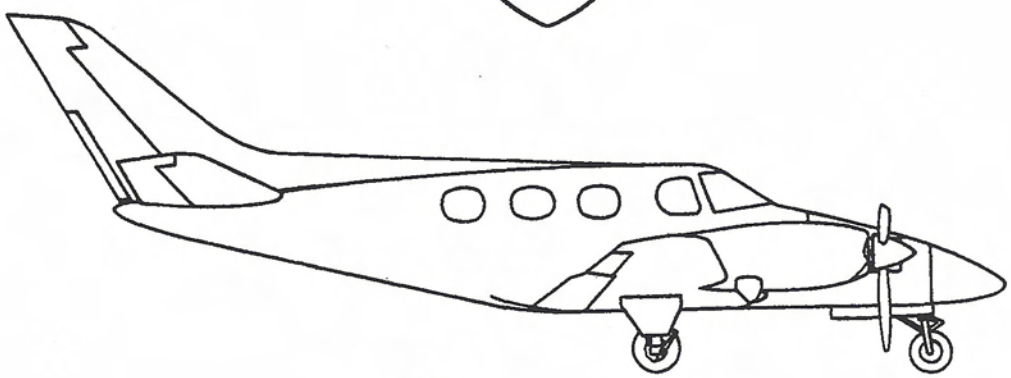
BEECH



Beechcraft®

DUKE 60 & A60

PILOT'S OPERATING MANUAL

This book is incomplete without a current FAA Flight Manual, P/N 60-590000-5E, consisting of FAA Data, FAA Revision Log, FAA Limitations, FAA Normal Procedures, FAA Emergency Procedures, FAA Performance, and FAA Flight Manual Supplements.

PUBLISHED BY PARTS AND SERVICE OPERATIONS
BEECH AIRCRAFT CORPORATION · WICHITA, KANSAS 67201

P/N 60-590000-3D

Reissued: December 15, 1972

Listed below are the pages required for this publication, with effectivity current through the revision and/or reissue code shown on the lower right hand corner of this page, and on the title page. Each page is followed by an entry that denotes whether the page is still as originally issued or is a part of some later revision or reissue.

LIST OF EFFECTIVE PAGES

Always destroy superseded pages when you insert revised pages.

Original	July 1, 1968
D Reissue	December 15, 1972

Title Page	D
"A" Page	D
a through g	D
FAA Title Page	See FAA Airplane Flight Manual Log of Revisions
i and ii	See FAA Airplane Flight Manual Log of Revisions
FAA Log of Revisions	See FAA Airplane Flight Manual Log of Revisions
Sections I through V	See FAA Airplane Flight Manual Supplements Log of Revisions
6-1 through 6-5	D
7-1 through 7-19	D
8-1 through 8-6	D
9-1 through 9-25	D
10-1 through 10-23	D

NOTE: The asterisk denotes pages in the current revision.

D

98-34406

Basic publications are assigned a part number which appears on the title page with the date of the issue. Subsequent revisions are identified by the addition of a revision code after the part number. A_1 after a part number denotes the first revision to the basic publication, A_2 the second, etc. Occasionally, it is necessary to completely reissue and reprint a publication for the purpose of obsoleting a previous issue and outstanding revisions thereto. As these replacement reissues are made, the code will also change to the next successive letter of the alphabet at each issue. For example, B for the first reissue, C for the second reissue, etc.

When ordering a handbook, give the basic number, and the reissue code when applicable, if a complete up-to-date publication is desired. Should only revision pages be required, give the basic number and revision code for the particular set of revision pages you desire.

THANK YOU . . . . .

for displaying your confidence in us by selecting a BEECHCRAFT airplane. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that your new BEECHCRAFT Duke 60 & A60 meets the high standards of quality and performance for which BEECHCRAFT airplanes have become famous throughout the world.

IMPORTANT NOTICE

This manual should be read carefully in order that you may become familiar with the operation of your Duke. Suggestions and recommendations have been made within it to help you obtain maximum performance without sacrificing economy. Furthermore, you should also be familiar with and operate your new BEECHCRAFT in accordance with the Federal Aviation Administration Approved Flight Manual and/or the FAA Approved Placards which are located in your BEECHCRAFT.

As a further reminder, you should also be familiar with the applicable Federal Aviation Regulations concerning operation and maintenance of the airplane and FAR Part 91 General Operating and Flight Rules. Likewise your aircraft must be operated and maintained in accordance with FAA Airworthiness Directives which may be issued against your BEECHCRAFT.

The operation, care, and maintenance of your airplane after it is delivered to you is your responsibility. However, your authorized BEECHCRAFT Parts and Service Outlets will have all recommended modification, service, and operating procedures issued by both FAA and Beech, designed to get maximum utility and safety from your airplane.

