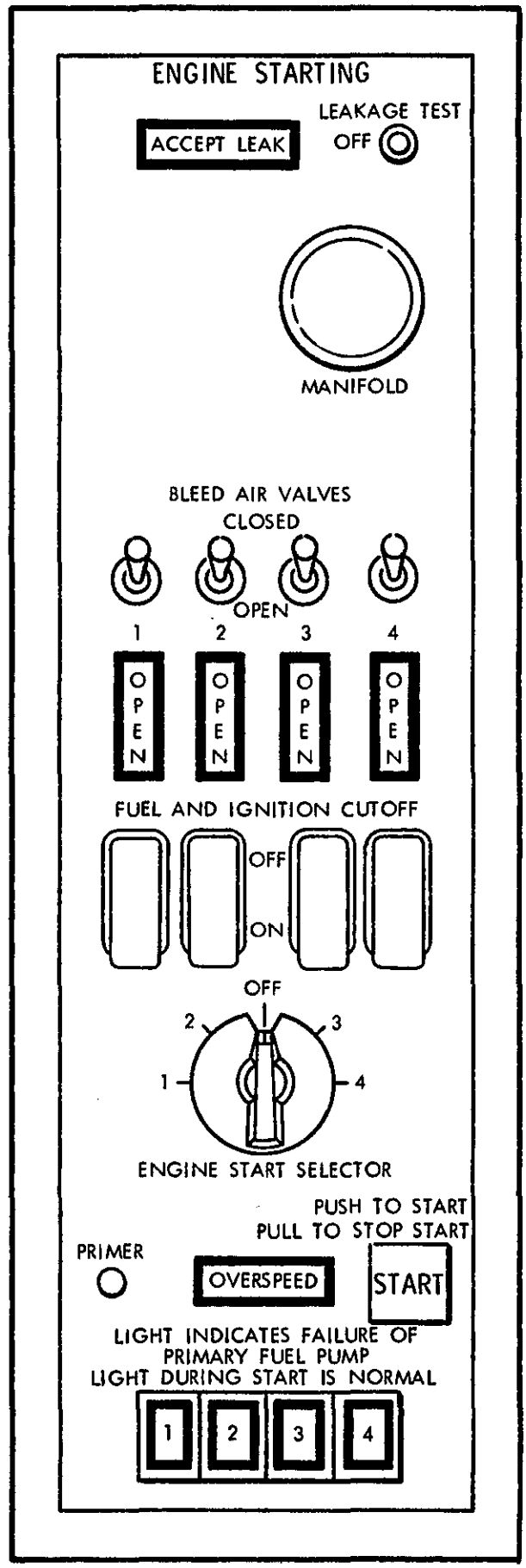


Figure 21. Engine Starting Controls (Typical L-188)

974. What is provided by the thermocouple assemblies located at the outlet of each
T20 combustion liner?

L188 1- An EGT indication to the flight deck.
L382 2- A fire warning to the flight deck.
3- A signal to the electronic fuel trimming system.
4- An indication of the thrust being produced.

975. Assume that there has been a failure of the engine instrument inverter. Select
T20 from the list below the instruments which would continue to give reliable
DC6 indications.

A. Autosyn Oil Pressure
B. Magnesyn Fuel Pressure
C. Thermocouple CHT
D. Ratiometer CAT
E. Autosyn MAP
F. Magnesyn BMEP
G. Tachometers
H. Ratiometer Oil Temperature

1- C, D, G, and H.
2- B, C, F, and H.
3- A, B, E, and F.
4- A, B, D, and G.

976. What type unit is ordinarily provided to prevent accumulations of fuel ice in the
T30 fuel control unit?

L188 1- A fuel to hydraulic fluid heat ex-
L382 changer which uses heat from the hydraulic fluid.
2- An electric immersion heater in the fuel manifold.
3- A fuel to oil heat exchanger which uses the heat from engine scavenge oil.
4- An air heater which uses bleed air from the final turbine stage.

977. When will the secondary fuel pump pressure light be illuminated?
T30

1- During engine starting (16% to 65%
L382 RPM) to indicate secondary pump failure.
2- During normal engine operation (above 65% RPM) to indicate primary pump failure.
3- Any time there is a secondary fuel pump failure.
4- Any time there is a primary fuel pump failure.

978. What is indicated by a red arc on an engine instrument?
T20

1- Precautionary range.
ALL 2- Maximum thrust range.
3- Prohibited operating range.
4- Maximum and minimum limits.

979. When does the tachometer indicate engine compressor speed?
T20

1- Only when the propeller is rotating.
L188 2- Only when the engine is coupled.
L382 3- Only when the engine is running and uncoupled.
4- When the engine is running, coupled or uncoupled.

980. Which is required for operation of the TIT engine instrument?
T20

1- Both the AC and DC electrical system.
L188 2- DC electrical system and thermocouple
L382 current.
3- AC electrical system and thermocouple current.
4- AC and DC electrical system and thermocouple current.

981. Which source is used to supply heat to the fuel heater?
T30

1- 14th-stage bleed air.
L188 2- Hydraulic fluid.
L382 3- Engine return oil.
4- 10th-stage bleed air.

982. Which type operation is available when the temperature datum control system is
T30 LOCKED?

L188 1- Temperature controlling and tempera-
L382 ture limiting.
2- Temperature limiting in LOW RPM; temperature controlling in HIGH RPM.
3- Temperature limiting but not temperature controlling.
4- Temperature controlling but not temperature limiting.

983. When does the fuel control governor start limiting RPM?
T30

1- At and above 103.5% RPM.
L382 2- During LOW speed operations.
3- When the propeller governor is LOCKED.
4- When the NTS system operates.

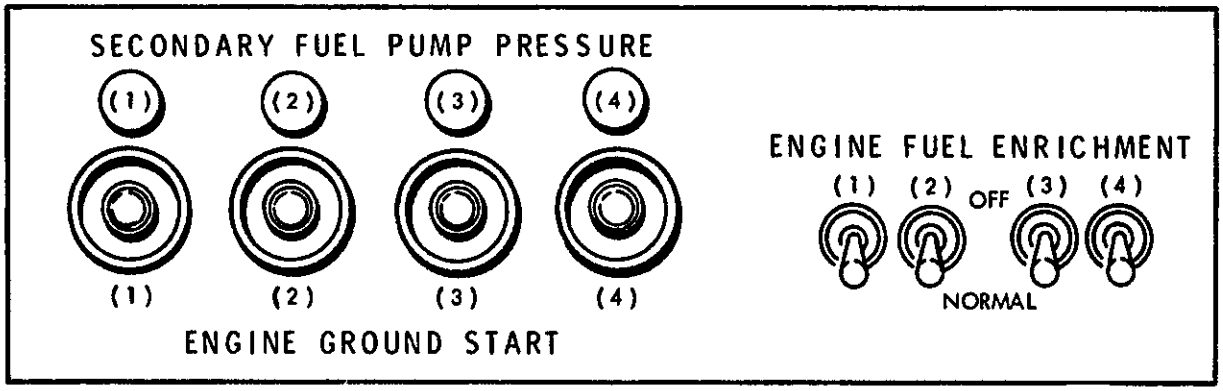


Figure 22. Engine Starting Panel (Typical L-382)

984. What does the torquemeter system measure?

T20 1- Positive thrust only.
2- Shaft power at a particular RPM.
L188 3- Propeller shaft thrust.
L382 4- Compressor section thrust.

985. What is the purpose of the manifold pressure gauge purge valves?

T20
1- To clean the pressure gauge lines of
DC6 condensation and foreign matter.
2- To relieve excess pressure that may damage the gauge.
3- To ensure ambient pressure is available to the gauge.
4- To prevent foreign matter from entering the lines when the engine is not operating.

986. What is indicated by the ADI green light being ON?

T30
1- ADI mixture is being discharged in
DC6 the engine.
2- Water/alcohol under pressure is available to the ADI regulator.
3- Fuel-air mixture has been enriched.
4- The ADI fluid supply has been depleted.

987. What is an indication of proper operation when the water injection switch is
T30 turned OFF?

DC6 1- An increase of water pressure.
2- A reduction of manifold pressure.
3- An increase of fuel flow.
4- Illumination of the water pressure warning light.

988. How are the manifold pressure gauge lines purged of condensation and
T20 foreign matter?

DC6 1- Opening the valves when the engines are idling.
2- Closing the valves when the engines are idling.
3- Opening each valve prior to engine start.
4- Opening each valve after cruise power is established.

989. Which powerplant control position will be attained in the event of a DC elec-
T20 trical system failure?

DC6 1- Spark advance--CRUISE.
2- Engine power--CRUISE.
3- Propeller governor--FULL LOW PITCH.
4- Supercharger--LOW BLOWER.

990. Where is fuel flow to the engine stopped when the engine fire emergency control
T30 handle is pulled?

L382 1- At the fuel control only.
2- At the firewall only.
3- At the fuel tank valve, fuel control, and firewall.
4- At the fuel control and firewall only.

991. When the water/alcohol mixture is injected into the engine during takeoff,
T30 what factor causes the power to increase?

DC6 1- The mixture is enriched.
2- The air density decreases.
3- The mixture is leaned.
4- The air density increases.

992. Which is the best instrument to watch for positive indication of engine anti-
T20 ice operation?

L188 1- Shaft horsepower indicator.
L382 2- Pneumatic duct pressure gauge.
3- Tachometer.
4- Turbine temperature gauge.

993. Which flow is measured by the fuel flowmeter?
T30

1- Flow from the carburetor to the in-
DC6 jection pumps.
2- All fuel flow from the fuel pump to the carburetor.
3- Flow from the carburetor to the fuel discharge nozzle.
4- Fuel and ADI flow at the fuel discharge nozzle.

994. Which is a feature of the powerplant lubrication system?
T40

1- Reduction gear box oil can be used
L188 to replenish propeller oil in an
L382 emergency.
2- The power section scavenger pump helps clear oil from the reduction gear box during nose up flight attitudes.
3- Engine oil is the source of heat which prevents icing of the fuel filter.
4- Power section oil and reduction gear box oil are not mixed in the oil tank.

995. During engine start, there must be a positive indication of engine oil pres-
T40 sure by the time the tachometer reaches which indication?
L382

1- 35% RPM.
2- 10% RPM.
3- 66% RPM.
4- 50% RPM.

996. What is an indication of proper starter operation?
T50

1- Normal indication on the aircraft
DC6 ammeters.
2- Normal indication on the voltmeter.
3- Normal indication on the prop deicing ammeter.
4- Normal indication on the pitot and scoop ammeter.

997. What does the torquemeter system measure?

T20 1- Difference between compressor inlet pressure and turbine outlet pressure.
L188 2- Axial movement of the prop shaft.
L382 3- Twist of the helical spline ring gear.
4- Twist of the extension shaft.

998. Where is the CHT measured?

T20 1- Spark plug base.
2- Exhaust pipe.
DC6 3- Cylinder cooling fins.
4- Carburetor air scoop.

999. Which medium is used to heat fuel in a heat exchanger?
T30

1- Engine pressure oil.
L188 2- Hydraulic system fluid.
L382 3- Engine scavenge oil.
4- Engine diffuser bleed air.

1000. What controls fuel flow in LOW RPM?

T30 1- Throttle position.
2- A governor in the fuel control.
L188 3- The speed sensitive valve.
L382 4- Temperature datum control.

1001. Which flight deck indications provide information for the crew regarding lub-
T40 rication system operation?

L188 A. Engine oil inlet temperature.
L382 B. Engine oil outlet temperature.
C. Gear box oil pressure.
D. Power section oil pressure.
E. Oil tank quantity.
F. Gear box oil quantity.

1- A, C, D, and E only.
2- B, C, D, and E only.
3- B, D, and F only.
4- A, B, C, D, E, and F.

1002. What is indicated when the lubrication system amber light is ON?
T40

1- Engine pump pressure is zero.
DC6 2- There is no oil in the oil tank, except that which is available for feathering.
3- Oil system pressure is 45 PSI or less.
4- Temperature of oil leaving the cooler is above 150°C.

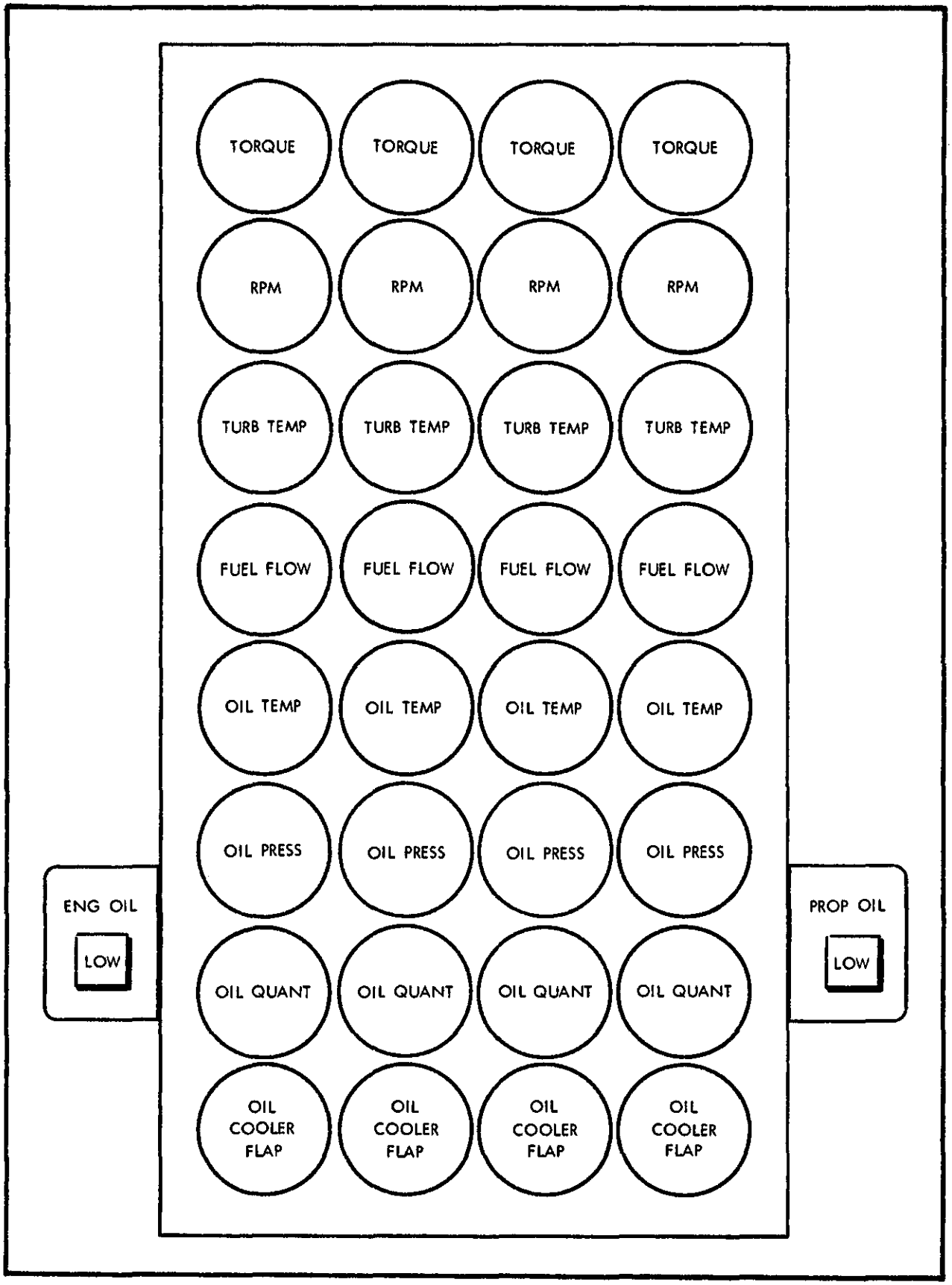


Figure 23. Engine Instrument Panel (Typical L-382)

1003. What does the engine horsepower gauge indicate?

T20

1- Power delivered to the reduction
L188 gear box.
L382 2- Power delivered to the propeller.
3- Thrust produced by the propeller.
4- Thrust produced by the propeller and the jet exhaust.

1004. During flight, movement of the thrust (power) lever has a direct control upon
T20 which factor?

L188 1- Fuel flow.
L382 2- Propeller blade angle.
3- RPM.
4- Combustion temperature limit.

1005. What is a function of the temperature datum system in automatic (NORMAL) posi-
T30 tion?

L188 1- Provide temperature limiting during
L382 BETA operation.
2- Shut off fuel when the propeller is feathered.
3- Provide temperature controlling during low speed ground idle.
4- Provide a constant fuel flow when TIT varies.

1006. What provision is provided to prevent windmilling in the event of an engine
T40 oil supply loss through a leaking oil cooler?

DC6

1- Pulling the fire selector handle will automatically feather the propeller.
2- The oil tank will still contain an oil reserve for propeller feathering.
3- A separate auxiliary oil tank provides oil for propeller feathering and reversing.
4- Engine rotation can be stopped only by a deliberate seizure procedure.

1007. What are the engine starter limits?

T50 1- 1 min. ON, 1 min. OFF, 1 min. ON, 30 min. OFF.
L382 2- 1 min. ON, 1 min. OFF, not to exceed 2 minutes operation in any 30-minute period.
3- 1 min. ON, 1 min. OFF, 1 min. ON, 1 min. OFF, 1 min. ON, 30 min. OFF.
4- 1 min. ON, 1 min. OFF, 1 min. ON, 5 min. OFF, 1 min. ON, 60 min. OFF.

1008. Which factor is used to vary engine power in flight?

T20

1- Propeller blade angle.
L188 2- Fuel flow and turbine temperature.
L382 3- Fuel-air ratio.
4- Turbine RPM.

1009. What is the function of the automatic mixture control in the carburetor?

T30

1- Increases fuel flow when air density
DC6 decreases.
2- Automatically corrects the fuel-air mixture as throttle position is changed.
3- Decreases fuel flow as altitude is increased.
4- Enrichens the mixture at takeoff power settings.

1010. Which function is performed by the lubrication system scavenge pump?

T40

1- Pump oil from the engine, through
DC6 the cooler, to the tank.
2- Provide an oil supply to the propeller feathering system.
3- Draw oil from the bottom of the tank to prevent engine-driven pump cavitation.
4- Pump oil from the sump, through the hopper, to the oil cooler.

1011. Which is an oil temperature limit?

T40 1- Maximum before takeoff--100°C.
2- Minimum for ground runup--15°C.
DC6 3- Minimum for cruise--65°C.
4- Maximum at rated powers--100°C.

1012. What is the minimum reduction gear box oil pressure in low speed ground idle?

T40

1- 130 PSI.
L382 2- 250 PSI.
3- 100 PSI.
4- 50 PSI.

1013. When is electrical ignition supplied by the igniter system?

T50

1- Only when the starter is being
L188 actuated.
L382 2- During all ground operations.
3- During starting and at any time the propeller is in the BETA range.
4- During air starts and ground starts.

1014. Which variable is used, together with BMEP, to calculate limiting brake horse-
T20 power?

DC6
1- Manifold pressure.
2- Carburetor air temperature.
3- Propeller efficiency.
4- Crankshaft RPM.

1015. What is the principle control of engine compressor RPM during normal cruising
T20 flight?

L188
L382
1- The fuel control governor.
2- The propeller governor.
3- Power lever position.
4- Ambient air temperature.

1016. What is the function of the electronic temperature datum system?
T30

L188
L382
1- To meter fuel according to compressor inlet pressure, temperature, and engine speed.
2- To deliver 100% of the required fuel flow to the fuel control.
3- To meter fuel according to actual TIT and throttle selected TIT.
4- To meter fuel as required to maintain a constant RPM.

1017. Which are features of the engine power section and propeller reduction gear box
T40 lubrication systems?

L188
L382
1- Use the same oil, oil tank, and oil cooler.
2- Have separate lubrication systems with no oil mixing.
3- Have the same oil tank but separate oil coolers.
4- Use the same oil but separate oil pumps and oil coolers.

1018. How should the primer be operated when starting an engine equipped with a PRES-
T70 SURE CARBURETOR?

DC6
1- Held ON until the engine starts with the mixture control in idle cutoff position.
2- Used to an extent determined by the OAT while cranking and turned OFF when the engine starts.
3- Held ON after the engine starts until the mixture control is moved out of the idle cutoff position.
4- Used to an extent determined by the OAT after the engine has started.

1019. Under which conditions will the oil low pressure warning light illuminate?
T40

L188
L382
1- Low pressure in the reduction gear box only.
2- Low pressure in the engine power section only.
3- Low pressure in either the gear box or the power section.
4- Low pressure in both the gear box and the power section because of the common supply and pump system.

1020. What is the maximum continuous engine oil temperature for 5 minutes during
T40 flight?

L188
L382
1- 60°C.
2- 100°C.
3- 85°C.
4- 120°C.

1021. How is starter operation terminated during normal engine starting procedures?
T50

L188
L382
1- Depletion of the air bottle supply.
2- Rotating the start selector switch to OFF.
3- Automatic cutout at a particular engine RPM.
4- Closing the engine bleed air valve.

1022. Which action is required to actuate the starter?
T50

DC6
1- Depress the starter button and hold the booster switch ON.
2- Select the engine, then hold the starter and safety switches ON.
3- Rotate the selector, place the safety switch ON, then depress the starter button.
4- Hold the starter switch ON for the selected engine.

1023. What is the probable trouble if there is a 7 BMEP drop when the ignition switch
T50 is moved from BOTH to LEFT and there is no change of BMEP when the switch is
DC6 moved from BOTH to RIGHT?

1- Right magneto ignition switch wire is grounded.
2- Left magneto ignition switch wire is open.
3- Left magneto ignition switch wire is grounded.
4- Right magneto ignition switch wire is open.

1024. Where is the oil temperature measured?

T40
L188
L382
1- Before the oil enters the oil cooler.
2- Before the oil enters the engine-driven pressure pump.
3- Before the oil enters the oil tank.
4- After the oil leaves the fuel heater.

1025. What is the maximum continuous oil temperature in reverse range?

T40
L382
1- 100°C.
2- 95°C. for a maximum of 30 minutes.
3- 60°C.
4- 85°C.

1026. Which is the minimum power required to obtain an engine ground start (aircraft not equipped with high pressure bottle)?

T50
L188
1- AC electrical power only.
2- AC electrical power and a ground pneumatic source.
3- DC electrical power and a ground pneumatic source.
4- DC electrical power only.