USE OF THE MANUAL

A current manual is an informative manual. Every effort will be made by Beech Aircraft Corporation to incorporate the latest information available so that you may always have a current BEECHCRAFT Duke 60 & A60 Pilot's Operating Manual. The following information will inform you of the divisions of the book and the proper manner of updating the revision records and amending the content of the book as the material becomes available to you.

DIVISIONS OF THE MANUAL

The Pilot's Operating Manual is divided into two basic parts; the FAA Approved portion which includes the FAA Approved Airplane Flight Manual and Supplements (each page being folioed as such with the FAA approval and date), and the portion that is not FAA Approved (folioed as Supplemental Operational Data), which includes the remainder of the manual. The FAA Approved sections of the manual are distinguished from the non-approved sections in that the quick reference divider tabs are marked "FAA" preceding the title of the section.

The FAA Approved Airplane Flight Manual bears its own part number and is a complete manual in itself, but the Pilot's Operating Manual bears a separate part number and is incomplete without the Flight Manual.

PILOT'S OPERATING MANUAL REVISION RECORD

On the back side of the title page is a List of Effective Pages or the "A" Page, as it is normally called. Take a moment, now, to examine this page. You will see that a complete listing of all pages is presented along with the current status of the material contained; i.e., Original, Reissued, Revised or described in another section. Also, in the lower right corner of the blocked portion is a box containing a capital letter which denotes reissue of the manual. It will be advanced one letter, alphabetically, per reissue. A reissue of the manual or the revision of any portion that does not require another revision log, will be received with a new "A" Page to replace the previous one.

FAA APPROVED AIRPLANE FLIGHT MANUAL REVISION RECORD

Note the reference to the FAA Airplane Flight Manual Log of Revisions which is located under the tab of that name in the first part of the manual. This page is used for description of all material covered under the FAA Approved portion except the Airplane Flight Manual Supplements. When a revision of any information contained in this portion of the manual is made, a new Log of Revisions sheet will be issued for insertion immediately ahead of all previously issued Log of Revisions sheets. All Log of Revisions pages must be retained in the manual to provide a current record of material status until a reissue of the manual is made at which time all pages are removed. Looking at this page, you will notice that under the column labeled Revision Number, there will be a letter indicating the current issue, followed by a number indicating the numerical revisions. The revised pages will be listed along with the description. As noted at the bottom of this page, each revised portion of the pages issued will have a black border indicating the portion changed. All revised pages listed in the new Log of Revisions are to be removed and replaced with the current page.

AIRPLANE FLIGHT MANUAL SUPPLEMENTS REVISION RECORD

Looking further to the last section before the full-page divider tab, you will find the FAA Approved Airplane Flight Manual Supplements headed by a Log of Revisions page. Here you will find a listing of the FAA Approved Supplemental Equipment available for installation on the BEECHCRAFT Duke 60 & A60. When new supplements are received the new "Log" sheet will replace the previous one, since it contains a listing of all previous approvals, plus the new approval. The supplemental material will be added to the grouping in accordance with the descriptive listing.

NOTE

In an effort to provide you with as complete coverage as possible, applicable to any configuration of the BEECHCRAFT Duke 60 & A60, optional equipment has been included in the scope of these manuals. Because of the versatility of the appointments and arrangements of the aircraft, the equipment described or depicted herein may not be designated as optional equipment in every case. Through variations provided by custom designing, the illustrations in this manual will not be typical of every airplane.

DIVISION TABULAR INDEX

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ABBREVIATIONS AND TERMINOLOGIES

The following Abbreviations and Terminologies have been listed for your convenience and ready interpretation where used within this manual. Whenever possible, they have been categorized for ready reference.

AIRSPEED TERMINOLOGY

IAS	Indicated airspeed is the speed of an aircraft as shown on its airspeed indicator. As used within this manual IAS assumes no instrument error.
CAS	Calibrated Airspeed is indicated airspeed of an aircraft, corrected for position error.
TAS	True Airspeed is actual or exact airspeed. Indicated airspeed corrected for temperature and pressure.
GS	Ground Speed, through not an airspeed, is directly calculable from True Airspeed if the True wind speed and direction are known.
M	Mach Number is the ratio of true airspeed to the speed of sound.
V_{mc}	Minimum Control Speed - The minimum flight speed at which the airplane is controllable with a maximum of 5° bank when one engine suddenly becomes inoperative and the remaining engine is operating at takeoff power.
V_a	Maneuvering Speed - The maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V_f	Design flap speed is the highest speed permissible at which wing flaps may be actuated.
V_{fe}	Maximum "flap extended speed" is the highest speed permissible with wing flaps in a prescribed extended position.
V_c	The design cruising speed.
V_{le}	Maximum landing gear extended speed is the maximum speed at which an aircraft can be safely flown with the landing gear extended.
V_{lo}	Maximum landing gear operating speed is the maximum speed at which the landing gear can be safely extended or retracted.
V_s	The stalling speed or the minimum steady flight speed in a specified flap, landing gear, and power configuration.
V_{so}	The stalling speed or the minimum steady flight speed, power off, in the landing configuration.
V_x	The best angle of climb speed.
V_y	The best rate of climb speed.

METEOROLOGICAL TERMINOLOGY

Pressure Altitude	Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter.
Station Pressure	Actual atmospheric pressure at field elevation.

OAT	Outside Air Temperature - The free air static temperature, obtained either from ground meteorological sources or from inflight temperature indications, adjusted for instrument error and compressibility effects.
Wind	The wind velocities recorded as variables on the charts of this manual are to be understood as the headwind or tailwind components of the actual winds at 50 feet above runway surface (tower winds).
ISA	International Standard Atmosphere in which (1) The air is a dry perfect gas: (2) The temperature at sea level is 59 degrees Fahrenheit; (3) The pressure at sea level is 29.92 inches Hg.; (4) The temperature gradient from sea level to the altitude at which the temperature is -69.7 degrees Fahrenheit is -0.003566 Fahrenheit per foot and zero above that altitude.
ICAO	International Civil Aviation Organization

POWER TERMINOLOGY

Maximum Continuous	Is the highest power rating not limited by time. Use of this rating should be limited to emergency situations.
Cruise Climb	Is the power recommended for normal climb.
Critical Altitude	Is that altitude for a given rpm where the desired manifold pressure can no longer be maintained.

CONTROL AND INSTRUMENT TERMINOLOGY

Throttle Control	Is the lever used to control the forced introduction of a fuel-air mixture into the intake passages of an engine by means of a pressure differential other than that caused by the induction airflow in the engine.
Propeller Control	This lever requests the governor to maintain rpm at a selected value and, in the maximum decrease rpm position, feathers the propellers.
Mixture Control	This lever, in the idle cut-off position, stops the flow of fuel at the injectors and in the intermediate to the full rich position regulates the fuel air mixture.
Propeller Governor	This governor will maintain the selected rpm requested by the propeller control lever.
Manifold Pressure Gage	An instrument that measures the pressure in the intake manifold of an engine, measured from zero, and expressed in inches of mercury (in. Hg)
Tachometer	An instrument that indicates the rotation of the propeller in revolutions per minute (rpm).
Turbo Supercharger	A turbin type compressor, driven by engine exhaust gases, that forces more air or fuel-air mixture into an internal combustion reciprocating engine than the engine would induct under the prevailing atmospheric pressures.

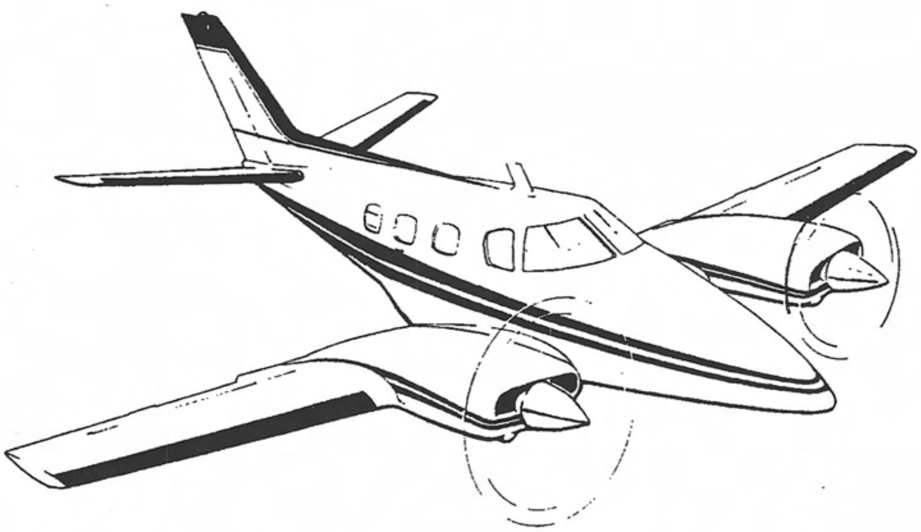
CHART AND GRAPH TERMINOLOGY

Climb Gradient	The demonstrated ratio of the change in height during a portion of a climb, to the horizontal distance traversed in the same time interval.