1027. When does the ignition system operate?

T50
L188
1- Continuously when the fuel and ignition switch is ON.
2- Any time the start selector is positioned to an engine, the fuel and ignition switch is ON, and the start button is depressed.
3- Any time the starter is operating.
4- When the fuel and ignition switch is ON and RPM is between 2200 and 9000.

1028. When is the booster ignition system to be used?

T50
DC6
1- During periods of heavy rain.
2- Starting, takeoff, approach, and landing.
3- Starting and takeoff only.
4- Starting only.

1029. Which condition causes the propeller brake to become LOCKED?

T60
L188
L382
1- Reverse rotation of the propeller.
2- Propeller RPM decreasing below 3200.
3- Use of ground idle (BETA) in flight.
4- Pulling the emergency shutdown control.

1030. During engine start, the starter button should pop out by the time the tachometer reaches which indication?

T50
L382
1- 10% RPM.
2- 35% RPM.
3- 66% RPM.
4- 90% RPM.

1031. When is electrical ignition supplied by the igniter system?

T50
L188
L382
1- When the starter button is in, or when the engine condition lever is in AIR START.
2- During ground starts and low speed ground idle operation.
3- Only when the starter is being actuated.
4- During air starts and ground starts only.

1032. Which component is contained in, or mounted on, the reduction gear box (housing) section of the engine?

T60
L188
L382
1- Single stage reduction gearing.
2- Negative torque sensing device.
3- IGV anti-icing system.
4- Bleed valve.

1033. At which position should the power lever be placed to properly adjust the propeller for starting?

T70
L188
L382
1- Minimum drag.
2- Low flight idle.
3- Maximum reverse.
4- Zero blade angle.

1034. If the airport elevation is 1,820 feet and the altimeter setting is 29.72" Hg, what should the manifold pressure gauges read before starting the engines?

T70
DC6
1- 28.44" Hg.
2- 29.72" Hg.
3- 29.92" Hg.
4- 27.90" Hg.

1035. Which of the following indicates acceptable magneto drop indications as the switch is moved from BOTH to LEFT?

T70
DC6
1- 10 to 15 BMEP.
2- 0 to 5 BMEP.
3- 25 to 75 RPM.
4- 25 to 125 RPM.

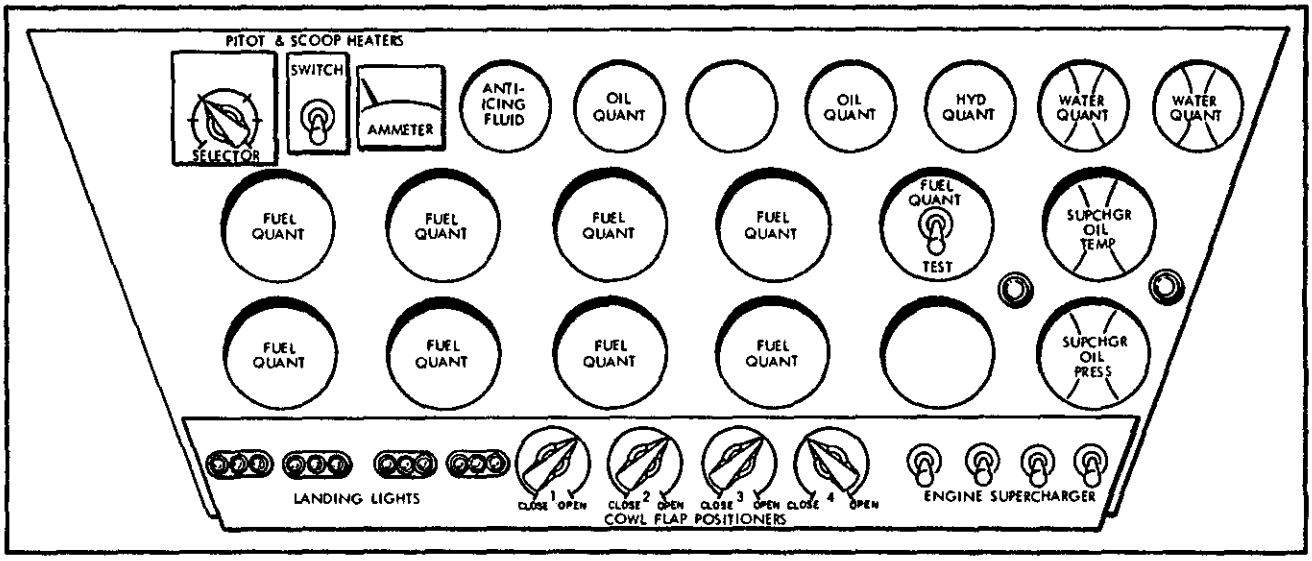


Figure 24. Upper Instrument Panel (Typical DC-6)

1036. Which spark plugs are firing when the ignition switch is moved from BOTH to
T50 LEFT position?

DC6
1- Front plugs of both banks.
2- Rear plugs of both banks.
3- Both plugs of the front bank.
4- Both plugs of the rear bank.

1037. Which is a feature of the propeller brake?
T60

1- Held disengaged by oil pressure.
L188 2- Provides a brake for normal rotation
L382 but not reverse.
3- Always engaged below 23% RPM.
4- Prevents a decrease of propeller blade angle.

1038. The reduction gear ratio is 13.54:1 and the propeller RPM is 998. What is the
T60 compressor RPM?

L188 1- 65,824 RPM.
L382 2- 6,756 RPM.
3- 15,005 RPM.
4- 13,513 RPM.

1039. How should the engine controls be set to adjust the propeller blade angle for an
T70 engine start on the ground?

L382
1- Condition lever--AIR START.
2- Throttle--GROUND START.
3- Condition lever--GROUND STOP.
4- Throttle--FLIGHT IDLE.

1040. When should the oil cooler inducer valve be opened?
T70

1- On the ground only.
L188 2- Any time oil temperature exceeds limits.
3- During engine starting and LOW RPM operations.
4- In flight only.

1041. When a takeoff is made under high ambient temperature conditions, which engine
T70 limit is most likely to be exceeded?

L382
1- RPM--over 102%.
2- Torque--over 19,600 in.-lbs.
3- TIT--over 977°C.
4- Oil temperature--over 100°C.

1042. The reduction gear ratio is 13.54:1 and the compressor RPM is 13,820. What is
T60 the propeller RPM?

L188 1- 1,863 RPM.
L382 2- 980 RPM.
3- 1,020 RPM.
4- 102 RPM.

1043. Before starting the engines, which instrument readings should be noted for
T70 use during the engine ground runup check procedures?
DC6

1- BMEP differences.
2- Oil inlet temperatures.
3- Static manifold pressures.
4- Differences between carburetor air temperature indications and reported OAT.

1044. Why should the engines be operated at 1000 RPM during ground operation rather
T70 than the minimum idle of 600 RPM?

DC6 1- Because the hydraulic pumps will not operate properly at 600 RPM.
2- To ensure that the generators, rather than the battery, are supplying current to the electrical system.
3- To prevent the engines from backfiring.
4- To prevent hydraulicking in the lower cylinders.

1045. When a takeoff is made under conditions which include high ambient temperature
T70 (all systems operating normally), which of the following limits is most likely
L188 to be exceeded?

1- RPM.
2- Turbine temperature.
3- Shaft horsepower.
4- Engine pressure ratio.

1046. When carburetor heat is applied while operating in high blower, which precau-
T70 tion should be followed?

DC6 1- Nacelle flaps should be put in trail to maintain a low CHT.
2- CAT should be limited to prevent detonation.
3- Carburetor deicing alcohol should be turned on to prevent overheating the carburetor.
4- MAP should be decreased to maintain constant power.

1047. During normal climb, the engines are controlled to maintain which constant
T70 factor?

L188 1- Airspeed.
L382 2- Rate of climb.
3- Horsepower (torquemeter pressure).
4- Turbine temperature.

1048. Which procedure can be used to avoid excessive master rod bearing loads during
T70 descent?

DC6 1- Adjust throttles to maintain a manifold pressure (in. Hg) of not more than RPM/100.
2- Delay shifting to auto rich mixture until the aircraft arrives at final approach altitude.
3- Delay shifting to low blower until the aircraft arrives at initial approach altitude.
4- Adjust throttles to maintain at least 1" Hg MAP for each 100 RPM.

1049. Which action should be accomplished immediately after landing?
T70

1- Change cowl flaps to wide-open posi-
DC6 tion.
2- Change cowl flaps to takeoff position.
3- Toggle the propellers to INC RPM position.
4- Toggle the propellers to DEC RPM position.

1050. What is the probable cause if the parallel light does not illuminate during a
T80 starting attempt (2700--9000 RPM)?

L188 1- Failure of the primary fuel pump.
2- Failure of the secondary fuel pump.
3- Faulty primer valve.
4- Failure of the engine-driven boost pump.

1051. What action should be taken if the manifold air pressure becomes lower than
T80 normal minimum (less than 25 PSI) before the first engine accelerates to light
L188 off speed?

1- Turn off the fuel and ignition.
2- Hold the starter button in (or starter switch on).
3- Actuate the emergency shutdown.
4- Turn off the fuel booster pump, but leave the ignition on.

1052. The reduction gear ratio is 13.54:1 and the propeller RPM is 1032. What is the
T60 compressor RPM?

L188 1- 66,368 RPM.
L382 2- 15,250 RPM.
3- 6,987 RPM.
4- 13,973 RPM.

1053. Which condition should the crew check prior to starting the engines?
T70

1- All manifold pressure gauges are
DC6 reading zero.
2- At least one inverter is ON.
3- The auxiliary power unit has been removed from the aircraft.
4- The control locks are engaged.

1054. Which condition is acceptable during low speed ground idle operation?
T70

1- ATM and ATM generator OFF.
L382 2- Engine RPM--55% to 66%.
3- Fuel pump failure warning light illuminated.
4- Low oil pressure warning light illuminated.

1055. When the OAT is conducive to carburetor icing, which procedure is recommended?
T70

1- Position carburetor heat controls to
DC6 maintain 59°F. carburetor heat during takeoff and climb.
2- Use carburetor heat during warmup, but remove heat and allow time for the automatic mixture control to stabilize prior to takeoff.
3- Maintain carburetor heat near 100°F. until takeoff power is initiated, then carburetor heat OFF.
4- Position carburetor heat controls to maintain carburetor heat near 35°F. during ground operation, takeoff, and climb until out of icing conditions.

1056. Maximum allowable takeoff BMEP and RPM are set at the start of the takeoff run.
T70 As the aircraft accelerates, the BMEP increases without further movement of
DC6 the throttle. What causes this BMEP change?

1- Increasing ram effect.
2- Operation in ground effect.
3- Improvement of propeller efficiency.
4- Propeller governor surging.

1057. What is the proper position for mixture and carburetor air controls for an en-
T70 gine start on a cold day, prior to activating the engine starter?
DC6

1- Mixture controls--IDLE CUTOFF; carburetor air controls--HOT.
2- Mixture controls--IDLE CUTOFF; carburetor air controls--COLD.
3- Mixture controls--AUTO RICH; carburetor air controls--COLD.
4- Mixture controls--AUTO RICH; carburetor air controls--HOT.

1058. Which is a correct control or switch setting for normal taxiing operation of
T70 a reciprocating engine transport airplane?
DC6

1- Spark control--ADVANCE.
2- RPM master lever control--CALIBRATE.
3- Auto-feather switch--TEST.
4- Cowl flaps--TAKEOFF.

1059. What should the flight engineer do just prior to the application of takeoff
T70 power or during the first part of the takeoff roll?
DC6

1- Assure that the nacelle flaps are wide open.
2- Turn on the carburetor alcohol system.
3- Adjust the carburetor heat controls to obtain +15°C. CAT.
4- Run the cowl flaps toward closed.

1060. What is the maximum RPM limit during start, with no indication of oil
T80 pressure?

L188 1- 2,200 RPM.
2- 9,000 RPM.
3- 5,000 RPM.
4- 13,000 RPM.

1061. During a starting attempt, if the starter does not shut off at the specified
T80 RPM, which action should the crewmember performing the start take?
L188

L382 1- Place the propeller in flat pitch to unload the starter.
2- Manually move the start switch to the OFF position.
3- Pull the emergency shutdown control.
4- Advise the ground crew to disconnect the pneumatic power source.

1062. During start, the engine should normally be on speed by what period of time?

T70

1- 60 seconds.
L382 2- 45 seconds.
3- 35 seconds.
4- 40 seconds.

1063. When runup must be conducted on slippery surfaces, do not attempt to make full
T70 power checks until the airplane is

L382 1- well clear of other aircraft.
2- lined up on the runway, ready for takeoff.
3- in the runup area.
4- rolling.

1064. The rule for adjustment of manifold pressure to compensate for nonstandard
T70 temperature conditions is:

DC6 A. Increase MAP 1% for each 6°C. CAT is above standard temperature.
B. Decrease MAP 1% for each 6°C. CAT is below standard temperature.

Your airplane is cruising at a pressure altitude of 19,000 feet with a CAT of +10°C. and a MAP of 30.0" Hg. To what setting should you adjust the MAP to compensate for temperature?

1- 30.0" Hg.
2- 28.5" Hg.
3- 31.6" Hg.
4- 31.0" Hg.

1065. At what time during descent should the engine superchargers be shifted from
T70 high to low?

DC6 1- At the lowest altitude descent power can be obtained in HIGH blower.
2- At the highest altitude descent power can be obtained in LOW blower.
3- Before starting the descent.
4- At HIGH blower critical altitude.

1066. What action should be taken by the flight engineer during the descent or landing?

T70

1- Run oil cooler flaps closed.
L188 2- Monitor and call out BETA lights ON.
L382 3- Place airfoil deice ON.
4- Check that No. 3 generator picks up the busses in LOW RPM.

1067. Which condition is required to obtain LOW SPEED operation?

T70

1- Condition lever in GROUND IDLE
L382 detent.
2- Temperature datum system in NULL.
3- Throttle position between 9° and 30°.
4- Fuel enrichment switches NORMAL.

1068. Takeoff weight and maximum landing weight should be used before takeoff to
T70 calculate which factor?

DC6 1- Elevator trim tab setting.
2- Maximum allowable BMEP settings for takeoff and for possible missed approach.
3- Fuel dumping time.
4- Zero fuel weight.

1069. Assume the engine supercharger is shifted from LOW to HIGH blower at an altitude
T70 below the recommended shift altitude. What will be the effect if the manifold
DC6 pressure is held constant?

1- An increase in BHP and an increase in charge temperature.
2- A decrease in BHP and an increase in charge temperature.
3- A decrease in BHP and a decrease in charge temperature.
4- An increase in BHP and a decrease in charge temperature.

1070. Which is a normal setting for cruising flight?

T70

1- TIT--847°C.
L188 2- RPM--13,200.
L382 3- Oil temperature--55°C.
4- Horsepower or torque--3,400 ESHP or 19,600 in.-lbs.

1071. Which actions should be taken if an engine start is discontinued because of no
T80 oil pressure?

L382 1- Close the engine bleed air switch and pull the starter button.
2- Move the condition lever to GROUND STOP and pull the starter button.
3- Pull the fire emergency control handle and close the engine bleed air switch.
4- Move the condition lever to GROUND STOP and pull the emergency shutdown handle.

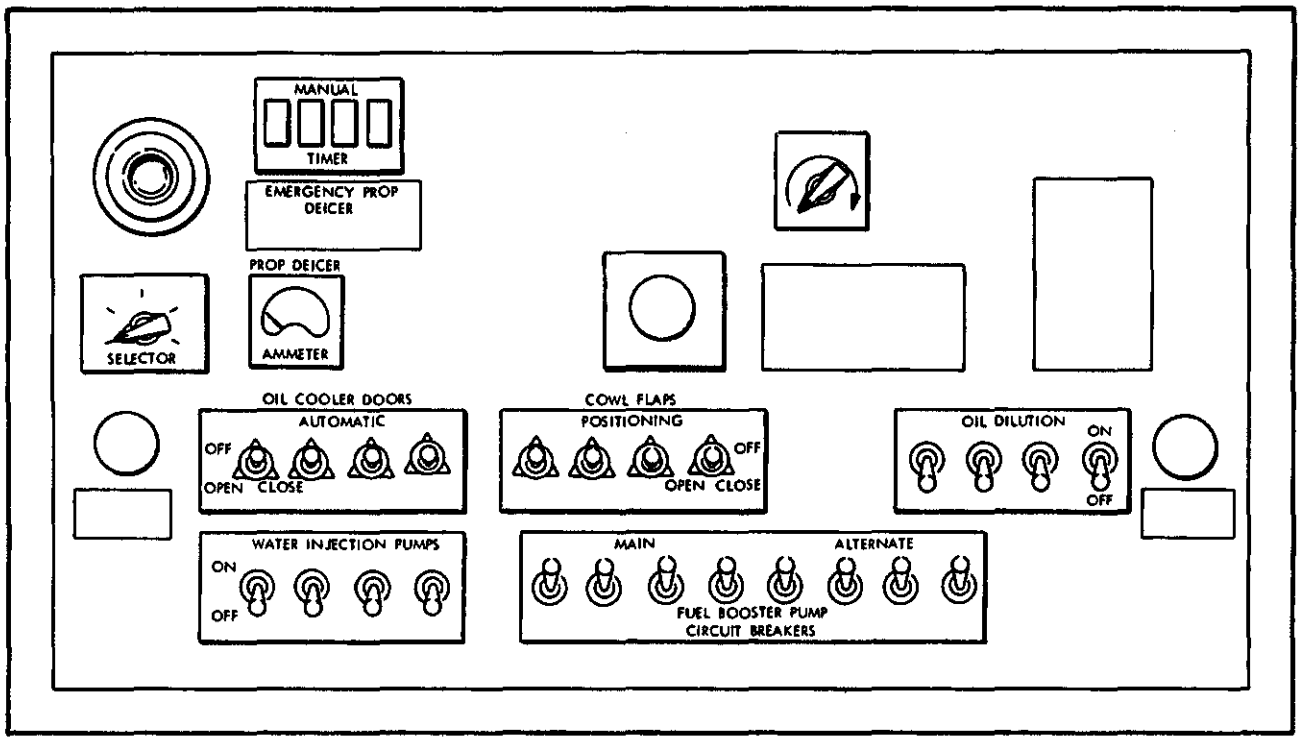


Figure 25. Aft Overhead Switch Panel (Typical DC-6)

1072. While cruising in a manual lean power setting, the pilot requests a change to
T70 a lower power setting with auto lean mixture. What is the correct sequence
DC6 of actions?

1- Decrease RPM, decrease MAP, close cowls as necessary.
2- Decrease BMEP, decrease RPM, lean the mixture.
3- Close cowl flaps, change mixture to auto lean, decrease RPM, increase BMEP.
4- Enrichen mixture, decrease MAP, decrease RPM, close cowls as necessary.

1073. Which action is advisable for the normal shutdown of an engine after flight?
T70

1- Stop the engine only after CHT is
DC6 below 200°C.
2- Close cowl flaps after rotation stops.
3- If the engine backfires during the stopping attempt, place ignition switch back ON.
4- If the engine continues to run with mixture in ICO, place the ignition switch OFF.

1074. Why should high supercharger ratio not be used during takeoff from relatively
T70 low altitude airports?

DC6 1- Detonation will occur at all power settings above maximum cruise power.
2- Engine overspeeding will result if takeoff MAP is obtained.
3- Excessive MAP will be needed to obtain takeoff BMEP.
4- Excessive BMEP will be developed at takeoff RPM and MAP.

1075. The cabin compressors are located on the outboard engines. During cruising
T70 flight, in order to obtain the same combustion pressures (IMEP) in each engine,
DC6 how should Nos. 1 and 4 engine BMEPs be adjusted?

1- The same as Nos. 2 and 3 engines by varying the manifold pressures.
2- Approximately 5 BMEPs higher than Nos. 2 and 3 engine BMEPs.
3- Approximately 5 BMEPs lower than Nos. 2 and 3 engine BMEPs.
4- The same as Nos. 2 and 3 engines by varying the RPMs.

1076. Which is an appropriate procedure if the dewpoint is high at takeoff?

T70

1- Adjust MAP upward to obtain rated
DC6 takeoff power.
2- Use a slightly lean mixture to obtain maximum takeoff BMEP.
3- Reduce takeoff BMEP setting to prevent overstressing combustion chambers.
4- Use partial carburetor heat to prevent induction air screen ice.

1077. What are normal indications when shifting from LOW blower to HIGH blower at
T70 constant throttle setting?

DC6 1- A decrease in BMEP and an increase in MAP.
2- An increase in BMEP and an increase in MAP.
3- An increase in BMEP and a decrease in MAP.
4- A decrease in BMEP and a decrease in MAP.

1078. During normal operation, how is the engine shut down?

T70

1- Stopping fuel flow at the firewall
L188 shutoff.
L382 2- Interrupting current in the ignition system.
3- Stopping fuel flow at the fuel control.
4- Stopping fuel flow at the tank valve.

1079. In the event that an engine lights-off during a start, but then the RPM stag-
T80 nates below self-sustaining speed, the crewmember performing the start should
L188 take which action?

1- Turn the primer on.
2- Turn off the fuel and ignition.
3- Disengage the starter.
4- Move the power lever to the ground idle position.

1080. What action should be taken if flames spread beyond the tailpipe during engine
T80 start?

L382 1- Place the engine condition lever to ground stop.
2- Pull the starter switch.
3- Place the engine condition lever to feather.
4- Follow the engine shutdown procedure.

1081. What action should be taken if the starter overspeed light illuminates
T80 steadily during a starting attempt?

L188 1- Shut down with the fuel and ignition switch.
2- Pull the emergency shutdown handle.
3- Pull out the start button.
4- Close the fuselage isolation valves.

1082. If the start switch is released (button pops out) before light-off occurs, which
T80 action should be taken?

L188 1- Let the engine stop rotating before
L382 attempting another start.
2- Immediately reactuate the switch.
3- Let the engine RPM drop below 10%, then reactuate the switch.
4- Let the engine stop rotating and remain stopped for at least 2 minutes before attempting another start.

1083. If the engine does not start after a reasonable amount of cranking and there
T80 is no fuel draining from the drip valves, what action should be taken?

DC6

1- Pump the throttle and move the mixture control to auto rich.
2- Stop cranking because the starter motor has inadequate cooling for continuous operation.
3- Stop cranking and clear the hydraulic lock.
4- Put the booster pump switch in high position and use the primer.

1084. During starting procedures on a twin-row radial engine, there is an indication of
T80 a hydraulic lock. How should the lock be cleared?

DC6

1- Turn the propeller backward by hand.
2- Disconnect the hydraulic pump inlet line and prime the pump.
3- Use the booster pump in the high-boost position.
4- Remove spark plugs from the lower cylinders.