Best Rate of Climb	The best rate-of-climb speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time with gear and flaps up.
Best Angle of Climb	The best angle-of-climb speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance with gear and flaps up.
Demonstrated Crosswind	The demonstrated crosswind velocity is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests. The value shown is not considered to be limiting.
Accelerate-stop Distance	The distance required to accelerate an airplane to a specified speed and, assuming failure of an engine at the instant that speed is attained, to bring the airplane to a stop.
Take-off Weight	The gross weight of the aircraft at lift-off from runway.
Landing Weight	The weight of the aircraft at landing touch-down.
Ramp Weight	The gross weight of the aircraft before engine start. Included is the take-off weight plus a fuel allowance for start, taxi, run-up and take-off ground roll to lift-off.
MEA	Minimum enroute IFR altitude.
Route Segment	A part of a route. Each end of that part is identified by: (1) a geographical location; or (2) a point at which a definite radio fix can be established.

FAA APPROVED

Airplane Flight Manual



Beechcraft®

DUKE® 60 & A60

NOTE: THE FAA APPROVED FLIGHT MANUAL MUST BE KEPT WITHIN REACH OF THE PILOT DURING ALL FLIGHT OPERATIONS

Mfr's Serial No. ______________________

Registration No. ______________________

FAA Approved by N. H. Schultz, for CHESTER A. REMBLESKE
BEECH AIRCRAFT CORPORATION
DOA CE-2

Date of Approval December 15, 1972

Part No. 60-590000-5E

FAA Approved, based on FAR 23, Normal Category.

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SECTION III, EMERGENCY PROCEDURES

SECTION IV, FAA PERFORMANCE

SECTION V, FLIGHT MANUAL SUPPLEMENTS

LOG OF REVISIONS

Duke 60 & A60 Airplane Flight Manual, P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision
E6	1-1	Engine Limitations, Operation above 27,000 Feet

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

98-34404A

A black bar on a revised page shows the current change

LOG OF REVISIONS

Duke 60 & A60 Airplane Flight Manual, P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision
E5	ii	Change Table of Contents
E5	1-1	Remove Fuel Information
E5	1-2	Add Instrument Air
E5	1-5	Remove 144 Gal System
E5	2-12	Change Oxygen Duration
E5	3-8	Add Spin Recovery Procedure

N. H. Schultz
for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

98-34404A

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LOG OF REVISIONS

Duke 60 & A60 Airplane Flight Manual P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision
E4	ii	Add Alternate Static Air Source
E4	1-5	Added Alternate Static Air Source Kit Installation Number
E4	3-6	Added Alternate Static Air Source Kit Installation Number
E4	3-7	Rearranged information
		W. H. Schultz for Chester A. Rembleske Beech Aircraft Corporation DOA CE-2

98-34404A

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LOG OF REVISIONS

Duke 60 & A60 Airplane Flight Manual P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision
E-3	4-1	Changed Table of Contents
E-3	4-3	Changed Airspeed Calibration - Alternate System Graph
E-3	4-5	Changed Altimeter Correction Alternate System Graph

H. H. Schultz
CHESTER A. REMBLESKE
BEECH AIRCRAFT CORP.
DOA CE-2

98-34404A

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LOG OF REVISIONS

Duke 60 and A60 Airplane Flight Manual, P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision
E-2	1-3	Correction of Minimum Single Engine Control Speed (Red Radial)
E-2	1-3	Landing Weight Restrictions with 8-Ply Rated Tires

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

98-34404A

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LOG OF REVISIONS

Duke 60 and A60 Airplane Flight Manual, P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision
E-1	i	Add Battery Condition Check to Table of Contents
E-1	2-6	Add Battery Check to Cruise
E-1	2-8	Add Battery Check to Shutdown
E-1	2-9	Add Battery Condition Check
E-1	4-11	Change "Approach Speed" to "Climb Speed"
E-1	4-12	Change "Climb Speed" to "Approach Speed"

H. H. Schultz
for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

98-34404A

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LOG OF REVISIONS

Duke 60 & A60 Airplane Flight Manual, P/N 60-590000-5E

Revision Number	Revised Pages	Description of Revision	FAA Approved
E	Title	Original	
E	i thru ii	Original	
E	1-1 thru 1-9	Original	
E	2-1 thru 2-12	Original	
E	3-1 thru 3-7	Original	
E	4-1 thru 4-13	Original	
			H. H. Schultz for Chester A. Rembleske Beech Aircraft Corporation DOA CE-2

98-34404

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SECTION I

LIMITATIONS

Airspeeds quoted in this section are Calibrated Airspeeds (CAS) unless otherwise noted.

Observance of the limitations listed is mandatory.

ENGINES

Take-off and Maximum Continuous Power . . . . 2900 rpm at 41.5 in. Hg

Airplane serials P-144 and after (and prior to P-144 when equipped with TIO-541-E1C4 Engines, one or both)
Cruise Power above 27,000 ft . . . . 2750 rpm and 31 in. Hg (Minimum)

Engine must be preheated before starting when ambient temperatures are below 10°F (-12°C).

Oil Cooler Baffles are to be removed when OAT exceeds 20°C.

PROPELLERS

Two Hartzell constant speed, full feathering, three-bladed propellers using; HC-F3YR-2 hubs with C7479-2R blades and C3273 spinner assemblies; Pitch setting at 30-inch station: Low, 14°; High, 81.7°. Diameter 74 inches, no cut-off permitted.

STARTERS

When restarting an engine in flight do not use the starter above 20,000 feet.

FUEL GRADE

100/130 (Green) Aviation Gasoline minimum grade
115/145 (Purple) Aviation Gasoline alternate grade.

FUEL CAPACITY

Baffled fuel cells installed in both wings
(207 gallon capacity) . . . . 204 gallons usable or
202 gallons usable after compliance with S.I. 0559-281

Unbaffled fuel cells in either or both wings
(207 gallon capacity) . . . . 204 gallons usable or
192 gallons usable after compliance with S.I. 0559-281

FUEL MANAGEMENT

Do not take-off if fuel quantity gages indicate in Yellow Arc or with less than 25 gallons of fuel in each main tank.

INSTRUMENT MARKINGS

Oil Temperature	
Minimum (Red Radial) Reference Service Instruction No. 0272-391	38°C
Normal Operating Range (Green Arc)	38 to 118°C
Maximum (Red Radial)	118°C
Oil Pressure	
Minimum Idle (Red Radial)	10 psi or 25 psi
Normal Operating Range (Green Arc)	60 to 90 psi
Maximum (Red Raidal)	.100 psi
Fuel Flow	
Green Arc	.60 to 330 pph
55%	.93 to 110 pph
65%	110 to 131 pph
75%	131 to 142 pph
Manifold Pressure	
Normal Operating Range (Green Arc)	14 to 41.5 in. Hg
Maximun (Red Radial)	41.5 in. Hg
Tachometer	
Normal Operating Range (Green Arc)	2350 to 2900 rpm
Maximum (Red Radial)	2900 rpm
Cylinder Head Temperature	
Normal Operating Range (Green Arc)	121 to 232°C
Maximum (Red Radial)	246°C
Turbine Inlet Temperature (Red Radial)	900°C
Instrument Air	
Caution Range (Yellow Arc)	2.5 to 3.5 in. Hg
Normal Operating Range (Green Arc)	3.5 to 5.5 in. Hg
Caution Range (Yellow Arc)	5.5 to 6.5 in. Hg
Red Button Source Failure Indicators	
Normal Operating Range (Green Arc)	.7 to 20 psi
(Red Radial)	20 psi
Cabin Differential	
Normal Operating Range (Green Arc)	0 to 4.7 psi
Maximum (Red Arc)	4.7 psi
Propeller Anti-Ice Normal	
Operating Range (Green Arc)	.14 to 18 amps
Fuel Quantity Indicators	
No Take-off (Yellow Arc)	0 to 25 gals

AIRSPEED LIMITATIONS (CAS)

Maximum Allowable (Red Radial) (Glide or Dive, Smooth Air)	270 mph/235 kts
Caution Range (Yellow Arc)	240 to 270 mph/208 to 235 kts
Normal Operating Range (Green Arc)	98 to 240 mph/85 to 208 kts
Flap Operating Range (White Arc)	88 to 156 mph/76 to 135 kts
Approach Position - 15°	202 mph/175 kts
Full Down Position - 30°	156 mph/135 kts
Single-Engine Best Rate-of-Climb (Blue Radial)	129 mph/112 kts
Minimum Single-Engine Control Speed (Red Radial)	101 mph/88 kts
Maximum Gear Operation Speed	202 mph/175 kts
Maximum Gear Extended Speed	202 mph/175 kts
Maximum Design Maneuvering	186 mph/161 kts
Maximum Demonstrated Crosswind	29 mph/25 kts

ALTITUDE LIMITATION 30,000 ft

MANEUVERS

This is a normal category aircraft. Acrobatic maneuvers, including spins, are prohibited.

Maximum slip duration . . . . 30 seconds

FLIGHT LOAD FACTORS

At design Gross Weight of 6775 lbs: Positive; Flaps Up 3.5 G, Flaps Down 2.0 G.

CENTER OF GRAVITY (Landing Gear Extended)

Forward Limits: 128.0 inches aft of datum at 5100 lbs and under, then straight line variation to 134.6 inches aft of datum at gross weight of 6775 lbs.

Aft Limits: 139.2 inches aft of datum at all weights.