1085. If in cruise flight a complete AC electrical system failure occurs, which
T80 instrument will still function?

L188 1- Engine fuel pressure.
L382 2- TIT.
3- Fuel flow.
4- RPM.

1086. Which action should be taken if there is excessive tailpipe torching during a
T80 ground start attempt?

L382
1- Place the condition lever in GROUND STOP and continue motoring with the starter.
2- Discontinue the start and use the engine fire extinguishing system.
3- Pull the fire control handle and continue motoring with the starter.
4- Advance the throttle, turn off the fuel booster pump, continue the start.

1087. What is the probable trouble when higher than normal amperage is drawn by the
T80 starter circuit during an engine start?

DC6
1- Engine resistance to turning is higher than normal.
2- The starter is turning but has not engaged to the engine.
3- The starter motor is turning faster than normal but the starter clutch is slipping.
4- There is an open in the starter motor field circuit.

1088. Assume the idle mixture is excessively rich. What will be the indication if
T80 the primer is activated while the engine is idling?

DC6
1- The RPM will decrease and the MAP will decrease.
2- The RPM will decrease and the MAP will increase.
3- The RPM will increase and the MAP will increase.
4- The RPM will increase and the MAP will decrease.

1089. During the power check the engine instruments indicate normal MAP, RPM, and fuel
T80 flow, but low BMEP, what is a possible trouble?

DC6
1- A defective torquemeter system.
2- Several dead cylinders.
3- A leaking primer.
4- A lean carburetor.

1090. What is the highest altitude at which air starts may be made?

T80
1- 30,000 feet.
L188 2- 18,000 feet.
3- 25,000 feet.
4- 20,000 feet.

1091. Which procedure applies after an unsuccessful ground start?

T80
1- Place fuel and ignition switch ON
L188 until the RPM drops to ZERO.
L382 2- Do not restart until TIT drops below 300°C.
3- Continue turning the engine until fuel drainage from the combustion chambers has ended.
4- A restart may be attempted if the TIT has not dropped below 150°C.

1092. What immediate action is recommended if a fire occurs in the induction system
T80 during an engine start?

DC6
1- Pull out affected engine CO_2 discharge handle.
2- Keep the engine turning to draw the fire through the engine.
3- Depress the propeller feathering button for the affected engine.
4- Close the throttle and pull the fire extinguisher selector valve handle for the affected engine.

1093. Assume the idle mixture is excessively lean. What will be the indication if
T80 the primer is activated while the engine is idling?

DC6
1- The RPM will increase and the MAP will increase.
2- The RPM will increase and the MAP will decrease.
3- The RPM will decrease and the MAP will increase.
4- The RPM will decrease and the MAP will decrease.

1094. What may be the result of placing the throttle below FLIGHT IDLE while in
T80 flight?

L382
1- Propeller going to feather.
2- Fuel control shutoff valve closing.
3- Engine controls binding.
4- Immediate loss of control of the airplane.

1095. Which powerplant components are most likely to be damaged if reverse pitch is
T80 used too long during the landing roll?

DC6
1- Rear spark plugs.
2- Nose section thrust bearing.
3- Cowl flap trailing edges.
4- Ignition wiring.

1096. Manifold pressure decreases when the primer is actuated during ground check
T80 of an engine which is not idling properly. When the mixture control is moved
DC6 toward idle cutoff, the manifold pressure increases. Which condition is indicated by these symptoms?

1- Idle mixture is too rich.
2- Idle mixture is correct but the primer is leaking.
3- Manifold pressure gauge line is contaminated with water or condensed fuel.
4- Idle mixture is too lean.

1097. Which of the following are indications that an engine has stopped firing during
T80 normal taxi operations?

DC6 A. Oil pressure warning light on.
B. Manifold pressure increase.
C. Fuel pressure reduced to zero.
D. BMEP increase.
E. Cylinder head temperature rapid decrease.
F. Generator dropping off bus.

1- A, B, and F.
2- A, C, E, and F.
3- B, D, and E.
4- A, B, C, D, E, and F.

1098. In the event that the power output of an engine decreases during cruising flight
T80 and induction system icing is suspected, what should be the immediate corrective
DC6 action?

1- Full rich mixture and full carburetor heat.
2- Isopropyl alcohol, full carburetor heat, and alternate fuel source.
3- Auto lean mixture, deicing alcohol, and full carburetor heat.
4- Sufficient carburetor heat to raise the CAT to no more than +5°C.

1099. Which procedure applies for an air start if the engine has been shutdown in
T80 flight for 5 minutes?

L188 1- BETA range should be selected with
L382 the power lever.
2- The pneumatic starter should be used.
3- Should be accomplished before the engine cools below 500°C. turbine inlet temperature.
4- Should be accomplished only after a suitable cooling period.

1100. RPM increases when the primer is actuated during ground check of an engine
T80 which is not idling properly. When the mixture control is moved toward idle
DC6 cutoff, the RPM decreases. Which condition is indicated by these symptoms?

1- Correct mixture, but the primer is leaking.
2- Correct mixture if the speed change is approximately 25 RPM.
3- Too rich.
4- Too lean.

1101. During the power check the engine instruments indicate normal MAP and fuel flow,
T80 but low RPM and BMEP. What is a possible trouble?
DC6

1- The propeller is set at a blade angle other than full low pitch.
2- Several dead cylinders.
3- A rich carburetor.
4- A leaking primer.

1102. What would be the probable cause and action required, if an engine began surg-
T80 ing with fluctuating fuel pressure and fuel flow during cruise?
DC6

1- A vapor lock and the fuel booster pump should be placed in LOW.
2- High fuel pressure and the fuel booster pump should be placed from HIGH to LOW position.
3- High fuel pressure and the fuel booster pump should be turned OFF.
4- Carburetor ice; place mixture control in AUTO LEAN and move the carburetor air control to FULL preheat position for 5 minutes.

1103. Which is an indication of an engine overtemperature with the TD system LOCKED
T80 above 13,000 RPM and 65% throttle?

L188 1- Temperature trim light ON.
2- Turbine inlet temperature indication drop.
3- Temperature trim light OFF.
4- High fuel flow indication.

1104. In accomplishing an engine air start, where should the power lever be placed?
T80

1- BETA range.
L188 2- Ground idle.
L382 3- Flight idle range.
4- Idle cutoff.

1105. During engine runup at local barometric manifold pressure, the engine develops
T80 excessively low RPM, BMEP, and fuel flow. What is the possible trouble?
DC6

1- Propeller low pitch stop is improperly adjusted.
2- Manifold pressure gauge is defective.
3- Engine is operating on single ignition.
4- Several cylinders are not firing.

1106. During the power check the engine instruments indicate normal MAP, low RPM and
T80 BMEP, and high fuel flow. What is a possible trouble?
DC6

1- A rich carburetor.
2- A defective manifold pressure gauge.
3- The propeller is set at a blade angle other than full low pitch.
4- Several dead cylinders.

1107. Which action should ordinarily be accomplished first if an engine fails due to
T80 fuel mismanagement during cruising flight?
DC6

1- Switch booster pumps to high position.
2- Turn on all crossfeed fuel valves.
3- Switch fuel selector to the most nearly full tank.
4- Retard the throttle.

1108. What is indicated when a fuel correction light is ON?
T80

1- TD system is in temperature control-
L188 ling range.
L382 2- An overtemperature condition only.
3- TD system is in LOCKED or NULL position.
4- An overtemperature condition or TD system in temperature limiting range.

1109. During an air start procedure, it is noted that the RPM has increased to over
T80 40% and there has been no indication of a light-off. What should be done in
L382 this event?

1- Return the condition lever to FEATHER.
2- Place ignition switch to INFLIGHT.
3- Pull the fire emergency control handle.
4- Return the throttle to FLIGHT IDLE.

1110. What action should the flightcrew take if there is evident exhaustion of the
T80 water supply during a WET takeoff?

DC6 1- Feather the propeller.
2- Move the mixture control to auto rich and turn off the ADI switch.
3- Reduce BMEP and turn off the ADI switch.
4- Move the mixture control to auto rich, then reduce MAP and RPM.

1111. An engine must be shut down because of an uncontrollable rise in turbine inlet
T80 temperature. Which action should be taken in the shutdown procedure?
L382

1- Propeller control--FEATHER.
2- Throttle--FLIGHT IDLE.
3- Engine condition lever--FEATHER.
4- Throttle--BETA RANGE.

1112. What is the most likely cause of trouble if a 28 volt DC resistance type carbu-
T80 retor air temperature gauge indicates off-scale high while other instruments
DC6 indicate normal operation?

1- A high resistance in the lead to the temperature bulb.
2- A short circuit at the firewall electrical plug.
3- The engine instrument bus circ it breaker has "popped."
4- A ground in the temperature bulb resistance element.

1113. Which condition is a requirement for an air start?
T80

1- The TIT must be below 200°C.
L382 2- The NTS system must be inoperative.
3- The throttle must be in the BETA range.
4- The engine condition lever must be held in air start until the RPM reaches 100%.

1114. What action should be taken if NTS is not indicated by 10% RPM on an air start
T80 (no light-off)?

L382 1- Place the condition lever to ground stop.
2- Place the condition lever to feather.
3- Allow the start to continue until the engine is on speed.
4- Discontinue the start with the fire emergency control handle only.

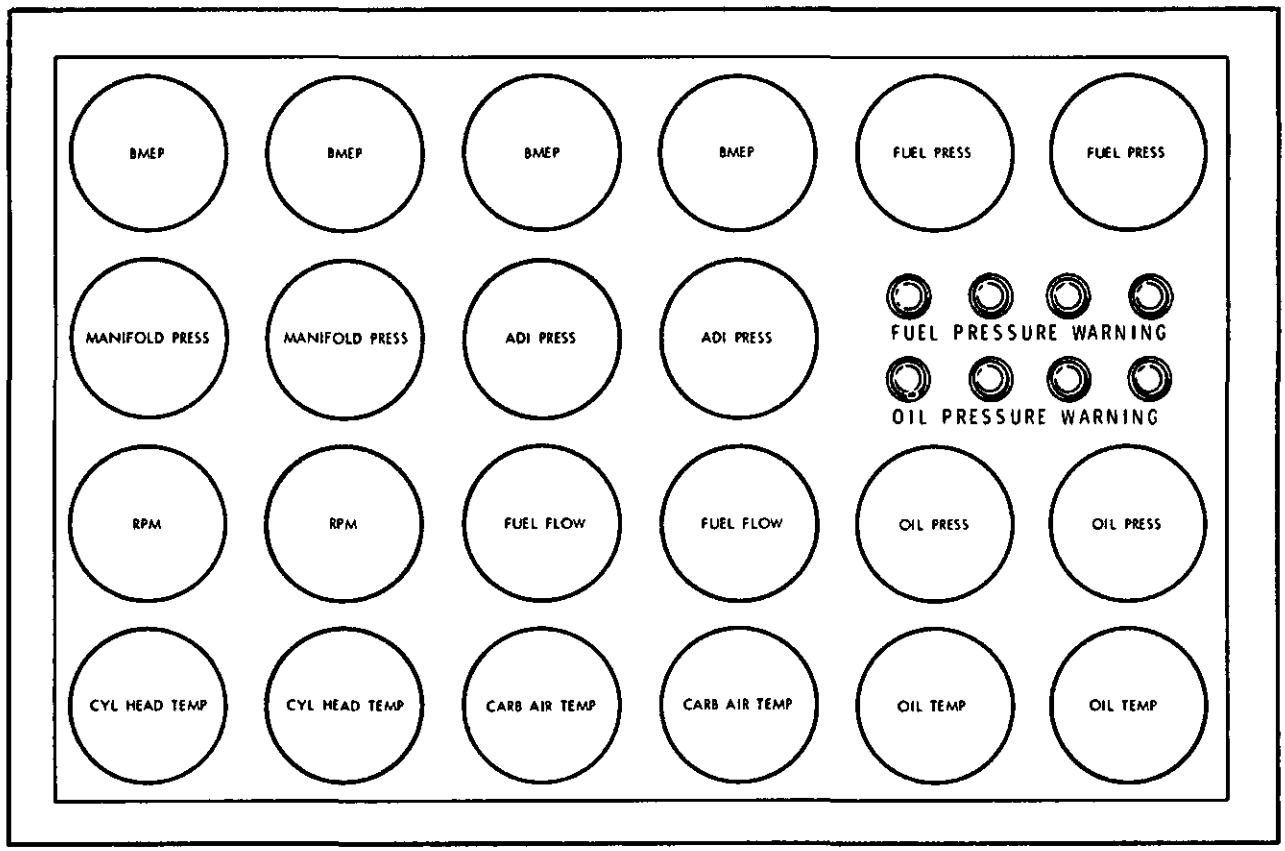


Figure 26. Center Instrument Panel (Typical DC-6)

1115. The tachometer generator for one engine is inoperative. The MEL may allow
T80 flight if RPM can be determined by other means. Which would be an accurate indi-
L188 cation of engine RPM?
L382

1- Fuel flow.
2- Turbine inlet temperature.
3- Propeller beat during synchrophase operation.
4- Generator frequency.

1116. Which is the correct position for a powerplant control immediately prior
T80 to unfeathering?

DC6 1- Propeller toggle switch to increase RPM position.
2- Throttle at cruising BMEP position.
3- Spark control to retard (takeoff) position.
4- Mixture in auto lean position.

1117. Which is the correct position for a powerplant control immediately prior to
T80 unfeathering?

DC6 1- Carburetor air in hot position.
2- Propeller toggle switch to increase RPM position.
3- Mixture in full rich position.
4- Magneto switch in the OFF position.

1118. If NTS is not indicated during an air start, and light-off has occurred, what
T80 is the correct procedure?

L382 1- Discontinue the start with the condition lever.
2- Discontinue the start with the fire emergency control handle only.
3- Allow the start to continue until the engine is on speed.
4- Follow the engine shutdown procedure immediately.

1119. During cruising flight of a four-engine airplane, which of the following are
T80 indications of an engine which is windmilling?
DC6

A. Zero MAP
B. Atmospheric MAP
C. Zero BMEP
D. Low RPM
E. Low Fuel Flow
F. Zero Fuel Flow
G. Low CHT
H. Low Oil Pressure

1- B, D, E, and H.
2- B, E, and G.
3- A, C, F, G, and H.
4- C and G.

1120. Assume that an engine has been shut down. Later, a requirement arises for the use
T80 of that engine's power. Which of the following is always correct concerning
L188 the decision of whether or not to re-
L382 start that engine?

1- Do not restart an engine that has been shut down due to fire or fire warning.
2- Do not restart if the EGT has dropped to ambient.
3- The engine may be restarted if it is windmilling within the air start range.
4- The engine may be restarted but is limited to 5 minutes' operation.

1121. When should light-off occur during an air start?
T80

1- Approximately 40% RPM.
L382 2- 30% RPM.
3- 35% RPM.
4- 10% RPM.

1122. In the event of an engine failure between V_1 and V_2 speeds, where should
T90 the power lever (throttle) of the failed engine be placed?
L188
L382 1- In cutoff position immediately.
2- In BETA range position.
3- In flight idle.
4- At takeoff position.

1123. Which action should be taken after engine rotation is stopped during an engine
T90 shutdown in flight?

DC6 1- Cowl flaps--TRAIL.
2- Fire extinguisher selector--FULL IN.
3- Crossfeed selectors--ON.
4- Prop toggle switch--FULL DEC RPM.

1124. What would be an early indication of oil congealed in the cooler cores?
T80

1- High oil temperature and low oil
DC6 pressure.
2- High oil temperature and high oil pressure.
3- Low oil temperature and low oil pressure.
4- Low oil temperature and high oil pressure.

1125. How should engine lubrication be re-established if all attempts to stop
T80 rotation of a feathered propeller fail and there is no indication of a fire?
L382

1- Oil cooler flap switch--OPEN.
2- Condition lever--AIR START.
3- Oil firewall shutoff valve switch--OPEN.
4- Fire emergency control handle--RESET.

1126. If a low speed ground idle button is popped out by throttle movement, what
T80 action is required?

L382 1- Leave the throttle at that position until RPM stabilizes on speed.
2- Reset the low speed ground idle button.
3- Return the throttle to ground idle.
4- Move the condition lever to GROUND STOP.

1127. Which procedure is used in the event of failure of one engine on takeoff before
T90 reaching V_1 speed?

L382 1- Throttles--GROUND IDLE.
2- Fire emergency control handle--PULL.
3- Engine condition lever--FEATHER.
4- Throttles--FLIGHT IDLE.

1128. While the engine is coasting down to a stop, it is observed that the turbine
T90 temperature is not decaying at the normal rate. Which action is indicated in this
L188 event?

1- Feather the propeller immediately.
2- Turn on the ignition to burn the residual fuel.
3- Actuate the emergency shutdown control.
4- Discharge the fire extinguisher to control the fire in the tailpipe extension.

1129. Which procedure is normally recommended before unfeathering an engine?

T80, DC6

1- Turn off the propeller reverse control circuit breaker.
2- Position the propeller governor to the increase RPM position.
3- Rotate the engine several revolutions with the starter.
4- Turn the fuel booster pump on to low and then immediately to the high position.

1130. Before making an air start what is the maximum TIT for the affected engine?

T80, L382

1- 125°C.
2- 200°C.
3- 100°C.
4- 250°C.

1131. What action should be taken in event of an engine failure before V_1 speed is attained?

T90, DC6

1- Feather the propeller of the failed engine.
2- Place all throttles in reverse pitch range.
3- Retard all throttles.
4- Cut all ignition switches.

1132. Which indication of engine overheating requires immediate shutdown without first attempting to eliminate the indication by operating at power settings near FLIGHT IDLE?

T90, L382

1- Engine turbine overheat flashing light ON.
2- Nacelle overheat warning light ON.
3- High turbine inlet temperature.
4- High oil temperature.

1133. Which action should be accomplished prior to discharging fire extinguishing agent into an engine nacelle area?

T90, DC6

1- All flight crewmembers should put on full face type oxygen masks.
2- The emergency fluid shutoff valves should be closed.
3- The electrical system for the engine should be shut off by means of the generator switch.
4- The fuel system should be changed from a crossfeed configuration to a straight tank-to-engine configuration.

1134. During an air start, the engine condition lever should be positioned to air start until which condition is attained?

T80, L382

1- 20% RPM.
2- Light-off.
3- 35% RPM.
4- 40% RPM.

1135. What is the indication of a locked propeller brake during air start?

T80, L382

1- Failure of the propeller to rotate only.
2- Illumination of the NTS light and failure of the propeller to rotate.
3- Illumination of the low oil quantity light and failure of the propeller to rotate.
4- The air start circuit breaker will pop and the propeller will slowly rotate counterclockwise.

1136. Which procedure is proper for shutdown of a failed engine while in flight?

T90, L188

1- Retard the power lever and pull the feather button.
2- Actuate the emergency shutdown handle prior to retarding the power lever.
3- Retard the power lever to cutoff and let automatic feather occur.
4- Retard the power lever and actuate the emergency shutdown handle.

1137. What is the first step in the procedure for in-flight engine overtemperature indicated by high TIT?

T90, L382

1- Fire emergency control handle--PULL.
2- Temperature datum control switch--NULL.
3- Throttle--RETARD toward FLIGHT IDLE.
4- Engine condition lever--FEATHER.

1138. If an engine has been shut down for a fire or nacelle overheat, one fire extinguisher agent has been discharged, and the indication persists; what is the next procedure?

T90, L382

1- Discharge the remaining fire extinguisher.
2- Isolate the wing by closing the wing isolation valve and engine bleed valve for the other engine.
3- Recycle the fire emergency control handles.
4- Isolate the manifold by placing all the bleed air valve switches to OFF.

1139. Which is a reason for immediate engine shutdown in flight?

T90

1- A sudden drop in engine oil pressure.
L188 2- An indication of zero RPM.
L382 3- A sudden turbine temperature rise during power increase.
4- An indication of zero turbine inlet temperature.

1140. What is the procedure in the event of an engine turbine overheat warning light
T90 illuminating in flight?

L382 1- Retard throttle toward flight idle. If overheat condition persists, follow the engine shutdown procedures.
2- Reduce power with throttles and switch TD to NULL. If warning light persists, follow the engine shutdown procedures.
3- Fire emergency control handle--PULL; Fire extinguisher agent--DISCHARGE; Follow the engine cleanup checklist.
4- Place throttle in flight idle and TD switch to NULL. If warning light persists, but oil pressure is normal, resume normal operation.

1141. Which action should be taken in the event of a Zone I engine fire?

T90

1- Feather only since there is no CO_2
DC6 protection for Zone I.
2- Feather and discharge CO_2 into Zones II and III to prevent spread of the fire.
3- Continue normal operation since Zone I fires will eventually blow out.
4- Feather and close the cowl flaps completely to assist in smothering the fire.

1142. Which of the following should be accomplished as a cleanup action after an
T90 engine fire has been successfully extinguished in the air?

DC6

A. Crossfeed valve--ON
B. Propeller toggle switch--DEC RPM
C. Crew oxygen--100%
D. Oil cooler--AUTOMATIC
E. Carburetor air--COLD

1- A, C, D, and E.
2- C and D only.
3- A, B, and C.
4- B and E.

1143. If the agent from the normal fire protection system bottle does not extinguish
T90 a fire in No. 3 engine, a second attempt can be made by discharging which device?
L188

1- Normal bottle for No. 4 engine.
2- Bottle in No. 4 engine pylon.
3- Bottles in the left wing.
4- Normal bottle for No. 2 engine.

1144. During the procedure for an engine in-flight fire, which is the first action
T90 which shuts off the fuel?

L382 1- Engine condition lever--FEATHER.
2- Fuel boost pump switch--OFF.
3- Fire emergency control handle--PULL.
4- Fire extinguisher--DISCHARGE.

1145. Which type of malfunction may cause the reduction gear section to decouple from
T90 the power section of the engine?

L188 1- Loss of reduction gear section oil
L382 pressure.
2- Flame-out when auto-feather is not armed.
3- Reverse rotation of the propeller after feathering.
4- Propeller driving the engine and NTS failure.

1146. If a decoupling occurs in flight, what RPM will result?

T90

1- Much lower than normal RPM.
L188 2- A momentary overspeed, then normal
L382 governed RPM.
3- Much higher than normal RPM.
4- A momentary overspeed, then zero RPM.

1147. When an engine is decoupled, what RPM is indicated?

T90

1- Actual propeller RPM.
L188 2- Zero RPM.
L382 3- Actual engine RPM.
4- Engine RPM corresponding to the actual propeller RPM.

1148. After an engine decoupling, what will the RPM normally indicate?

T90

1- Below normal.
L382 2- Above normal.
3- Normal.
4- A pitch lock.

1149. Which is the proper procedure when combating an engine fire in a reciprocating
T90 engine transport airplane?

DC6
1- The cowl flaps and oil cooler flap should be closed prior to discharging the extinguisher.
2- The fire extinguisher should be discharged for Zones I and II fires but not for Zone III fires.
3- The fire extinguisher should be discharged after the propeller is feathered.
4- The fuel selector valve should be closed prior to the discharge of a fire extinguishing agent.

1150. What are the instrument indications of a decoupled propeller reduction gear box?
T90

1- High RPM, low fuel flow, low TIT,
L188 low torque (HP).
L382 2- Low RPM, low fuel flow, low TIT, negative torque (HP).
3- Normal RPM, high fuel flow, high TIT, low torque (HP).
4- Normal RPM, low fuel flow, low TIT, low torque (HP).

1151. What causes the safety coupling to disengage?
T90

1- A reverse propeller blade angle dur-
L382 ing flight.
2- A negative torque of more than 6,000 in.-lbs.
3- Operation of the NTS system.
4- Reduction gear box oil pressure.

1152. During flight, the torque, TIT, and fuel flow are near zero; power section oil
T90 pressure is low; hydraulic pressure, RPM, and gear box oil pressure are nor-
L382 mal. Which condition is indicated by these clues?

1- Gear box failure.
2- In-flight decoupling of the gear box.
3- Single-phase power failure.
4- Stepdown transformer failure.

1153. Which function of the propeller is accomplished without an electrical signal
U10 or electrical power?

L188 1- Speed synchronization.
L382 2- Complete feathering.
3- Unfeathering.
4- Pitch lock control.

1154. Which procedure may result in splitting a fire extinguishing system charge?
T90

1- Returning the CO_2 bottle control to
DC6 OFF before the charge is completely dissipated.
2- Selection of several CO_2 bottles for discharge at the same time.
3- Selection of more than one fire area when the CO_2 bottle is discharged.
4- Discharging CO_2 to an engine before the firewall shutoff valves (fluid shutoff valves) have been closed.

1155. For what purpose are the low pitch stop levers in the dome of the propeller un-
U10 latched?

DC6 1- To allow feathering and unfeathering.
2- To lock the blades in feathered position.
3- To prevent propeller overspeeding.
4- To allow reverse pitch operation.

1156. What is the comparison between propeller blade angles in low speed and high speed
U20 ranges at a given power lever (throttle) position?
L188
L382 1- Identical for low and high speed, regardless of all other variables.
2- Relatively high for the low speed range, and low for the high speed range.
3- Relatively high for the high speed range, and low for the low speed range.
4- Ground idle low pitch for low speed range; flight idle low pitch stop for high speed range.

1157. Which function of the propeller requires the availability of electrical power?
U40

1- BETA operation in reverse pitch.
L188 2- Drag limiting by NTS operation.
L382 3- Full feathering to stop propeller rotation.
4- Mechanical speed governing.

1158. Which action causes the engine to start windmilling during the unfeathering pro-
U40 cedure?

L188 1- Throttle--FLIGHT IDLE.
2- Emergency shutdown handle--PUSH FULL IN.
3- Feather button--PULL OUT.
4- Fuel and ignition switch--ON.

1159. What modes of operation are normal for the turbopropeller?

U10

1- Controllable pitch below flight idle; constant speed above flight idle.
L188 2- Fixed pitch below flight idle; phase sync above flight idle.
L382 3- Controllable pitch on the ground; constant speed in the air.
4- Fixed pitch on the ground; phase sync in the air.

1160. In the Hamilton Standard reversible propeller, which blade angle position is NOT limited by a positive mechanical stop?

U10

DC6

1- Full low pitch in governing range.
2- Full feathering pitch.
3- Full high pitch in governing range.
4- Full reverse pitch.

1161. What is indicated by illumination of a BETA light when a throttle is retarded into taxi range?

U20

L188 1- Propeller blade angle is in the reverse thrust range.
2- Transition from selective blade angle range to governing range has been accomplished.
3- Propeller blade angle is being controlled by the propeller hydraulic governor and RPM is a function of the engine fuel governor control.
4- Transition from governing range to selective blade angle range has been accomplished.

1162. What switch position removes all electrical signals from the propeller control system?

U30

L382 1- Synchrophase master switch--OFF.
2- Governor control switch--MECH GOV.
3- Prop resynchrophase switch--NORMAL.
4- Feather override button--IN.

1163. What is indicated by illumination of the auto-feather lights?

U40

1- Propeller is moving toward feather position.
L188 2- Master switch ARMED and throttles above 75°.
3- Auto-feather switches ON and takeoff thrust applied.
4- Throttles at takeoff position and thrust less than 500 lbs.

1164. How do the propeller blades react when the piston in the dome is moved forward?

U10

1- Move toward an increased blade pitch.
DC6 2- Move toward feather position.
3- Move toward a decreased blade pitch.
4- Move toward an unreverse position.

1165. How do centrifugal twisting moments on the blades act upon the propeller in flight?

U10

L188 1- Tend to increase blade pitch.
L382 2- Tend to decrease blade angle.
3- Keep blade angle constant.
4- Keep RPM constant.

1166. What corrective action is taken by the propeller governor if there is a tendency to overspeed in normal cruising flight?

U30

ALL

1- Increase oil flow to the increase blade angle side of the pitch change mechanism.
2- Drain oil from the propeller pitch change mechanism and decrease fuel flow.
3- Send an electrical impulse to the pitch change motor to drive the blades toward a higher pitch.
4- Decrease oil pressure on the propeller brake until speed is reduced to the governing RPM.

1167. What condition normally exists in the propeller governor during a momentary overspeed?

U30

ALL 1- Flyweight force is less than speeder spring force.
2- Governor pump oil pressure is too low.
3- Flyweight force is greater than speeder spring force.
4- Governor pump oil pressure is too high.

1168. Which event is associated with a condition lever position?

U40

1- Lever in GROUND STOP--propeller pitch moves to full reverse.
L382 2- Lever in AIR START--feather button moves to unfeather.
3- Lever in FEATHER--feather override button pulls in.
4- Lever in RUN--propeller pitch moves to flight idle.

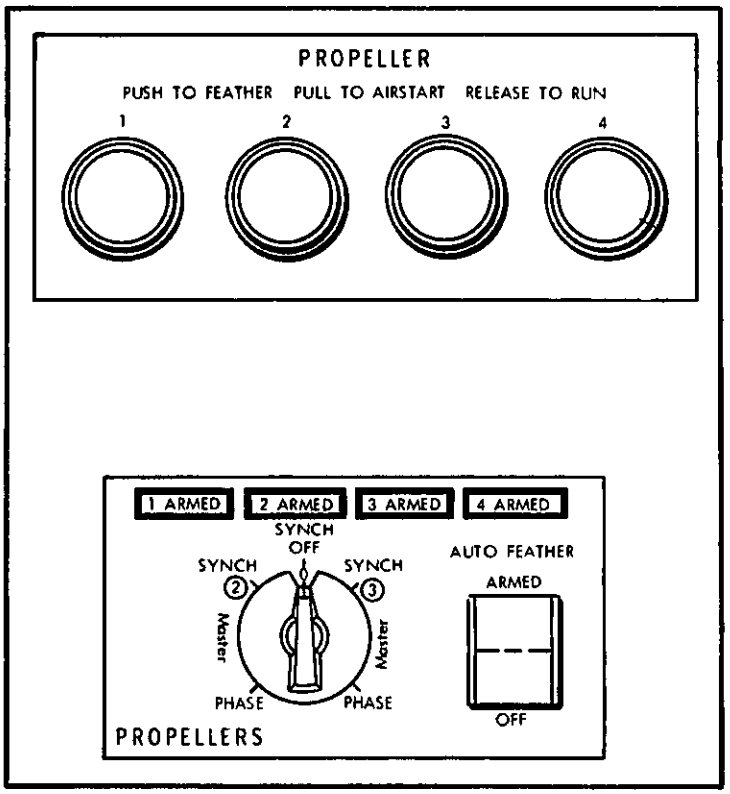


Figure 27. Propeller Controls (Typical L-382)

1169. What condition normally exists in the propeller governor during a momentary
U30 underspeed?

ALL
1- Flyweight force is greater than speeder spring force.
2- Governor pump oil pressure is too high.
3- Governor pump oil pressure is too low.
4- Flyweight force is less than speeder spring force.

1170. Assume that No. 4 engine fails on take-off and the propeller has auto-feathered.
U40 If No. 2 engine fails 5 seconds later, what happens to its propeller?
DC6

1- It cannot auto-feather because its auto-feather switch is disarmed.
2- It will auto-feather when the No. 4 auto-feather light goes out.
3- It will auto-feather when the No. 4 feathering button returns to neutral.
4- It cannot be feathered manually until the auto-feather switches are reset.

1171. Which conditions cause the auto-feather system to actuate?
U40

1- Auto-feather switch ON, throttle
L188 above 75°, and NTS system actuated.
2- Auto-feather switches ARMED, throttle at takeoff, and a reduction of EPR.
3- Master switch ARMED, throttle 75°--90°, and thrust 500 lbs. or less.
4- Master switch ARMED, throttle in flight range, and thrust between positive 500 lbs. and negative 500 lbs.

1172. What is indicated if the light in the feathering button is illuminated?
U40

1- The propeller associated with this
L188 button is feathered.
2- Power is available to operate the feathering pump of the propeller associated with this button.
3- The propeller feathering pump is operating.
4- The NTS system associated with this feathering button and propeller is armed.

1173. Under which condition is the low pitch stop retracted?

U10

1- For feather operations.
ALL 2- For reverse operations.
3- For pitch lock.
4- For NTS operations.

1174. What blade angle will be attained by the propeller when reverse thrust is used
U20 during the landing roll?

L188 1- Against the full reverse pitch stop.
L382 2- A blade angle determined by power lever position.
3- Against the flight idle low pitch stop.
4- A blade angle determined by the propeller governor spring tension.

1175. Which method of propeller control would remain after a complete elec-
U30 trical failure?

DC6 1- Master lever adjustment of all engine RPMs.
2- Governing action at the last set RPM.
3- Feathering and unfeathering.
4- Feathering, reversing, and governing at the last set RPM.

1176. Which is an indication that feather pump action has been terminated?

U40

1- Engine tachometer indicates zero.
DC6 2- Governor limit light (amber) illuminates.
3- Reverse pitch light (blue) illuminates.
4- Feather button returns to neutral.

1177. Which statement is correct concerning the Hamilton Standard propeller syn-
U50 chronization system?

DC6 1- When the master control lever is moved to a new position, all propellers synchronize automatically.
2- When the synchronizer system is off or inoperative, the propellers can be synchronized with the toggle switches.
3- When the master control lever is moved full forward, each propeller moves to full high pitch.
4- During synchronizer operation, either No. 1 or 4 engine must be selected as the MASTER.

1178. What is a feature of the BETA followup system?

U10

1- Operates only in BETA range.
L188 2- Provides a mechanical low pitch stop in flight range.
3- Operates when pitch lock occurs.
4- Provides a variable hydraulic low pitch stop in flight range.

1179. What control setting is required to allow throttle movement to adjust pro-
U30 peller blade angle during normal cruising flight (anticipation system)?

L382

1- Prop resynchrophase switch--NORMAL.
2- Prop resynchrophase switch--RESYNC.
3- Prop governor control switch--MECH GOV.
4- Prop governor control switch--NORMAL.

1180. Which is one way to unfeather the propeller?

U40

1- Hold the condition lever in AIR
L382 START.
2- Advance the throttle levers.
3- Move the condition lever to the RUN position.
4- Pull the propeller feather override switch.

1181. When should the feather override button be manually actuated?

U40

1- To complete feathering started by
L382 the NTS system.
2- During all normal unfeathering procedures.
3- To stop the feather (auxiliary) pump at completion of the feather cycle.
4- To override inadvertent placing of the condition lever to FEATHER during flight.

1182. What is the function of the propeller synchrophase system?

U50

1- To maintain each slave engine pro-
L188 peller blade angle within 3° of
L382 master blade angle.
2- To set the blades of all propellers at an identical blade angle.
3- To maintain slave engine RPM within 3% of the master engine RPM.
4- To maintain a predetermined angular relationship between the blades of all four propellers as they rotate.

1183. What protection does the BETA followup system provide when takeoff power is
U20 applied?

L188
1- A variable hydraulic low-pitch stop.
2- A variable mechanical low-pitch stop.
3- A variable hydraulic high-pitch stop.
4- A variable mechanical high-pitch stop.

1184. What action removes all electrical signals from the propeller control system?
U30

1- Throttle--TAXI RANGE.
L188 2- Prop sync selector--SYNC OFF.
3- Emergency shutdown handle--PULL.
4- Prop sync selector--No. 2 SYNC.

1185. What is a feature of the auto-feather system?
U40

1- Auto-feather will operate on ap-
L188 proach if the landing gear is down.
2- Pulling the throttle back to BETA on takeoff will cause auto-feather to operate.
3- Auto-feather should be armed during cruising flight in turbulent air.
4- Auto-feather of one engine disarms auto-feather on the other engines.

1186. What action must be taken to unfeather the propeller?
U40

1- Pull the feather button out, and
DC6 hold it.
2- Place the throttle in flight idle position.
3- Hold the toggle switch in INC RPM position.
4- Momentarily place the feather switch in unfeather position, then release it.

1187. What is a feature of the NTS system?

U60 1- The system causes a propeller pitch change in response to a negative
L188 torque.
L382 2- The system causes a propeller pitch change in response to a negative thrust.
3- Once initiated, the system causes full feathering.
4- If the system actuates on one propeller, the other propeller systems are locked out.

1188. Which is an indication of proper operation during the air start procedure?
U40

1- Illumination of the feather override
L382 button light.
2- Automatic release of the feather override button.
3- Automatic release of the engine ground start switch.
4- Illumination of the NTS check light.

1189. What is a feature of the speed synchronization system?
U50

1- Adjusts the master engine governor
L188 to synchronize engines.
2- Can correct a maximum of plus or minus 200 RPM.
3- Corrects for variations in fuel flow between engines.
4- Can adjust all four propellers to a predetermined equal blade angle.

1190. What is the purpose of the synchrophasing system?
U50

1- To prevent overspeeding during sud-
L188 den power lever (throttle) applica-
L382 tion.
2- To obtain the same power and fuel flow from all engines.
3- To decrease vibration and reduce noise level.
4- To decrease vibration and set all propellers to the same blade angle.

1191. What takes place when the resynchrophase switch is held in RESYNC and then re-
U50 leased to NORMAL?

L382 1- Slave RPMs change continuously with the switch held in RESYNC.
2- Slave RPMs change up to 5% with the switch held in RESYNC.
3- Master RPM changes while the switch is held in RESYNC; slave RPMs follow when the switch is returned to NORMAL.
4- No change of RPM in RESYNC; slave RPMs can change up to 5% when released to NORMAL.

1192. Which malfunction is prevented or corrected by the NTS system?
U60

1- Propeller driving the engine.
L188 2- Reverse thrust in flight.
L382 3- Undesired feathering in flight.
4- Sudden loss of thrust during takeoff.

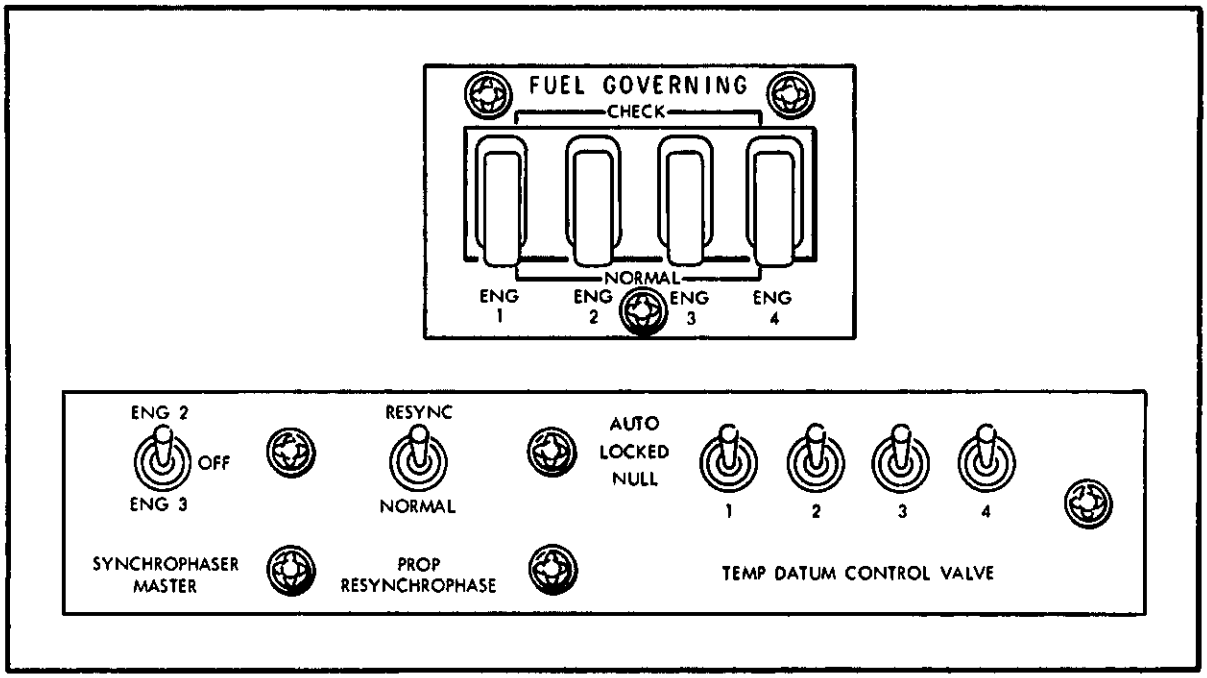


Figure 28. Propeller & Fuel Controls (Typical L-382)

1193. When the auto-feather green lights are ON, it is an indication that

U40

1- a propeller has feathered automatically.
DC6 2- the auto-feather system must be reset.
3- an auto-feather test switch is in the ON position.
4- the auto-feather system is armed.

1194. What is a feature of the phase synchronization system?

U50

1- Can correct a maximum of plus or minus 100 RPM.
L188 2- Should be used during flight in turbulent air.
L382 3- Adjusts slave engines by causing a momentary offspeed.
4- Can use either outboard engine as the master.

1195. Which is a normal selection of the synchrophase master switch during climbing flight?

U50

L382 1- ENGINE No. 2.
2- RESYNC.
3- NORMAL.
4- OFF.

1196. What positions are available on the prop master selector switch?

U50

1- Engine No. 1, Engine No. 2, Manual, OFF.
DC6 2- Engine No. 2, Manual, Engine No. 3.
3- Resync, Manual, Auto.
4- Either inboard engine Auto, Calibrate, OFF.

1197. What action should be taken if a tachometer generator failure occurs on the engine selected as a master engine?

U50

L382 1- Place the propeller governor control switch to MECH GOV.
2- Place the synchrophase master switch to the unaffected master engine position.
3- Resync the propellers.
4- Follow the engine shutdown procedures.

1198. When should the negative torque signal (NTS) system be tested?

U60

1- After landing; before arrival at the ramp.
L188 2- Before engine starting.
L382 3- Before takeoff; after engine starting.
4- During engine shutdown.

1199. What happens to all propellers when synchrophasing is selected?

U50

1- They assume the same blade angle.
L188 2- They lock at the existing blade
L382 angle.
3- They synchronize at 3% of the master engine speed.
4- They rotate at the same propeller RPM.

1200. During cruising flight with all engines at 2300 RPM, and synchronization ON;
U50 you use the propeller toggle switch to change the master engine from 2300 RPM
DC6 to 2100 RPM. What will happen to the slave engines?

1- They will reduce to 2230 RPM.
2- They will reduce to 2100 RPM.
3- They will remain at 2300 RPM.
4- They will reduce to exactly 2237 RPM.

1201. How will the negative torque system make a correction if an engine fails and the
U60 propeller attempts to windmill the engine?

L188
L382 1- By disconnecting the reduction gear box from the engine compressor shaft.
2- By increasing propeller blade angle.
3- By increasing propeller RPM.
4- By increasing fuel flow.

1202. What components are used to deice the propeller cuffs (fairings) and aft
U70 spinner?

L188 1- Cycled (timed sequenced) AC heating
L382 elements.
2- Continuous operation AC heating elements.
3- Cycled (timed sequenced) DC heating elements.
4- Continuous operation DC heating elements.

1203. How are the blades heated in an electric propeller deicing system?

U70

1- Sufficiently to melt leading edge
DC6 ice and prevent runback to the trailing edge.
2- Intermittently to keep blade temperature above 32°F.
3- Only enough to prevent ice formation.
4- In a timed sequence to throw off accumulated ice.

1204. Under which condition should the emergency shutdown handle not be pulled?

U40

1- Feathering by the auto-feather
L188 system.
2- A GEN MECH FAIL warning light coming on for engine No. 1, 2, or 3.
3- An indication of negative horsepower.
4- Starter overspeed light coming on in flight.

1205. Which action should be taken to re-NULL the governors when cruising with phase
U50 sync selected?

L188 1- Periodically place the selector switch in SYNC OFF.
2- Place the temperature datum switches in NULL position.
3- Switch to the opposite master engine.
4- Place the selector switch in SYNC for 2 minutes, then back to PHASE.

1206. Assume that the master and two engines are operating at 2200 RPM and the other
U50 engine is 100 RPMs slower. How can synchronization of all engines, by means of
DC6 the resynchronization button, be accomplished?

1- By holding down the button until all engines are the same RPM.
2- By holding down the button and adjusting the master lever.
3- By pressing and releasing the button at least twice.
4- By pressing the button once if the master lever is in manual position.

1207. Under which condition is the negative torque signal (NTS) designed to operate
U60 if a powerplant failure occurs?

L188 1- Any flight condition but not the
L382 BETA range.
2- Any flight operation in the BETA range.
3- All flight and ground operations.
4- Takeoff only if AUTO FEATHER is armed.

1208. When is operation of the NTS feature checked?

U60

1- During each engine start.
L188 2- Prior to emergency feathering.
L382 3- During engine runup prior to takeoff.
4- As a part of the engine shutdown procedure.