WEIGHTS

Maximum Take-off Weight . . . . 6775 lbs

Maximum Landing Weight (Serials P-190, P-192 and after) . . . . 6775 lbs

Maximum Landing Weight (Serials P-4 through P-189 and P-191)
Reference Service Instruction No. 0536-202

8-ply Tires with original unmodified shock strut orifice
P/N 60-810012-13 LH, 60-810012-14 RH, or lower dash numbers . . . . 6600 lbs

10-ply Tires with original unmodified shock strut orifice
P/N 60-810012-13 LH, 60-810012-14 RH, or lower dash numbers . . . . 6450 lbs

10-ply Tires with modified or replacement shock strut orifice
P/N 60-810012-15 LH, 60-810012-16 RH, or higher dash numbers . . . . 6775 lbs

8-Ply Tires with modified or replacement shock strut orifice
P/N 60-810012-15 LH, 60-810012-16 RH, or higher dash numbers . . . . 6600 lbs

Maximum Ramp Weight . . . . 6819 lbs

CABIN PRESSURIZATION

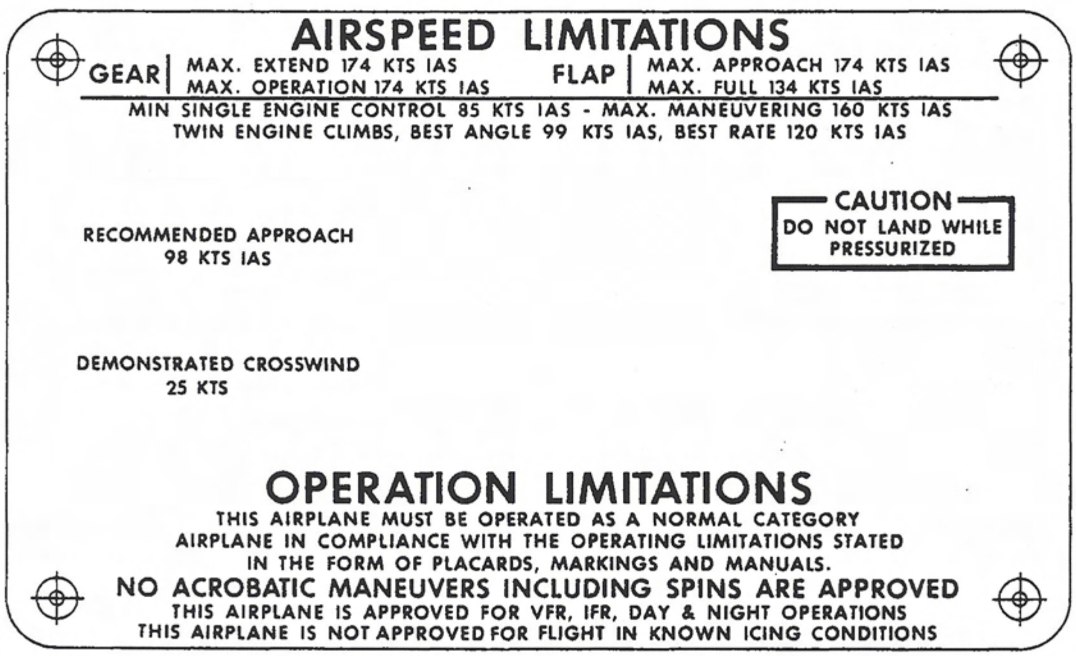
Maximum operating cabin pressure differential is 4.7 psi.
Fuselage pressure vessel structural life limit - 15,000 hrs.

AFT FACING CHAIRS

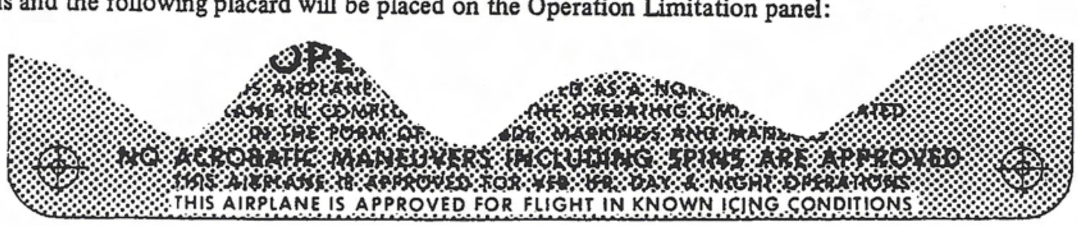
Only aft facing seats are authorized in the aft facing position.
The headrest and seat back of the aft facing seat must be in the fully raised position for take-off and landing.

PLACARDS

On the right side wall:

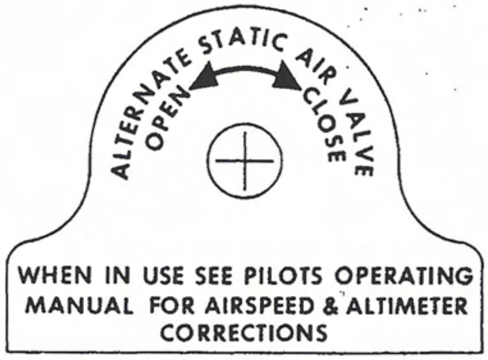


Airplanes equipped in accordance with Airplane Flight Manual Supplement FLIGHT IN KNOWN ICING CONDITIONS, P/N 60-590001-17 are approved for flight in known icing conditions and the following placard will be placed on the Operation Limitation panel:



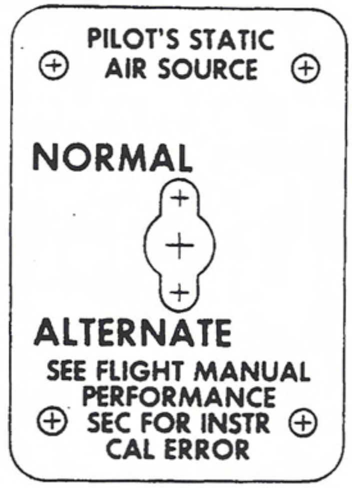
PLACARDS (Continued)

On the copilot's sidewall:
(P-4 through P-246)



OR

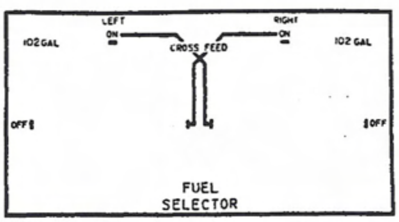
On these airplanes having Kit 60-5019-1 installed



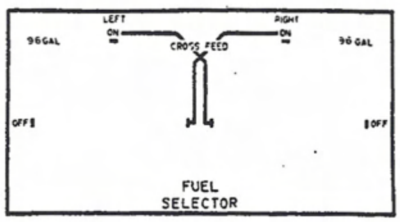
On Fuel Selector Panel on Floor Between Seats:

P-4 through P-195

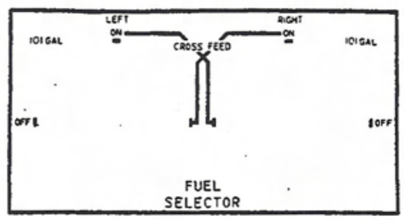
Unbaffled Fuel Cells



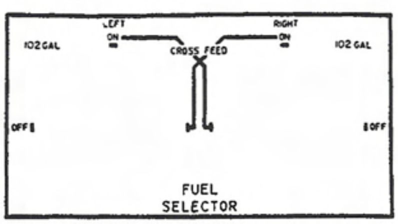
Unbaffled Fuel Cells after compliance with S.I. 0559-281



Baffled Fuel Cells both sides per S.I. 0559-281

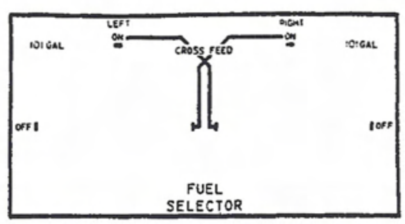


P-196 through P-219

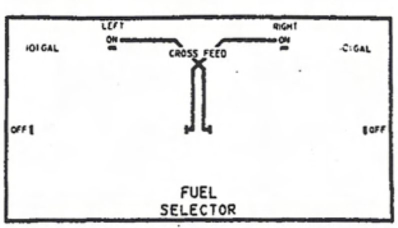


or

After compliance with S.I. 0559-281



P-220 and after



PLACARDS (Continued)

On the main spar cover between the pilot and copilot seats:

> EMERGENCY LANDING
> GEAR INSTRUCTIONS
> TO EXTEND
>
> ENGAGE HANDLE IN
> REAR OF FRONT SEAT
> AND TURN CLOCKWISE
> AS FAR AS POSSIBLE
> (50 TURNS)

Above magnetic compass (Duke 60):