1209. What is the effect of moving the master RPM control lever full forward?

U50

1- All propellers are changed to the
DC6 same low-pitch blade angle as the master engine propeller.
2- All engine RPMs are calibrated at 2800 RPM.
3- All governors change to their individual full high RPM setting.
4- All propellers change to the full low-pitch stop setting.

1210. What is the procedure for a tachometer generator failure on an engine other
U50 than the one selected as master?

L382 1- Follow engine shutdown procedure.
2- Place sync master off.
3- Place propeller governor control switch in MECH GOV.
4- Place sync master off and monitor frequency meter.

1211. Which system protects the propeller blade leading edges and fairings
U70 from icing?

L382 1- A 115 volt AC continuous current deicing system.
2- An electric anti-icing system.
3- Both anti-icing and deicing systems.
4- A timed electric deicing system.

1212. Which is normally true concerning the function and operation of the propeller
U70 electric deicing system?

DC6 1- The heating elements cannot be checked during ground operation.
2- The timer may be operated at fast, medium, or slow speeds depending upon icing rate.
3- High amperage may be selected for heavy icing and low amperage for light icing.
4- The system is deactivated during feather pump operation.

1213. Which is an indication of propeller ice protection system malfunction during the
U70 before takeoff check?

L382 1- Blade deice ammeter below 65 amps.
2- Spinner anti-ice ammeter above 20 amps.
3- Anti-ice master switch light ON.
4- Individual propeller anti-ice light does not illuminate in sequence.

1214. What occurs when the propeller deice control is placed in the test position?

U70

1- Heating elements do not receive full
L188 power.
2- The lights which indicate cycling do not operate.
3- The timer is operated at 1/4 speed.
4- Bleed air valves do not operate.

1215. Which precaution should be observed on the preflight operational check of the
U70 propeller anti-icing and deicing system?

L382 1- Operation of the anti-icing and deicing system is not allowed on the ground.
2- Do not test propeller anti-icing and deicing for more than 2 minutes.
3- Immediately shut off deicing if ammeter indicates above 70 amps.
4- Do not operate for more than two cycles.

1216. What is a normal indication during a propeller synchronizer ground check with
U80 all engines stabilized at 800° TIT, when the master engine throttle is retarded
L188 to flight idle?

1- Other engines should follow the master within plus or minus 50 RPM.
2- Other engines should decrease no more than 200 RPM.
3- Other engines should remain at the high stabilized RPM.
4- Prop sync selector would automatically rotate to SYNC OFF; ENGINE RPMs would be varied but stabilized.

1217. Which operations require the synchrophase master switch to be OFF?

U80

1- Takeoff, approach, and landing.
L382 2- Takeoff and climb.
3- Ground operation and turbulent air penetration.
4- Takeoff, climb, and landing.

1218. During an NTS check the light does not illuminate. What action should be taken
U80 to see if the light or light circuit is faulty?

L188

1- Press the feather button.
2- Pull the emergency shutdown handle.
3- Move the throttle out of BETA range.
4- Place the auto-feather master switch to ARMED position.

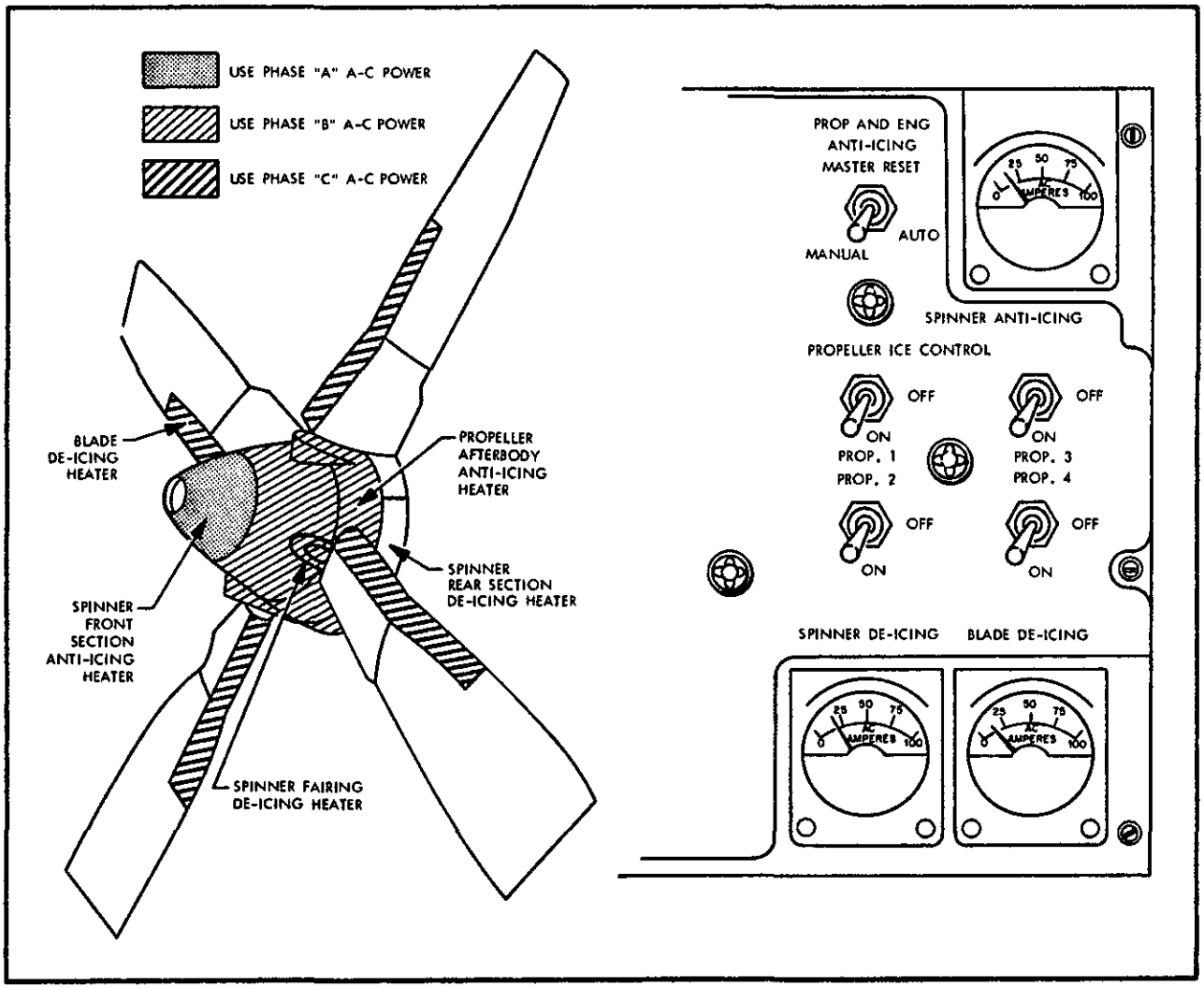


Figure 29. Propeller Ice Controls (Typical L-382)

1219. How should propeller reverse pitch operation be checked?

U80

L382

1- Static blade angle check before starting engines.
2- During taxi, pull each condition lever to FEATHER in turn; return to RUN before an indication of 500 RPM drop.
3- After start, before taxi, place all throttles in reverse and observe a shift from HIGH to LOW RPM.
4- During taxi, place pairs of symmetrical throttles in reverse and observe change of torque.

1220. What action should the flightcrew take if a propeller accidentally goes into reverse pitch during flight?

U90

DC6

1- Place the throttle in reverse idle and the mixture control in idle cutoff.
2- Place the throttle in forward idle and feather the propeller.
3- Place the throttle in reverse idle and feather the propeller.
4- Place the throttle in forward high power, trip the prop reverse circuit breakers, and then feather the propeller.

1221. What limitation is imposed on propeller deicing operation on the ground?

U70

DC6

1- Engine running, AUTOMATIC--3 complete cycles.
2- Engine running, MANUAL--1 minute.
3- Engine not running, AUTOMATIC--10 seconds.
4- Engine not running, MANUAL--not allowed.

1222. How can you determine whether a propeller is in a forward or reverse pitch position prior to takeoff?

U80

DC6

1- Turn on the propeller electric deicer; if there is no amperage draw, the propeller is in reverse pitch.
2- Press the propeller toggle switch forward; if the INC RPM indicator light comes on, the propeller is in forward pitch.
3- Press the feathering button; if the RPM increases, the propeller is in reverse pitch.
4- Pull out the feathering button; if the RPM decreases, the propeller is in reverse pitch.

1223. Which operation requires the sync selector to be in SYNC OFF?

U80

L188

1- Approach and landing.
2- Turbulent air penetration.
3- Takeoff.
4- Climb.

1224. Which is an indication that pitch lock has occurred in flight?

U90

L188

L382

1- Lower than normal steady RPM; increases with airspeed decrease.
2- lower than normal steady RPM; increases with throttle decrease.
3- Higher than normal steady RPM; decreases with airspeed increase.
4- Higher than normal steady RPM; decreases with throttle decrease.

1225. What should be done in the event of propeller malfunction during takeoff after V_1 speed?

U90

L382

1- Use full reverse on other engines and stop.
2- Select MECH GOV.
3- Select PHASE RESYNC.
4- Press the propeller feather override switch.

1226. During the auto-feather check, after the feather button pulls in and the throttle is retarded to flight idle, the BETA light should go out. What is the next step?

U80

L188

1- Visually check that blade angle is still rotating toward feather.
2- Retard throttle to the START position.
3- Pull the feather button out to the UNFEATHER position.
4- Retard throttle to the BETA range and observe that the BETA light illuminates.

1227. How is the feathering check accomplished?

U80

DC6

1- With the engine operating at 1,500 to 1,700 RPM.
2- At idling speed.
3- With the engine operating at magneto check speed.
4- Before starting the engine.

1228. Which is an indication of proper NTS operation during a shutdown on the ground?

U80

L188

L382

1- Automatic feathering of the propeller.
2- RPM cycling (alternately increasing and decreasing) while the switch is held.
3- Illumination of the BETA light.
4- Illumination of the NTS light.

1229. During the first part of cruise, a propeller pitch lock occurs and you find that RPM follows throttle movement. What action should be taken?

U90

L188

L382

1- Feather the propeller immediately.
2- Shut down the engine but reduce airspeed to control windmilling RPM.
3- Continue the flight but feather the propeller before landing.
4- Continue the flight but land without using reverse thrust.

1230. If the engine tends to overspeed, which unit in the Hamilton Standard Turbopropeller will engage and prevent the engine from exceeding approximately 103% RPM?

U90

L382

1- Stop lock assembly.
2- Pitch lock mechanism.
3- Fuel control governor.
4- Mechanical governor.

1231. Which action is required to obtain manual deicing of No. 1 propeller?

U70

1- Prop deicer switch--ON; No. 1 prop
DC6 deicer transfer switch--MANUAL.
2- Prop deicer switch--MANUAL; prop deicer ammeter selector--No. 1.
3- Prop deicer switch--MANUAL; No. 1 prop deicer transfer switch--MANUAL.
4- No. 1 prop deicer transfer switch--MANUAL; prop deicer ammeter selector--No. 1.

1232. When checking the propellers by operating the toggle switches, you should
U80 observe the proper change of RPM and operation of which lights?

DC6

1- The auto-feather lights.
2- The reverse pitch lights.
3- The governor limit lights.
4- The master lever lights.

1233. What position of a propeller control is correct during takeoff?

U80

1- Master RPM control lever--CALIBRATE.
DC6 2- Toggle switch--hold in INC RPM.
3- Master engine selector--MANUAL.
4- Prop deicer switch--OFF.

1234. How should the propellers be adjusted for climbing flight after a takeoff?

U80

1- Use the toggle switch for each prop
DC6 to obtain climb RPM.
2- Reduce RPM with the master lever and press the resync button, if needed.
3- Reduce manifold pressure with the throttles, then press the resync button, if needed.
4- Pull the master RPM control lever back until master engine is at desired RPM, then trim other engines as required with toggle switches.

1235. Which is a feature of the propeller pitch lock system?

U90

1- Requires propeller oil pressure for
L188 engagement.
L382 2- Prevents feathering but allows reverse pitch upon landing.
3- Prevents a decrease of blade angle but allows an increase of blade angle when engaged.
4- Cannot engage if the propeller is under control of the phase sync system.

1236. How should the propeller feather check be made before the first flight of the
U80 day?

L188 1- Engine operating in LOW SPEED GROUND
L382 IDLE.
2- Engine operating in HIGH SPEED GROUND IDLE.
3- Engine stopped.
4- Throttle in FLIGHT IDLE position.

1237. What is an indication of the proper functioning of the propeller at the be-
U80 ginning of the takeoff run?

L188 1- The high RPM governor limit light should be on.
2- The BETA range indicating light should go out.
3- Prop shaft RPM should remain steady while engine compressor RPM increases to 100%.
4- RPM should indicate that the propeller has shifted to the flight low pitch stop.

1238. During normal climbing flight, where should the propeller controls be placed?

U80

1- Phase synchronization on.
L188 2- No. 1 master position.
L382 3- BETA range position.
4- Temperature trim position.

1239. What is the purpose of the propeller pitch lock mechanism?

U90

1- To maintain a fixed pitch in the
L188 event of electrical failure and sub-
L382 sequent loss of governing capability.
2- To lock the propeller in selected pitch during reverse operation.
3- To lock the blades in the full feather position after actuation of the auto-feather system.
4- To prevent a decrease of propeller blade angle during an overspeed.

1240. What action should the flightcrew take if an engine overspeed cannot be con-
U90 trolled by a reduction of power?

DC6 1- Move the mixture to idle cutoff.
2- Switch to the alternate master engine.
3- Feather the propeller.
4- Pull the fire control and discharge one bottle of extinguisher to the engine.

1241. What conditions will cause the mechanical pitch lock to become engaged?

U90

1- Engine overspeeding or loss of engine oil pressure.
L188
L382 2- Engine overspeeding or loss of propeller oil pressure.
3- Negative thrust or propeller governor failure.
4- Feathering operation or BETA operation.

1242. Assume a propeller has accidentally gone into reverse pitch during flight and the
U90 engine is still in operation. How will the reverse pitch be indicated on the
DC6 engine tachometer?

1- Severe fluctuation at normal governing speed.
2- A speed several hundred RPMs lower than other engines.
3- Zero RPM.
4- A steady overspeed.

1243. Which action should be taken if it is determined that fluctuations of RPM,
U90 fuel flow, and torque are caused by tachometer generator failure?

L188
L382 1- Shut down the engine.
2- Place the propeller control switch in MECH GOV (SYNC OFF).
3- Switch to the alternate master engine for synchrophase operation.
4- Pull the tachometer circuit breakers.

1244. Which is an abnormal indication after the auto-feathering of one propeller?

U90

1- Feather button in neutral with the
DC6 red light OUT.
2- Three auto-feather green lights remain ON.
3- All auto-feather green lights are OUT.
4- Auto-feather master switch remains in the AUTO FEATHER position.

1245. Which condition is indicated by illumination of the master propeller warning
U90 light on the engine instrument panel and an individual light on the copilot's
L382 side shelf?

1- Low propeller oil pressure.
2- Pitch lock.
3- Low propeller oil quantity.
4- NTS operation.

1246. During approach with power levers in flight idle, what is the probable trouble
U90 with these indications: TIT--Normal, RPM--Fluctuating, FF--Normal, Torque-
L188 meter--Negative and Fluctuating?
L382

1- NTS system operation.
2- Propeller RPM and phase sync malfunction.
3- Bleed valves opening and closing.
4- Decoupling.

1247. What should be done if all RPMs are hunting or surging?

U90

1- Tachometer isolation switches--
DC6 EMERGENCY.
2- Master lever--CALIBRATE.
3- Propeller toggle switches--OFF.
4- Synchronizer system circuit breaker--OFF.

1248. What may result from a rapid movement of the power lever to takeoff position?

U90

1- A runaway propeller.
L188 2- Complete arming of auto-feather system and subsequent auto-feather of the propeller.
3- Pitch lock.
4- Complete arming of the NTS system and subsequent decoupling of the propeller and powerplant.

1249. What should be done to stop a propeller from rotating backward slowly after
U90 feathering?

L188 1- Actuate the propeller brake.
2- Push in the emergency shutdown handle and pull the feather button momentarily to unfeather.
3- Place the emergency shutdown handle in the detent position.
4- Pull out the feather button and push in the emergency shutdown handle momentarily.

1250. What action should be taken if a feathered propeller rotates slowly in the
U90 normal direction of rotation?

DC6 1- Actuate the propeller toggle switch to DEC RPM position.
2- Open the oil valve which had been closed after feathering.
3- Unfeather until the rotation stops.
4- Unfeather to idle RPM to prevent further damage to the engine.

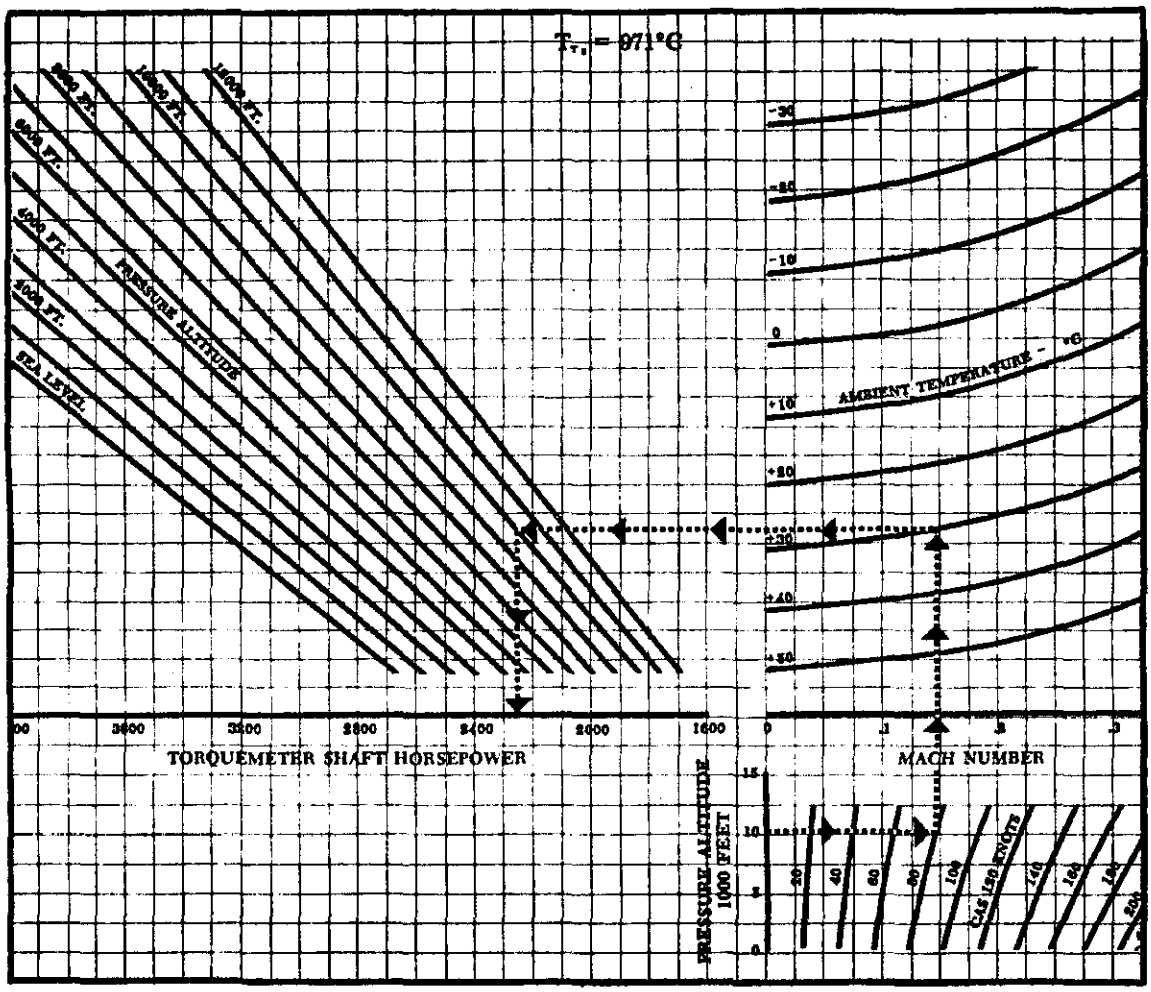


Figure 30. Takeoff Power (Typical L-188)

1251. Which procedure is appropriate for operations with the auto-feather system
U90 inoperative?

L188
1- Takeoff weight limit must be reduced.
2- Takeoff should not be made if there is a known possibility of bird ingestion.
3- V_{MC} must be reduced.
4- The pitch lock function of the propeller must also be deactivated for takeoff.

1252. Which action should be taken if the RPM of all engines becomes unstable during
U90 cruise?

L188
L382
1- Select the opposite master.
2- Place the sync selector in OFF position.
3- Retard all four throttles to flight idle.
4- Remove all electric power from propeller circuits and adjust each engine's power lever to obtain a synchronized condition.

1253. What action can be taken if a normal air start cannot be accomplished because
U90 of failure of the propeller to rotate?

L382
1- Increase airspeed by entering a dive.
2- Open the bleed air valve and use the starter.
3- Actuate the propeller brake emergency release.
4- Place the condition lever back to FEATHER and then rapidly back to RUN.

1254. What is the procedure for a propeller low oil light if RPM is within allowable
U90 limits?

L382
1- Switch to MECH GOV and monitor engine operation closely.
2- Feather the propeller using the condition lever only.
3- Shut down the engine in accordance with the engine shutdown procedures.
4- No corrective action is required if the RPM remains stable.

Table 19. Takeoff Power

OPERATING CONDITIONS	1	2	3	4	5
Pressure Altitude FT.	1,000	10,000	2,500	5,000	500
CAS KTS.	100	120	140	110	120
Ambient Temperature °C.	+10	-10	+10	-5	+40

1255. What is the takeoff power available under operating conditions No. 1, Table 19;
V10 according to the Takeoff Power Chart? (Figure 30)
L188

1- 3,700 SHP.
2- 4,000 SHP.
3- 3,600 SHP.
4- 3,750 SHP.

1256. What is the takeoff power available under operating conditions No. 2, Table 19;
V10 according to the Takeoff Power Chart? (Figure 30)
L188

1- 2,900 SHP.
2- 3,140 SHP.
3- 3,270 SHP.
4- 3,080 SHP.

1257. What is the takeoff power available under operating conditions No. 3, Table 19;
V10 according to the Takeoff Power Chart? (Figure 30)
L188

1- 3,700 SHP.
2- 4,000 SHP.
3- 3,630 SHP.
4- 3,580 SHP.

1258. What is the takeoff power setting under operating conditions No. 2, Table 20;
V10 according to the Takeoff Power Schedule? (Figure 31)
DC6

1- 54.5" Hg MAP.
2- 200 BMEP.
3- 190 BMEP.
4- 60.9" Hg MAP.

1259. What is the takeoff power available under operating conditions No. 4, Table 19;
V10 according to the Takeoff Power Chart? (Figure 30)
L188

1- 3,700 SHP.
2- 3,520 SHP.
3- 3,410 SHP.
4- 3,620 SHP.

1260. What is the takeoff power available under operating conditions No. 5, Table 19;
V10 according to the Takeoff Power Chart? (Figure 30)
L188

1- 3,000 SHP.
2- 2,890 SHP.
3- 2,520 SHP.
4- 3,090 SHP.

1261. What is the takeoff power setting under operating conditions No. 1, Table 20;
V10 according to the Takeoff Power Schedule? (Figure 31)
DC6

1- 59.5" Hg MAP.
2- 234 BMEP.
3- 54.7" Hg MAP.
4- 204 BMEP.

1262. What is the takeoff power setting under operating conditions No. 3, Table 20;
V10 according to the Takeoff Power Schedule? (Figure 31)
DC6

1- 206 BMEP.
2- 236 BMEP.
3- 59.9" Hg MAP.
4- 55.6" Hg MAP.

Table 20. Takeoff Power

OPERATING CONDITIONS	1	2	3	4	5
CAT	86°F.	95°F.	20°C.	25°C.	40°C.
Dewpoint	40°F.	90°F.	13°C.	21°C.	4°C.
ADI	ON	ON	OFF	OFF	ON

DC-6B Power Schedule
P&W R-2800 CB-16 Wet Takeoff
BMEP at Various Conditions of Temperature & Humidity
2800 RPM, Sea Level, ADI ON

MANIFOLD PRESSURE *	DEW POINT TEMPERATURE °C	°F	CARBURETOR AIR TEMPERATURE 10°C 50°F	15°C 59°F	20°C 68°F	25°C 77°F	30°C 86°F	35°C 95°F	40°C 104°F
59.6	-4	25	244	242	240	238	235	233	231
59.7	-1	30	244	242	239	238	235	233	231
59.7	1	35	243	241	239	237	234	232	230
59.7	4	40	242	240	238	236	234	232	230
59.8	7	45	242	240	238	236	233	231	229
59.8	10	50	241	239	237	235	233	231	228
59.9	13	55		238	236	234	232	230	228
60.0	16	60		238	235	234	231	229	227
60.1	18	65			234	233	230	228	226
60.2	21	70			233	232	229	227	225
60.4	24	75				230	228	226	224
60.5	27	80				228	226	224	222
60.7	29	85					224	222	220
60.9	32	90						220	218

* 59.5" OF MANIFOLD PRESSURE PLUS EXISTING VAPOR PRESSURE, UP TO 1.5".

SPECIAL NOTE - FOR CB-16 DRY TAKEOFF POWER SCHEDULE APPLY THE FOLLOWING:

RPM=2700

SUBTRACT APPROXIMATELY 30 BMEP FROM THE ABOVE SETTINGS.

SUBTRACT APPROXIMATELY 5 INCHES OF MANIFOLD PRESSURE FROM THE ABOVE SETTINGS.

Figure 31. Takeoff Power (Typical DC-6)

1263. What is the takeoff power setting under operating conditions No. 4, Table 20; according to the Takeoff Power Schedule? (Figure 31)

V10
DC6

1- 60.2" Hg MAP.
2- 182 BMEP.
3- 55.2" Hg MAP.
4- 232 BMEP.

1264. Which procedure should be used to establish cruise power at the top of climb?

V30

1- Set maximum cruise turbine temperature and allow the airplane to accelerate to cruise airspeed.
2- Set cruise power after the airplane accelerates to cruise airspeed or slightly higher.
3- Set maximum cruise turbine temperature until the airplane accelerates to cruise IAS, then set cruise BHP.
4- Set cruise RPM and fuel flow after the airplane has stabilized at cruise airspeed.

L188
L382

1265. What is the takeoff power setting under operating conditions No. 5, Table 20; according to the Takeoff Power Schedule? (Figure 31)

V10
DC6

1- 230 BMEP.
2- 231 BMEP.
3- 200 BMEP.
4- 59.8" Hg MAP.

1266. An airplane is climbing at an average rate of 1,000 ft./min. and the cabin altitude is increasing at a rate of 250 ft./min. What cabin altitude will be obtained in the period of time it takes the airplane to climb from the airport level of 2,000 feet to a flight level of 23,000 feet?

V20
DC6

1- 6,500 feet.
2- 5,550 feet.
3- 7,250 feet.
4- 6,725 feet.

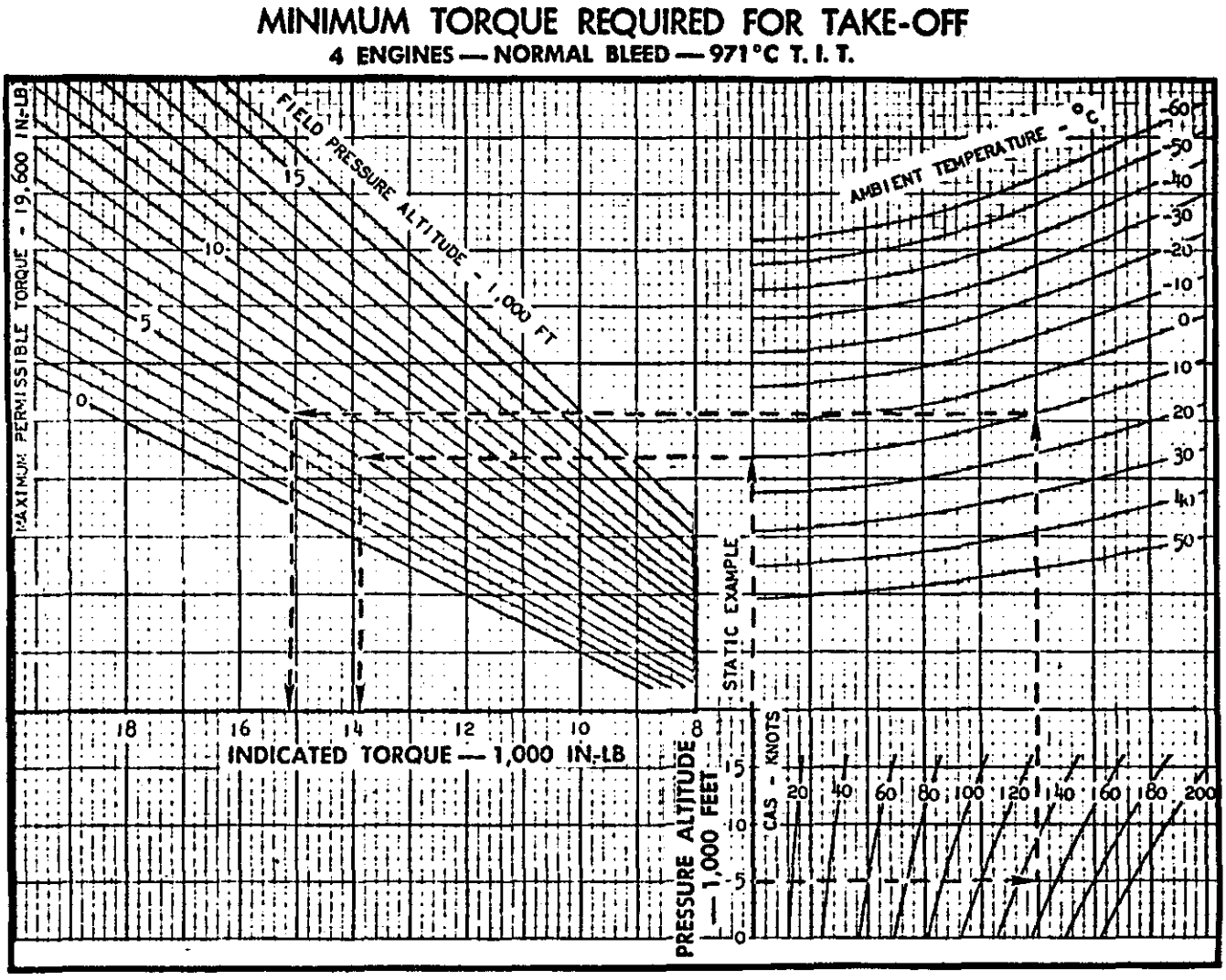


Figure 32. Takeoff Torque (Typical L-382)

Table 21. Takeoff Torque

OPERATING CONDITIONS	1	2	3	4	5
Pressure Altitude FT.	1,000	10,000	1,500	3,000	5,000
CAS KTS.	100	140	120	130	110
Ambient Temperature °C.	0	-10	-30	+40	+15

1267. What is the minimum torque required for takeoff under operating conditions No. 4, Table 21, according to the Takeoff Torque Chart? (Figure 32)

V10
L382

1- 18,800 in.-lb.
2- 13,600 in.-lb.
3- 12,300 in.-lb.
4- 19,600 in.-lb.

1268. What is the minimum torque required for takeoff under operating conditions No. 3, Table 21; according to the Takeoff Torque Chart? (Figure 32)

V10
L382

1- 17,800 in.-lb.
2- 18,600 in.-lb.
3- 19,200 in.-lb.
4- 19,600 in.-lb.

1269. What is the minimum torque required for takeoff under operating conditions No. 2, Table 21; according to the Takeoff Torque Chart? (Figure 32)

V10
L382

1- 15,000 in.-lb.
2- 14,400 in.-lb.
3- 12,400 in.-lb.
4- 13,800 in.-lb.

1270. Maximum range performance for a particular altitude and weight is obtained by flying a reciprocating engine airplane at which airspeed?

V30
ALL

1- The speed which requires the least fuel flow.
2- The speed which requires the least horsepower.
3- The speed where the highest lift/drag ratio is obtained.
4- The speed where the least drag is produced.

1271. What is the minimum torque required for takeoff under operating conditions No. 1, Table 21; according to the Takeoff Torque Chart? (Figure 32)

V10
L382

1- 18,000 in.-lb.
2- 12,400 in.-lb.
3- 18,300 in.-lb.
4- 16,600 in.-lb.

1272. What is the minimum torque required for takeoff under operating conditions No. 5, Table 21; according to the Takeoff Torque Chart? (Figure 32)

V10
L382

1- 13,800 in.-lb.
2- 18,000 in.-lb.
3- 10,700 in.-lb.
4- 12,000 in.-lb.

1273. Which of the following cruising operations is based upon the use of the highest airspeeds?

V30
ALL

1- Maximum range cruise.
2- Long range cruise.
3- Maximum endurance cruise.
4- Optimum hours per pound of fuel cruise.

1274. What is a characteristic of the constant turbine temperature cruise control procedure?

V30
L188
L382

1- Fuel flow decreases with increased altitude.
2- True airspeed decreases as weight decreases.
3- True airspeed decreases as OAT decreases.
4- Fuel flow remains constant as long as pressure altitude is not changed.

ELECTRA V_1 V_2 SPEEDS - C. A. S.

SEA LEVEL TIT - 971C

GROSS WEIGHT	SPEED	RUNWAY SLOPE	-10C 14F	0C 32F	10C 50F	20C 68F	30C 86F
116000	V_1	1% UP	115	116	120	125	
		LEVEL	111	113	116	121	
		1% DOWN	107	107	110	113	
	V_2		125	125	125	125	
110000	V_1	1% UP	112	113	116	119	122
		LEVEL	110	110	110	113	118
		1% DOWN	106	106	106	107	108
	V_2		124	123	122	122	122
105000	V_1	1% UP	109	109	111	111	116
		LEVEL	107	107	107	108	110
		1% DOWN	104	104	104	104	104
	V_2		124	123	121	119	119
100000	V_1	1% UP	106	107	108	109	110
		LEVEL	105	105	105	105	106
		1% DOWN	105	102	102	102	102
	V_2		124	123	121	119	116
95000	V_1	1% UP	103	105	106	106	106
		LEVEL	103	104	104	103	102
		1% DOWN	103	102	100	100	100
	V_2		124	123	121	119	116
90000	V_1	1% UP	103	103	104	102	102
		LEVEL	103	102	101	100	100
		1% DOWN	103	102	99	98	98
	V_2		124	123	121	119	116
85000	V_1	1% UP	103	102	102	100	99
		LEVEL	103	102	100	98	97
		1% DOWN	103	102	99	98	98
	V_2		124	123	121	119	116

Figure 33. Takeoff Speed (Typical L-188)

Table 22. Takeoff Speed

OPERATING CONDITIONS		1	2	3	4
Runway Slope	%	1.0 UP	Level	0.5 DN	1.0 DN
Temperature		-5°C.	40°F.	10°C.	80°F.
Gross Weight	LBS.	97,500	85,000	107,500	97,500

Table 23. Takeoff Speed

OPERATING CONDITIONS		1	2	3	4
Ambient Temperature		0°C.	+20°C.	-30°C.	+40°F.
Pressure Altitude	FT.	2,000	6,000	1,000	3,000
Gross Weight	LBS.	140,000	105,000	130,000	145,000
Runway Slope	%	.5 UP	Level	.5 DN	1.0 UP
Wind	KTS.	10 HW	5 TW	20 HW	10 TW

1275. What is the takeoff decision speed under operating condition No. 4, Table 22;
V10 according to the Takeoff Speed Chart? (Figure 33)
L188

1- 115 knots CAS.
2- 108 knots CAS.
3- 105 knots CAS.
4- 101 knots CAS.

1276. What is the takeoff decision speed under operating conditions No. 3, Table 22;
V10 according to the Takeoff Speed Chart? (Figure 33)
L188

1- 121 knots CAS.
2- 110 knots CAS.
3- 107 knots CAS.
4- 104 knots CAS.

1277. What is the takeoff decision speed under operating conditions No. 1, Table 23;
V10 according to the Takeoff Speed Chart? (Figure 34)
L382

1- 115 knots CAS.
2- 112 knots CAS.
3- 109 knots CAS.
4- 105 knots CAS.

1278. What is the takeoff decision speed under operating conditions No. 2, Table 23;
V10 according to the Takeoff Speed Chart? (Figure 34)
L382

1- 93 knots CAS.
2- 96 knots CAS.
3- 90 knots CAS.
4- 98 knots CAS.

1279. What is the V_1 speed under operating conditions No. 1, Table 24; according to
V10 the Takeoff Speed Chart? (Figure 35)

DC6 1- 87 IAS.
2- 91 IAS.
3- 88 IAS.
4- 85 IAS.

1280. What is the takeoff decision speed under operating conditions No. 3, Table 23;
V10 according to the Takeoff Speed Chart? (Figure 34)
L382

1- 110 knots CAS.
2- 105 knots CAS.
3- 116 knots CAS.
4- 119 knots CAS.

1281. What is the takeoff decision speed under operating conditions No. 1, Table 22;
V10 according to the Takeoff Speed Chart? (Figure 33)
L188

1- 105 knots CAS.
2- 107 knots CAS.
3- 123 knots CAS.
4- 103 knots CAS.

1282. What is the takeoff decision speed under operating conditions No. 2, Table 22;
V10 according to the Takeoff Speed Chart? (Figure 33)
L188

1- 97 knots CAS.
2- 101 knots CAS.
3- 122 knots CAS.
4- 103 knots CAS.

1283. What is the takeoff decision speed under operating conditions No. 4, Table 23;
V10 according to the Takeoff Speed Chart? (Figure 34)
L382

1- 86 knots CAS.
2- 110 knots CAS.
3- 113 knots CAS.
4- 118 knots CAS.

1284. What is the V_1 speed under operating conditions No. 2, Table 24; according to
V10 the Takeoff Speed Chart? (Figure 35)

DC6 1- 99.0 IAS.
2- 100.5 IAS.
3- 101.1 IAS.
4- 97.5 IAS.

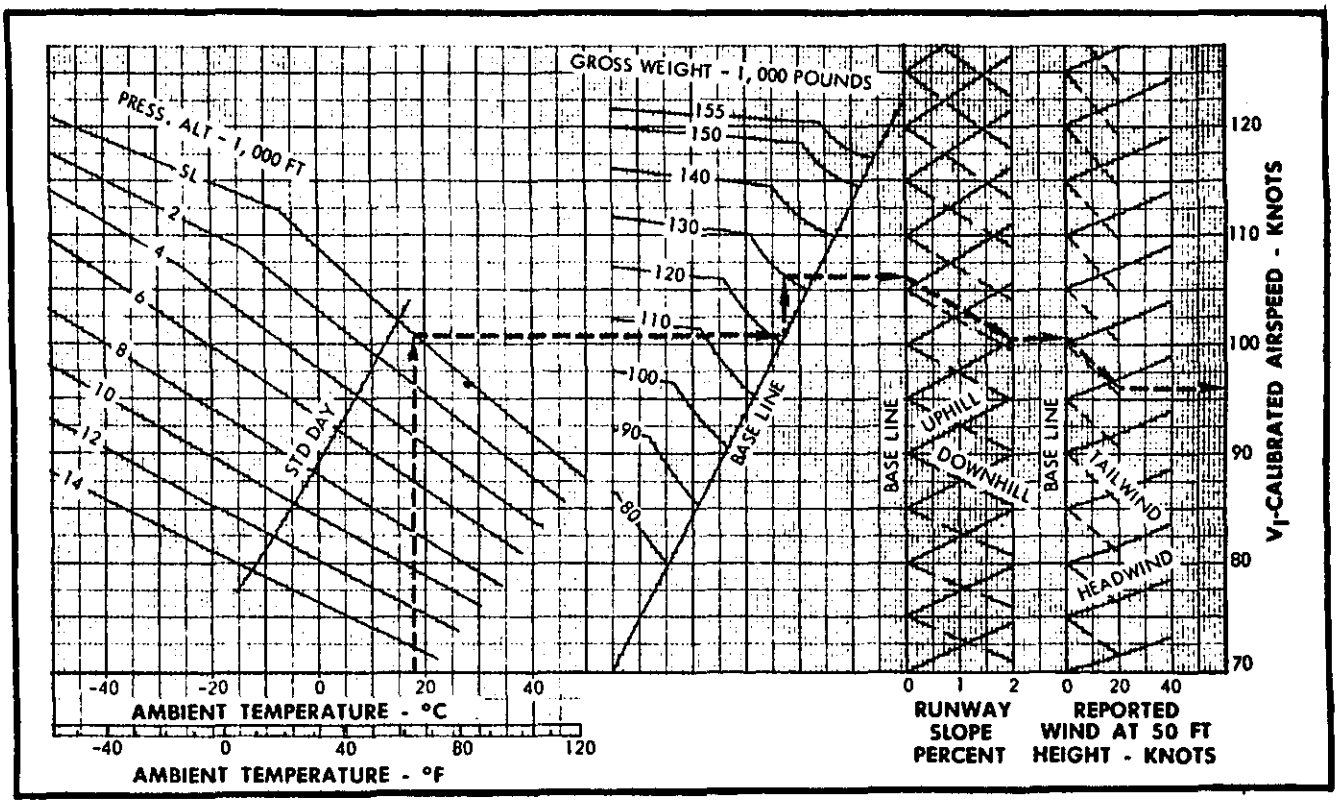


Figure 34. Takeoff Speed (Typical L-382)

DC-6B V_1 V_2 SPEEDS IAS-KTS CB-17, WET

TOGW 1000's LBS	Decision Speed - V_1							V_2
Altitude	SL	1000	2000	3000	4000	5000	5500	
75	73	74	75	76	77	78	79	100
80	79	80	80	81	82	83	84	103
82	80	83	82	83	84	85	86	104
84	83	84	85	86	87	88	89	105
86	85	86	87	88	89	90	91	107
88	87	88	89	90	91	92	93	108
90	89	90	91	92	93	95	96	109
92	91	92	93	94	95	97	98	110
94	93	94	95	96	97	99	100	112
96	96	97	97	98	100	101	102	113
98	98	98	99	100	101	103		114
100	98	98	99	100	103			115
102	98	98	99	100				116
104	99	100	101					117
106	101	102						118
107	102							119

Wind Correction to V_1 Speed

	tailwind-subtract					*headwind - add*						
wind	-8	-6	-4	-2	0	5	15	20	28	36	42	48
V_1	-2	-1½	-1	-½	0	½	1	1½	2	2½	3	3½

Runway Slope Correction to V_1 Speed

	uphill - add						downhill - subtract				
% slope	+1.0	+.8	+.6	+.4	+.2	0	-.2	-.4	-.6	-.8	-1.0
V_1	5	4	3	2	1	0	-1	-2	-3	-4	-4½

Figure 35. Takeoff Speed (Typical DC-6)

Table 24. Takeoff Speed

OPERATING CONDITIONS		1	2	3	4
Gross Weight	LBS.	88,000	100,000	90,000	96,000
Pressure Altitude	FT.	SL	2,000	4,000	3,000
Wind Component		+15	+20	-4	+36
Runway Slope	%	.6 UP	.6 DN	.8 UP	.8 DN

1285. What is the gross weight at the top of climb under operating conditions No. 3, Table 26; according to the Climb Chart? (Figure 37)
V20
L382

1- 142,900 lbs.
2- 143,600 lbs.
3- 143,450 lbs.
4- 143,750 lbs.

1286. What is the V_1 speed under operating conditions No. 4, Table 24; according to the Takeoff Speed Chart? (Figure 35)
V10

DC6 1- 96.5 IAS.
2- 100.5 IAS.
3- 98.0 IAS.
4- 94.5 IAS.

1287. What is the gross weight at the top of climb under operating conditions No. 2, Table 25; according to the Climb Chart? (Figure 36)
V20
L188

1- 93,000 lbs.
2- 93,550 lbs.
3- 93,800 lbs.
4- 91,500 lbs.

1288. What is the gross weight at the top of climb under operating conditions No. 1, Table 25; according to the Climb Chart? (Figure 36)
V20
L188

1- 101,550 lbs.
2- 102,450 lbs.
3- 102,900 lbs.
4- 101,900 lbs.

1289. What is the gross weight at the top of climb under operating conditions No. 4, Table 25; according to the Climb Chart? (Figure 36)
V20
L188

1- 98,000 lbs.
2- 98,450 lbs.
3- 97,700 lbs.
4- 98,200 lbs.

1290. What is the gross weight at the top of climb under operating conditions No. 3, Table 25; according to the Climb Chart? (Figure 36)
V20
L188

1- 111,450 lbs.
2- 112,250 lbs.
3- 112,850 lbs.
4- 113,000 lbs.

1291. What is the gross weight at the top of climb under operating conditions No. 1, Table 26; according to the Climb Chart? (Figure 37)
V20
L382

1- 148,000 lbs.
2- 147,500 lbs.
3- 146,500 lbs.
4- 145,850 lbs.

1292. What is the V_1 speed under operating conditions No. 3, Table 24; according to the Takeoff Speed Chart? (Figure 35)
V10

DC6 1- 93 IAS.
2- 92 IAS.
3- 96 IAS.
4- 95 IAS.

Table 25. Climbing Flight

OPERATING CONDITIONS	1	2	3	4
Takeoff Weight LBS.	105,000	95,000	115,000	100,000
Cruising Altitude	FL 210	13,000 ft.	FL 190	17,000 ft.
Temperature °C. (at cruising altitude)	-17	-11	-33	-19

NOTE: CLIMB STARTED AT SEA LEVEL

Based on 878°C TIT Climb Power

	PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
STD.+10°C GROSS WEIGHT - POUNDS	AV CLIMB TAS-KTS	284	267	258	251	245	240	235	230	226	221	217	213
	115,000				32.5	24.5	19	15	12	9	7	5	3
					3550	3050	2650	2300	1950	1700	1450	1200	1000
	110,000			37	27.5	21	16.5	13.5	10.5	8	6	4.5	2.5
				3850	3150	2700	2300	2000	1750	1500	1300	1150	950
	105,000		42	31	23.5	19	15	12	9.5	7.5	6	4	2.5
			4300	3450	2900	2450	2200	1850	1700	1450	1250	1100	950
	100,000	55	35.5	26.5	21	17	13.5	11	9	7	5.5	3.5	2.5
		4750	3700	3100	2700	2300	2000	1750	1600	1350	1200	1100	950
	95,000	40	29	23	19	15	12.5	10	8	6.5	5	3.5	2
		3750	3200	2750	2400	2150	1900	1700	1500	1300	1150	1000	900
	90,000	32	25	20.5	17	13.5	11	9	7.5	6	4.5	3	2
		3250	2900	2550	2250	2050	1800	1650	1450	1300	1150	1000	900
	85,000	29	22	18	15	12.5	10	8.5	7	5.5	4	3	2
		2900	2650	2300	2100	1900	1700	1550	1400	1250	1150	1000	850
	80,000 *	24	19	16	13.5	11.5	9.5	7.5	6	5	3.5	2.5	1.5
	**	2650	2450	2200	1950	1800	1650	1500	1350	1250	1100	1000	850
STD. DAY GROSS WEIGHT - POUNDS	AV CLIMB TAS-KTS	273	260	252	246	240	235	231	227	222	218	215	211
	115,000		43	28	22	18	14.5	11.5	9.5	7.5	5.5	4	2.5
			3800	3250	2750	2400	2000	1750	1600	1400	1250	1000	800
	110,000	45	31	23	19	15.5	12.5	10	8	6.5	5	3.5	2
		3900	3300	2750	2450	2200	1850	1650	1500	1350	1200	1000	800
	105,000	36	26	21	17	14	11.5	9.5	7.5	6	4.5	3	2
		3400	2900	2550	2300	2000	1750	1550	1400	1300	1150	950	750
	100,000	29.5	23.5	18	15	12.5	10.5	8.5	7	5.5	4	3	1.5
		3100	2650	2350	2050	1800	1600	1500	1350	1250	1100	900	750
	95,000	26.5	21	16.5	14	11.5	9.5	8	6.5	5	4	2.5	1.5
		2800	2500	2200	1900	1750	1550	1450	1300	1200	1100	900	750
	90,000	23.5	18.5	15	12.5	10.5	9	7	6	4.5	3.5	2.5	1.5
		2500	2250	2000	1800	1700	1500	1350	1250	1150	1050	850	750
	85,000	21	16.5	13.5	11.5	9.5	8	6.5	5.5	4	3.5	2	1
		2250	2100	1850	1700	1600	1400	1300	1200	1100	1000	850	750
	80,000 *	18.5	15	12	10.5	9	7.5	6	5	4	3	2	1
	**	2200	2000	1750	1600	1500	1350	1250	1150	1000	950	800	700
STD.-10°C GROSS WEIGHT - POUNDS	AV CLIMB TAS-KTS	263	253	246	241	236	231	227	223	219	216	212	208
	115,000	30.5	25	20.5	16.5	13.5	11	9	7.5	6	4.5	3	2
		3450	2850	2450	2150	1900	1700	1450	1300	1150	950	850	700
	110,000	25.5	21	17.5	14.5	12	10	8.5	7	5.5	4	3	2
		2900	2550	2250	2000	1750	1550	1350	1200	1100	950	800	650
	105,000	23	19	16	13.5	11	9.5	7.5	6.5	5	4	2.5	1.5
		2650	2300	2100	1800	1650	1500	1300	1200	1050	900	800	650
	100,000	20.5	17.5	15	12.5	10.5	8.5	7	6	4.5	3.5	2.5	1.5
		2400	2150	1900	1750	1600	1400	1250	1150	1000	850	750	650
	95,000	19	16	13.5	11.5	9.5	8	6.5	5.5	4.5	3.5	2.5	1.5
		2200	2000	1800	1650	1450	1300	1200	1100	1000	850	750	650
	90,000	17	14.5	12.5	10.5	8.5	7.5	6	5	4	3	2	1
		2050	1800	1700	1550	1350	1250	1150	1050	950	800	700	650
	85,000	15	13	11	9.5	8	6.5	5.5	4.5	3.5	3	2	1
		1950	1750	1600	1450	1300	1200	1100	1000	900	800	700	650
	80,000 *	13.5	11.5	10	8.5	7.5	6	5	4	3.5	2.5	2	1
	**	1800	1650	1500	1350	1250	1150	1050	1000	850	800	700	650

*Time to Altitude - Minutes
**T.O., Taxi & Climb Fuel - Lbs.

Figure 36. Climbing Flight (Typical L-188)

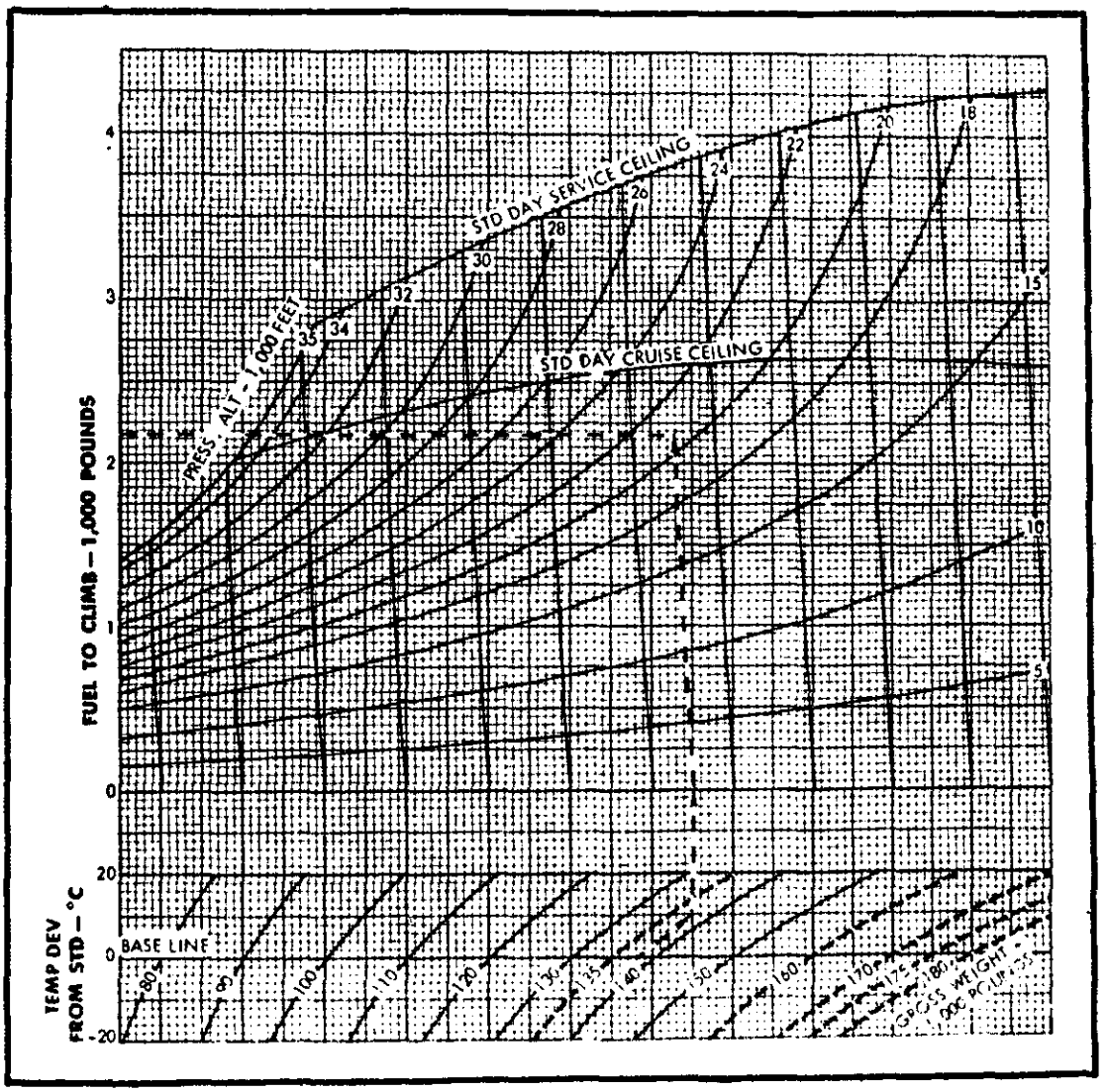


Figure 37. Climbing Flight (Typical L-382)

1293. What is the gross weight at the top of climb under operating conditions No. 4, Table 26; according to the Climb Chart? (Figure 37)
V20
L382

1- 153,550 lbs.
2- 153,050 lbs.
3- 152,250 lbs.
4- 152,700 lbs.

1294. What is the gross weight at the top of climb under operating conditions No. 5, Table 26; according to the Climb Chart? (Figure 37)
V20
L382

1- 122,600 lbs.
2- 123,500 lbs.
3- 123,100 lbs.
4- 122,150 lbs.

1295. What is the gross weight at the top of climb under operating conditions No. 2, Table 26; according to the Climb Chart? (Figure 37)
V20
L382

1- 133,500 lbs.
2- 133,050 lbs.
3- 133,750 lbs.
4- 132,750 lbs.

1296. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 1, Table 27?
V20
ALL

1- 264 ft./min.
2- 300 ft./min.
3- 281 ft./min.
4- 313 ft./min.

Table 26. Climbing Flight

OPERATING CONDITIONS		1	2	3	4	5
Takeoff Weight	LBS.	150,000	135,000	145,000	155,000	125,000
Cruising altitude	FT.	20,000	18,000	15,000	19,000	24,000
Temperature (at cruising altitude)	°C.	-35	-1	-5	-23	-20

NOTE: CLIMB STARTED AT SEA LEVEL

1297. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 3, Table 27?
V20
L188
L382
1- 500 ft./min.
2- 605 ft./min.
3- 528 ft./min.
4- 650 ft./min.

1298. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 4, Table 27?
V20
ALL
1- 541 ft./min.
2- 505 ft./min.
3- 478 ft./min.
4- 536 ft./min.

1299. What is the total fuel burn under operating conditions No. 3, Table 28?
V30
1- 16,130 lbs.
L188 2- 19,200 lbs.
L382 3- 17,850 lbs.
4- 23,150 lbs.

1300. What is the total fuel burn under operating conditions No. 1, Table 28?
V30
1- 14,440 lbs.
L188 2- 44,320 lbs.
L382 3- 22,160 lbs.
4- 12,800 lbs.

1301. What cabin rate of climb is required to reach cruising altitude and desired cabin altitude at the same time under operating conditions No. 2, Table 27?
V20
ALL
1- 206 ft./min.
2- 169 ft./min.
3- 153 ft./min.
4- 195 ft./min.

1302. What is the total fuel burn under operating conditions No. 2, Table 28?
V30
1- 24,050 lbs.
L188 2- 16,700 lbs.
L382 3- 18,130 lbs.
4- 12,600 lbs.

1303. What is the total fuel burn for a 2,000 NMI cruising flight under operating conditions No. 5, Table 28?
V30
L188 1- 24,060 lbs.
L382 2- 19,350 lbs.
3- 22,170 lbs.
4- 20,550 lbs.

1304. What is the total fuel burn for a 1,200 NMI cruising flight under operating conditions No. 6, Table 28?
V30
L188 1- 15,900 lbs.
L382 2- 12,630 lbs.
3- 16,500 lbs.
4- 13,720 lbs.

Table 27. Cabin Pressurization

OPERATING CONDITIONS		1	2	3	4
Departure Airport Elevation	FT.	1,000	2,000	1,500	SL
Pressurization Start	Ft. above airport	500	1,000	---	750
Cruising Altitude	FT.	20,000	22,000	25,000	18,000
Desired Cabin Altitude	FT.	8,000	7,000	8,000	6,000
Aircraft Rate of Climb	FT./MIN.	750	800	1,900	1,750

Table 28. Specific Fuel Consumption

OPERATING CONDITIONS	1	2	3	4	5	6
NAM/1,000 LBS.	55.4	62.0	67.2	72.5	93.5	85.0
TAS KTS.	200	220	240	260	270	255
Wind Component KTS.	10 HW	10 TW	20 HW	20 TW	30 HW	30 TW
Cruise Time HRS.	4.0	4.5	5.0	—	—	—

Table 29. Cruise Performance

OPERATING CONDITIONS		1	2	3	4
Cruise Altitude	FT.	19,000	17,000	23,000	15,000
Ambient Temperature	°C.	-13	-19	-41	-5
Weight Start Cruise	LBS.	105,000	110,000	115,000	100,000
Cruise Time	HRS.	3.5	3.5	2.5	4.0
Descent & Landing Fuel Burn	LBS.	1,350	1,200	1,550	1,400

1305. What is the landing weight under operating conditions No. 2, Table 29, according to the Cruise Chart? (Figure 38)
V30

L188 1- 93,150 lbs.
L382 2- 91,970 lbs.
3- 90,600 lbs.
4- 92,875 lbs.

1306. What is the landing weight under operating conditions No. 4, Table 29; according to the Cruise Chart? (Figure 38)
V30

L188 1- 79,700 lbs.
2- 81,100 lbs.
3- 78,300 lbs.
4- 76,700 lbs.

1307. What is the landing weight under operating conditions No. 4, Table 29; according to the Cruise Chart? (Figure 38)
V30

L188 1- 79,700 lbs.
2- 81,100 lbs.
3- 78,300 lbs.
4- 76,700 lbs.

1308. What is the landing weight under operating conditions No. 3, Table 29; according to the Cruise Chart? (Figure 38)
V30

L188 1- 102,820 lbs.
2- 103,200 lbs.
3- 102,580 lbs.
4- 101,150 lbs.

1309. What is the total fuel burn for a 1,500 NMI cruising flight under operating conditions No. 4, Table 28?
V30

L188 1- 22,500 lbs.
2- 18,840 lbs.
3- 19,060 lbs.
4- 19,200 lbs.

Table 30. Cruise Performance

OPERATING CONDITIONS	1	2	3	4	5
Gross Weight LBS.	140,000	115,000	145,000	100,000	135,000
Pressure Altitude FT.	16,000	20,000	5,000	18,000	10,000
Ambient Temperature °C.	-32	-5	+20	-21	+5
Cruise Time HRS.	4.0	3.5	2.5	3.0	4.5

STD. + 10°C

GROSS WEIGHT - POUNDS

PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
115,000				321	323	324	325	324	323	322	320	319
				4210	4440	4690	4930	5170	5410	5660	5920	6170
110,000			322	324	326	326	327	326	325	324	322	320
			3990	4220	4460	4700	4950	5180	5420	5680	5930	6180
105,000			325	327	328	329	328	328	327	325	323	321
			4000	4230	4470	4710	4960	5190	5440	5690	5940	6190
100,000		327	329	330	331	331	330	329	328	326	324	322
		3780	4010	4240	4480	4720	4970	5200	5450	5700	5950	6200
95,000	328	330	331	332	333	332	332	331	329	327	325	323
	3580	3790	4020	4250	4490	4730	4970	5200	5450	5710	5960	6200
90,000	332	333	334	335	335	334	333	332	330	328	326	324
	3590	3800	4020	4250	4490	4730	4970	5210	5460	5710	5960	6210
85,000	335	336	337	337	337	336	335	333	331	329	327	325
	3600	3800	4030	4250	4500	4730	4980	5220	5470	5720	5970	6210
80,000 *	338	339	339	339	338	337	336	334	332	330	328	325
**	3600	3800	4030	4260	4500	4740	4980	5220	5470	5730	4970	6220

STD. DAY

GROSS WEIGHT - POUNDS

PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
115,000			331	333	335	335	336	335	333	332	331	329
			4280	4530	4800	5050	5320	5590	5850	6100	6400	6690
110,000		331	334	336	337	337	337	336	335	334	332	330
		4060	4290	4540	4800	5050	5320	5600	5870	6110	6410	6700
105,000	331	335	337	338	339	339	339	338	336	335	333	331
	3840	4070	4290	4540	4810	5060	5330	5600	5880	6120	6420	6710
100,000	335	338	340	340	341	341	340	339	337	336	334	332
	3850	4080	4300	4550	4810	5070	5330	5610	5890	6130	6430	6710
95,000	339	341	342	342	343	342	341	340	338	337	335	333
	3850	4080	4310	4550	4820	5070	5340	5610	5890	6140	6440	6720
90,000	342	343	344	344	344	343	342	341	340	338	336	333
	3860	4090	4320	4560	4820	5080	5340	5620	5900	6150	6450	6730
85,000	344	345	346	346	346	345	343	342	340	339	336	334
	3870	4090	4320	4570	4830	5080	5350	5620	5910	6150	6450	6740
80,000 *	348	348	348	348	347	346	345	343	341	339	337	335
**	3880	4100	4330	4570	4830	5090	5350	5630	5910	6160	6460	6740

STD. - 10°C

GROSS WEIGHT - POUNDS

PRESS ALT-1000 FT	25	23	21	19	17	15	13	11	9	7	5	3
115,000		338	341	343	344	344	344	343	343	342	340	333
		4340	4620	4890	5170	5450	5740	6030	6320	6620	6920	7030
110,000	338	341	344	345	346	346	346	345	344	343	341	333
	4070	4350	4630	4900	5180	5460	5750	6040	6330	6630	6930	7000
105,000	342	345	346	347	347	347	347	346	345	344	342	333
	4080	4360	4640	4910	5190	5470	5760	6050	6340	6640	6940	6980
100,000	345	347	349	349	349	349	348	347	346	345	343	333
	4090	4370	4650	4920	5200	5480	5770	6060	6340	6640	6940	6960
95,000	348	350	351	351	351	350	350	348	347	346	343	333
	4100	4380	4650	4920	5210	5480	5770	6060	6350	6650	6920	6940
90,000	350	352	353	353	352	352	351	350	348	347	343	333
	4110	4380	4660	4930	5210	5490	5780	6060	6350	6650	6900	6930
85,000	353	354	355	355	354	353	352	350	349	347	343	333
	4120	4380	4660	4930	5220	5500	5780	6060	6360	6660	6880	6910
80,000 *	355	356	356	356	355	354	353	351	350	348	343	333
**	4120	4390	4660	4930	5220	5500	5780	6060	6360	6660	6870	6900

*True Airspeed - Knots
**Four Engine Fuel Flow - Lbs/Hr

Figure 38. Cruise Performance (Typical L-188)

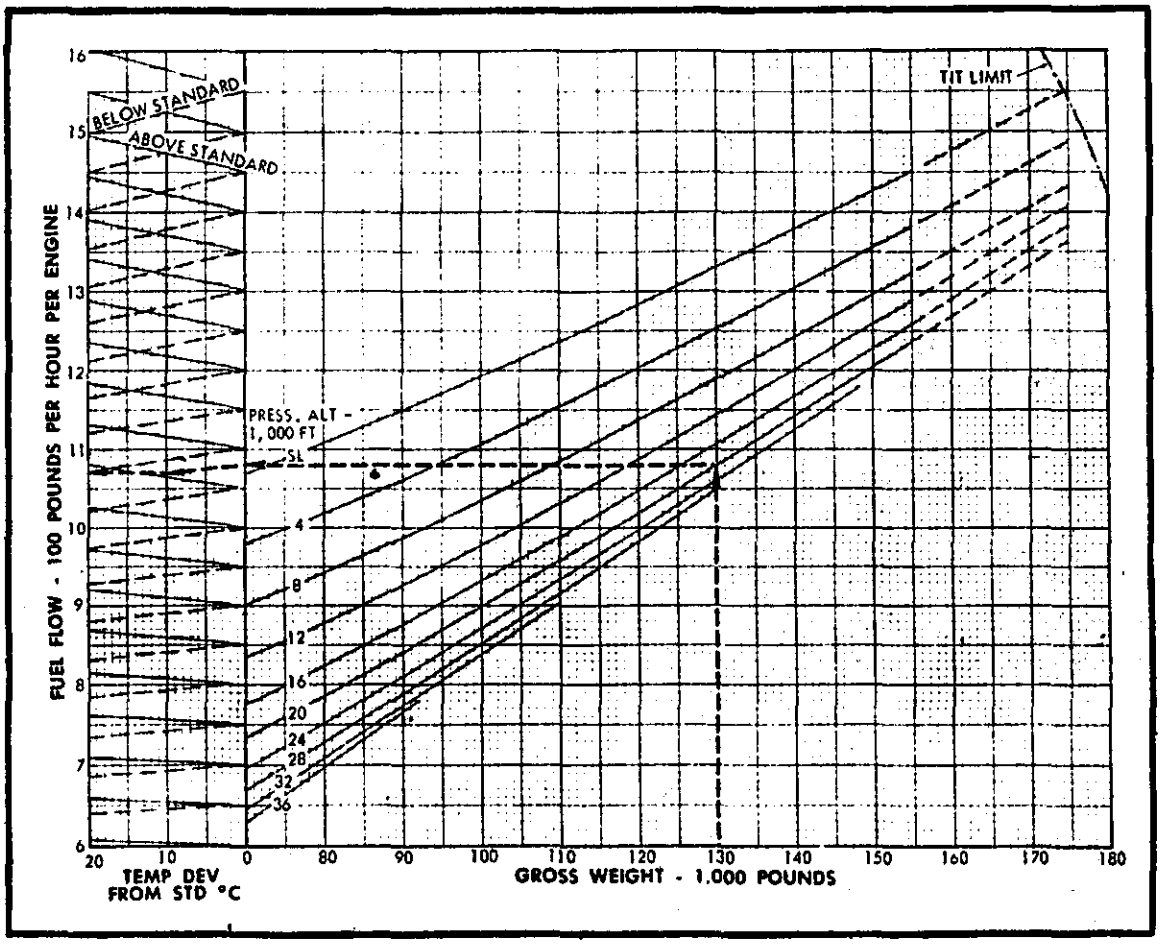


Figure 39. Cruise Performance (Typical L-382)

1310. What is the aircraft weight at the end of cruise under operating conditions No. 4, Table 30; according to the Cruise Chart? (Figure 39)

V30
L382

1- 88,360 lbs.
2- 90,850 lbs.
3- 89,260 lbs.
4- 89,020 lbs.

1311. What is the aircraft weight at the end of cruise under operating conditions No. 3, Table 30; according to the Cruise Chart? (Figure 39)

V30
L382

1- 128,800 lbs.
2- 132,400 lbs.
3- 131,600 lbs.
4- 111,500 lbs.

1312. What is the aircraft weight at the end of cruise under operating conditions No. 5, Table 30; according to the Cruise Chart? (Figure 39)

V30
L382

1- 113,040 lbs.
2- 129,840 lbs.
3- 113,950 lbs.
4- 111,750 lbs.

1313. What is the aircraft weight at the end of cruise under operating conditions No. 1, Table 30; according to the Cruise Chart? (Figure 39)

V30
L382

1- 121,600 lbs.
2- 120,650 lbs.
3- 135,400 lbs.
4- 122,400 lbs.

1314. What is the aircraft weight at the end of cruise under operating conditions No. 2, Table 30; according to the Cruise Chart? (Figure 39)

V30
L382

1- 101,700 lbs.
2- 100,700 lbs.
3- 94,400 lbs.
4- 110,900 lbs.

1315. How much fuel remains after cruising under operating conditions No. 1, Table 31; according to the Cruise Chart? (Figure 40)

V30
DC6

1- 3,050 gals.
2- 18,740 lbs.
3- 18,930 lbs.
4- 3,200 gals.

STANDARD CRUISE POWER TABLE

	PRESSURE ALTITUDE FEET	BLOWER	RPM	BMEP	BMEP DROP	SPARK	FUEL FLOW lbs/hr/engine
1200 Brake Horsepower	0 - 3,000	LOW	2200	154	12	Cruise	545
	3,001 - 6,000	LOW	2200	154	12	Cruise	545
	6,001 - 9,000	LOW	2200	154	12	Cruise	545
	9,001 - 12,000	LOW	2200	154	12	Cruise	545
	12,001 - 14,000	LOW	2200	154	12	Cruise	545
	14,001 - 16,000	LOW	2300	148	12	Cruise	555
	15,001 - 21,000	HIGH	2300	148	12	TO&CL	575
1100 Brake Horsepower	0 - 3,000	LOW	2100	148	12	Cruise	495
	3,001 - 6,000	LOW	2100	148	12	Cruise	495
	6,001 - 9,000	LOW	2100	148	12	Cruise	495
	9,001 - 12,000	LOW	2100	148	12	Cruise	495
	12,000 - 14,000	LOW	2100	148	12	Cruise	495
	14,001 - 16,000	LOW	2200	142	12	Cruise	505
	15,001 - 17,000	HIGH	2100	149	12	*Cruise	510
	17,001 - 20,000	HIGH	2200	142	12	*Cruise	520
	20,001 - 24,000	HIGH	2300	135	12	TO&CL	535
1000 Brake Horsepower	0 - 3,000	LOW	1850	153	12	Cruise	440
	3,001 - 6,000	LOW	1850	153	12	Cruise	440
	6,001 - 9,000	LOW	1850	153	12	Cruise	440
	9,001 - 12,000	LOW	1950	145	12	Cruise	445
	12,001 - 15,000	LOW	2100	135	12	Cruise	455
	15,001 - 18,000	LOW	2200	129	12	Cruise	465
	15,001 - 18,000	HIGH	2100	135	12	*Cruise	470
	18,001 - 21,000	HIGH	2200	129	12	*Cruise	480
	21,001 - 24,000	HIGH	2300	123	12	TO&CL	495

Figure 40. Cruise Performance (Typical DC-6)

1316. How much fuel remains after cruising under operating conditions No. 2, Table
V30 31; according to the Cruise Chart? (Figure 40)
DC6

1- 2,210 gals.
2- 2,150 gals.
3- 12,860 lbs.
4- 12,680 lbs.

1317. How much fuel remains after cruising under operating conditions No. 3, Table
V30 31; according to the Cruise Chart? (Figure 40)
DC6

1- 7,245 lbs.
2- 7,655 lbs.
3- 1,224 gals.
4- 1,020 gals.

1318. How much fuel remains after cruising under operating conditions No. 4, Table
V30 31; according to the Cruise Chart? (Figure 40)
DC6

1- 1,547 gals.
2- 10,115 lbs.
3- 9,267 lbs.
4- 1,528 gals.

1319. How much dump time is required to reduce weight to 96,650 lbs. under operating
V40 conditions No. 4, Table 32?

L188 1- 7.7 minutes.
2- 8.5 minutes.
3- 8.1 minutes.
4- 7.9 minutes.

Table 31. Cruise Performance

OPERATING CONDITIONS	1	2	3	4
Beginning Total Weight LBS.	97,520	88,500	95,400	101,700
Zero Fuel Weight LBS.	68,450	69,700	80,100	83,200
Pressure Altitude	14,000	17,000	19,000	13,000
1200 BHP Cruise Time	1:25	:40	:55	1:05
1100 BHP Cruise Time	1:40	2:15	1:35	2:50
1000 BHP Cruise Time	2:10	--	1:20	:45

Table 32. Fuel Dumping

OPERATING CONDITIONS	1	2	3	4
Acft. Weight - Start Dump LBS.	113,000	111,500	110,000	107,500
Zero Fuel Weight LBS.	77,000	80,000	75,500	---
Dump Rate LBS./MIN.	1,350	1,350	1,350	1,300
Dump Time MIN.	22	15	18.5	---
Fuel Flow LBS./HR./ENG.	1,200	1,500	1,250	1,485
Engines operating during dump	4	3	4	3

1320. How much fuel remains after dumping under operating conditions No. 3, Table 32?

V40
L188
1- 6,873 lbs.
2- 8,262 lbs.
3- 7,984 lbs.
4- 9,525 lbs.

1321. How much fuel remains after dumping under operating conditions No. 1, Table 32?

V40
L188
1- 4,540 lbs.
2- 4,980 lbs.
3- 5,100 lbs.
4- 4,360 lbs.

1322. How much fuel remains after dumping under operating conditions No. 2, Table 32?

V40
L188
1- 11,350 lbs.
2- 10,125 lbs.
3- 5,250 lbs.
4- 9,750 lbs.

1323. How much fuel remains after dumping under operating conditions No. 1, Table 33?

V40
L382
1- 13,800 lbs.
2- 15,000 lbs.
3- 12,100 lbs.
4- 16,200 lbs.

1324. How much dump time is required to reduce weight to 116,100 lbs. under operating conditions No. 4, Table 33?

V40
L382
1- 9.9 minutes.
2- 8.7 minutes.
3- 9.0 minutes.
4- 9.6 minutes.

1325. How much fuel remains after dumping under operating conditions No. 2, Table 33?

V40
L382
1- 9,835 lbs.
2- 8,750 lbs.
3- 8,670 lbs.
4- 9,345 lbs.

1326. How much fuel remains after dumping under operating conditions No. 3, Table 33?

V40
L382
1- 8,050 lbs.
2- 8,375 lbs.
3- 7,335 lbs.
4- 7,210 lbs.

1327. How much fuel remains after dumping under operating conditions No. 1, Table 34?

V40
DC6
1- 450 gals.
2- 3,294 lbs.
3- 710 lbs.
4- 2,917 lbs.

Table 33. Fuel Dumping

OPERATING CONDITIONS	1	2	3	4
Acft. Weight - Start Dump LBS.	135,000	145,000	135,000	145,000
Zero Fuel Weight LBS.	90,000	95,000	92,000	---
Dump Rate LBS./MIN.	2,000	2,770	2,770	2,950
Dump Time MIN.	15	14.5	12.5	---
Fuel Flow LBS./HR./ENG.	1,200	1,500	1,250	1,485
Engines operating during dump	4	3	4	3

Table 34. Fuel Dumping

OPERATING CONDITIONS	1	2	3	4
Aircraft Weight - Start Dump LBS.	102,000	96,500	100,100	94,230
Zero Fuel Weight LBS.	83,200	72,700	76,150	--
Dump Rate LBS./MIN.	2,736	2,736	2,736	2,736
Dump Time MIN.	5.6	7.2	6.9	--
Fuel Flow LBS./HR./ENG.	495	715	545	440
Engines Operating During Dump	4	3	4	4

1328. How much fuel remains after dumping under operating conditions No. 2, Table 34?

V40

1- 3,756 lbs.
DC6 2- 3,950 lbs.
3- 640 gals.
4- 626 gals.

1329. How much dump time is required to reduce to 88,200 lbs. under operating conditions
V40 No. 4, Table 34?

DC6 1- 2.2 minutes.
2- 2.6 minutes.
3- 4.5 minutes.
4- 1.2 minutes.

1330. How much fuel remains after dumping under operating conditions No. 3, Table 34?

V40

1- 4,833 lbs.
DC6 2- 810 gals.
3- 910 gals.
4- 5,023 lbs.

1331. What is the recommended runway boundary speed under operating conditions No. 2,
V60 Table 35; according to the Landing Speed Chart? (Figure 41)

L382

1- 124 knots IAS.
2- 129 knots IAS.
3- 136 knots IAS.
4- 131 knots IAS.

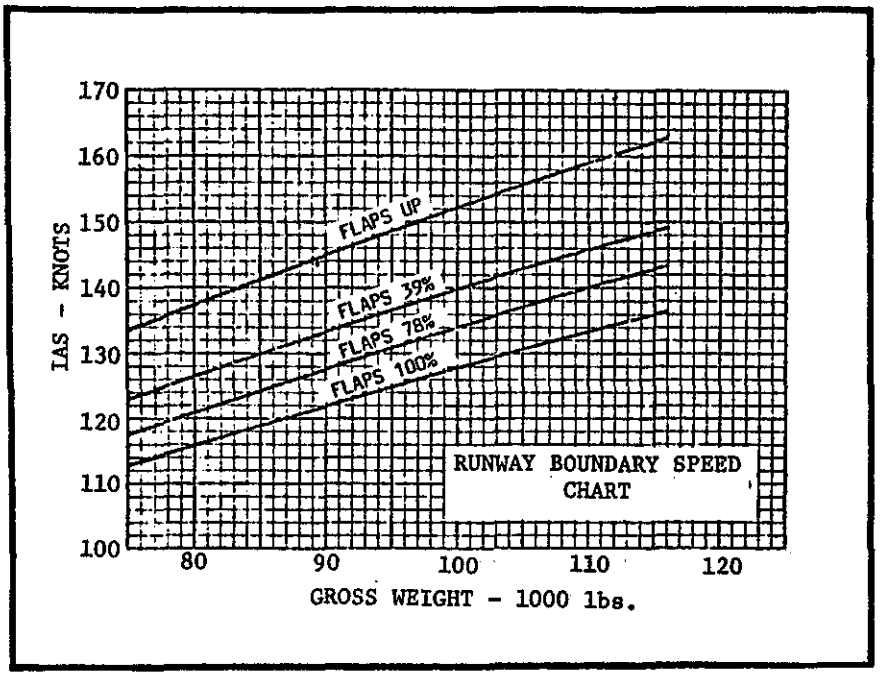


Figure 41. Landing Speed (Typical L-188)

Table 35. Landing Speed

OPERATING CONDITIONS		1	2	3	4
Weight at Cruise	LBS.	100,000	105,000	107,500	110,000
Cruise Fuel Flow	LBS./HR./ENG.	1,130	1,050	1,200	1,250
Cruise Time	HRS.	2.2	2.6	1.8	2.7
Descent & Landing Fuel	LBS.	1,200	1,300	1,500	1,200
Final Flap Setting		100%	78%	100%	78%

1332. What is the recommended runway boundary speed under operating conditions No. 3,
V60 Table 35; according to the Landing Speed Chart? (Figure 41)
L188

1- 130 knots IAS.
2- 132 knots IAS.
3- 126 knots IAS.
4- 128 knots IAS.

1333. What is the recommended runway boundary speed under operating conditions No. 1,
V60 Table 35; according to the Landing Speed Chart? (Figure 41)
L188

1- 121 knots IAS.
2- 126 knots IAS.
3- 116 knots IAS.
4- 124 knots IAS.

1334. What is the threshold speed under operating conditions No. 1, Table 36; according
V60 to the Landing Speed Chart? (Figure 42)
L382

1- 136 knots IAS.
2- 122 knots IAS.
3- 118 knots IAS.
4- 141 knots IAS.

1335. What is the touchdown speed under operating conditions No. 2, Table 36; according
V60 to the Landing Speed Chart? (Figure 42)
L382

1- 123 knots IAS.
2- 109 knots IAS.
3- 127 knots IAS.
4- 115 knots IAS.

1336. What is the recommended runway boundary speed under operating conditions No. 4,
V60 Table 35; according to the Landing Speed Chart? (Figure 41)
L188

1- 127 knots IAS.
2- 137 knots IAS.
3- 125 knots IAS.
4- 131 knots IAS.

1337. What is the touchdown speed under operating conditions No. 3, Table 36; ac-
V60 cording to the Landing Speed Chart? (Figure 42)
L382

1- 149 knots IAS.
2- 114 knots IAS.
3- 130 knots IAS.
4- 134 knots IAS.

1338. What is the threshold speed under operating conditions No. 4, Table 36; accord-
V60 ing to the Landing Speed Chart? (Figure 42)
L382

1- 137 knots IAS.
2- 128 knots IAS.
3- 148 knots IAS.
4- 131 knots IAS.

Table 36. Landing Speed

OPERATING CONDITIONS		1	2	3	4
Weight at Cruise	LBS.	120,000	135,000	140,000	140,000
Cruise Fuel Flow	LBS./HR./ENG.	1,185	1,500	1,200	1,070
Cruise Time	HRS.	2.2	2.6	1.8	2.7
Descent & Landing Fuel	LBS.	1,500	1,200	1,400	1,300
Flap Setting		UP	50%	UP	50%

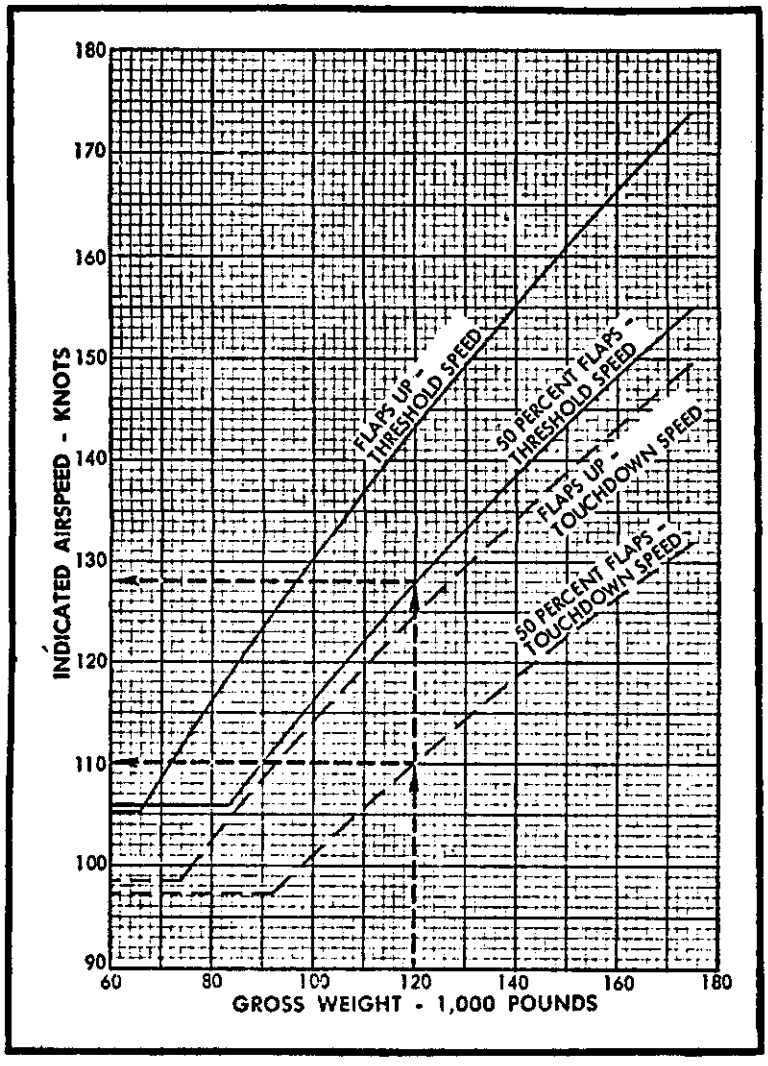


Figure 42. Landing Speed (Typical L-382)

TITLE	TEST NO.
FLIGHT ENGINEER TURBOPROP-BASIC	00001

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	4	21	252	41	631	61	1032
2	15	22	273	42	644	62	1040
3	32	23	281	43	661	63	1047
4	41	24	343	44	672	64	1081
5	53	25	347	45	699	65	1103
6	60	26	363	46	706	66	1122
7	82	27	371	47	740	67	1128
8	90	28	385	48	764	68	1143
9	92	29	407	49	771	69	1158
10	98	30	424	50	799	70	1166
11	104	31	437	51	809	71	1194
12	114	32	450	52	825	72	1207
13	128	33	488	53	849	73	1216
14	130	34	494	54	855	74	1235
15	155	35	523	55	875	75	1253
16	171	36	535	56	896	76	1278
17	178	37	539	57	943	77	1289
18	191	38	544	58	965	78	1299
19	215	39	581	59	982	79	1305
20	240	40	610	60	1017	80	1332

QUESTION SELECTION SHEET

TITLE	FLIGHT ENGINEER TURBOPROP	TEST NO. 00002

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	269	21	656	41	1027
2	287	22	658	42	1033
3	306	23	673	43	1066
4	318	24	682	44	1091
5	362	25	695	45	1108
6	374	26	717	46	1115
7	384	27	739	47	1136
8	397	28	757	48	1147
9	423	29	778	49	1165
10	429	30	797	50	1172
11	447	31	817	51	1205
12	457	32	838	52	1214
13	473	33	842	53	1218
14	509	34	868	54	1248
15	532	35	893	55	1257
16	538	36	924	56	1276
17	548	37	936	57	1287
18	560	38	957	58	1302
19	593	39	999	59	1308
20	629	40	1019	60	1334

QUESTION SELECTION SHEET

TITLE	FLIGHT ENGINEER TURBOPROP-BASIC	TEST NO. 00003

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	16	21	251	41	654	61	1030
2	22	22	285	42	667	62	1039
3	28	23	309	43	669	63	1041
4	45	24	324	44	680	64	1086
5	49	25	354	45	701	65	1094
6	69	26	370	46	712	66	1121
7	71	27	382	47	747	67	1132
8	83	28	403	48	756	68	1138
9	87	29	409	49	770	69	1162
10	88	30	436	50	802	70	1168
11	110	31	452	51	819	71	1197
12	119	32	466	52	828	72	1215
13	141	33	482	53	839	73	1219
14	145	34	493	54	851	74	1230
15	164	35	531	55	885	75	1271
16	174	36	533	56	918	76	1280
17	184	37	540	57	937	77	1291
18	206	38	555	58	973	78	1304
19	231	39	587	59	990	79	1313
20	245	40	617	60	1025	80	1331

QUESTION SELECTION SHEET

TITLE	FLIGHT ENGINEER TURBOPROP	TEST NO. 00004

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	262	21	649	41	1038
2	278	22	665	42	1054
3	305	23	671	43	1070
4	330	24	692	44	1082
5	366	25	704	45	1111
6	369	26	728	46	1118
7	379	27	734	47	1127
8	393	28	750	48	1148
9	415	29	779	49	1153
10	429	30	803	50	1180
11	436	31	811	51	1191
12	445	32	820	52	1211
13	492	33	848	53	1217
14	497	34	860	54	1245
15	510	35	895	55	1268
16	526	36	928	56	1277
17	549	37	945	57	1285
18	565	38	955	58	1309
19	602	39	983	59	1311
20	626	40	1012	60	1324

QUESTION SELECTION SHEET

TITLE	FLIGHT ENGINEER RECIPROCATING-BASIC	TEST NO. 00005

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	12	21	258	41	639	61	1036
2	25	22	286	42	643	62	1043
3	33	23	312	43	650	63	1049
4	38	24	328	44	676	64	1089
5	40	25	352	45	702	65	1102
6	63	26	357	46	716	66	1117
7	73	27	380	47	744	67	1123
8	86	28	391	48	767	68	1129
9	101	29	412	49	791	69	1142
10	122	30	422	50	795	70	1155
11	124	31	454	51	805	71	1170
12	127	32	461	52	830	72	1206
13	147	33	470	53	840	73	1212
14	154	34	503	54	859	74	1227
15	170	35	520	55	887	75	1250
16	177	36	536	56	930	76	1262
17	188	37	552	57	943	77	1286
18	212	38	572	58	961	78	1298
19	237	39	596	59	993	79	1315
20	248	40	613	60	1006	80	1330

QUESTION SELECTION SHEET

TITLE	FLIGHT ENGINEER RECIPROCATING ENGINE	TEST NO. 00006

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	261	21	645	41	1028
2	303	22	648	42	1034
3	316	23	675	43	1046
4	341	24	689	44	1083
5	352	25	703	45	1095
6	373	26	720	46	1116
7	377	27	738	47	1131
8	381	28	758	48	1149
9	406	29	786	49	1154
10	430	30	794	50	1160
11	449	31	818	51	1176
12	455	32	837	52	1196
13	464	33	843	53	1203
14	518	34	871	54	1222
15	522	35	892	55	1240
16	530	36	921	56	1259
17	556	37	938	57	1284
18	578	38	947	58	1301
19	606	39	991	59	1318
20	625	40	1002	60	1327

QUESTION SELECTION SHEET