> CAUTION-MAGNETIC COMPASS IS
> ERRATIC WHEN HEATED
> WINDSHIELD IS IN OPERATION

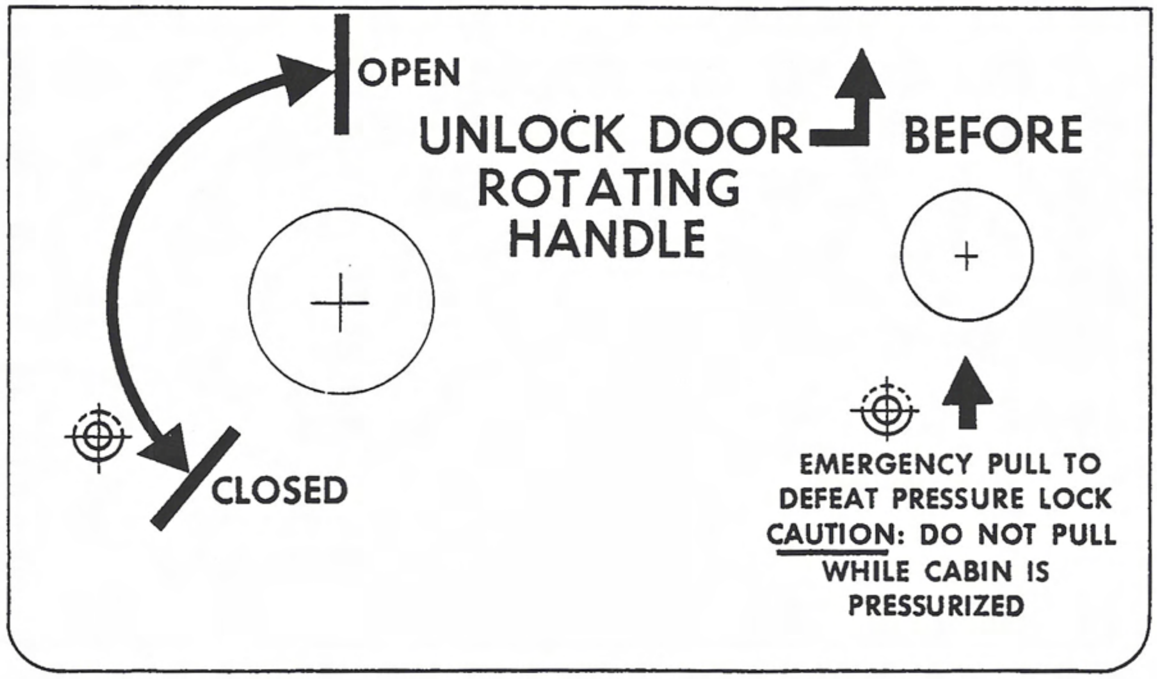
Above magnetic compass (Duke A60):

> -CAUTION-
>
> MAGNETIC
> COMPASS IS
> ERRATIC
> WHEN
> HEATED
> WINDSHIELD
> IS IN
> OPERATION

Around each oxygen outlet if installed:

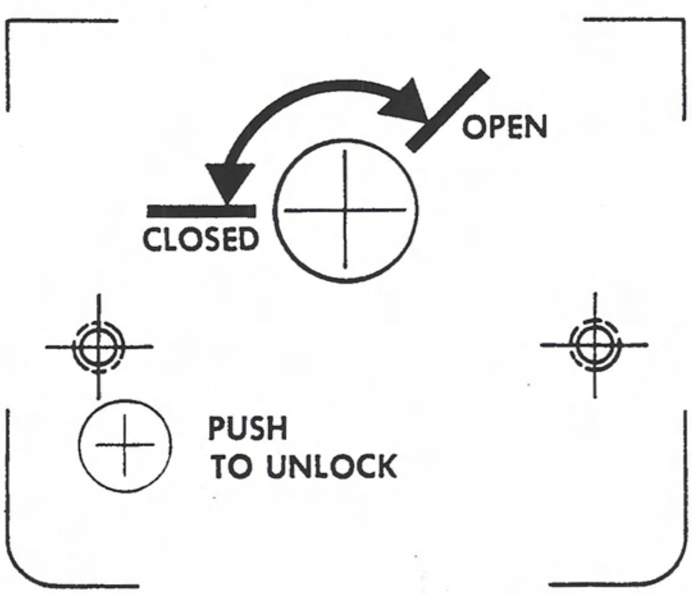
PLACARDS (Continued)

Adjacent to inside cabin door handle (Duke 60):



Adjacent to cabin door handle (Duke 60):

Adjacent to inside cabin door handle (Duke A60):



Near cabin door handle (Duke A60):

PLACARDS (Continued)

On headliner above emergency exit window:

EMERGENCY EXIT

PULL CURTAIN ASIDE

On emergency exit:

EMERGENCY EXIT

LIFT COVER, RELEASE CATCH
& PULL HANDLE DOWN FULLY

On cabin sidewalls (Duke A60):

HEADRESTS ON AFT FACING SEATS
MUST BE EXTENDED UP TO STOPS
ON TAKEOFF AND LANDING

In nose baggage compartment:

COMPARTMENT LOADING
WEIGHT LIMITATIONS

STD LOADING 500 LBS MAX.

SEE WEIGHT & BALANCE SECTION OF FLIGHT MANUAL
FOR ADD'L LIMITATIONS FROM OPTIONAL EQUIP.

On aft cabin floor with optional fifth and sixth seats installed:

MAX. BAGGAGE LOAD
ON FLOOR
70 LBS.

PLACARDS (Continued)

On aft cabin bulkhead upholstery panel above baggage shelf (Duke 60);

MAX. BAGGAGE LOADS
SHELF 135 LBS
FLOOR 315 LBS
SHELF PLUS FLOOR 315 LBS

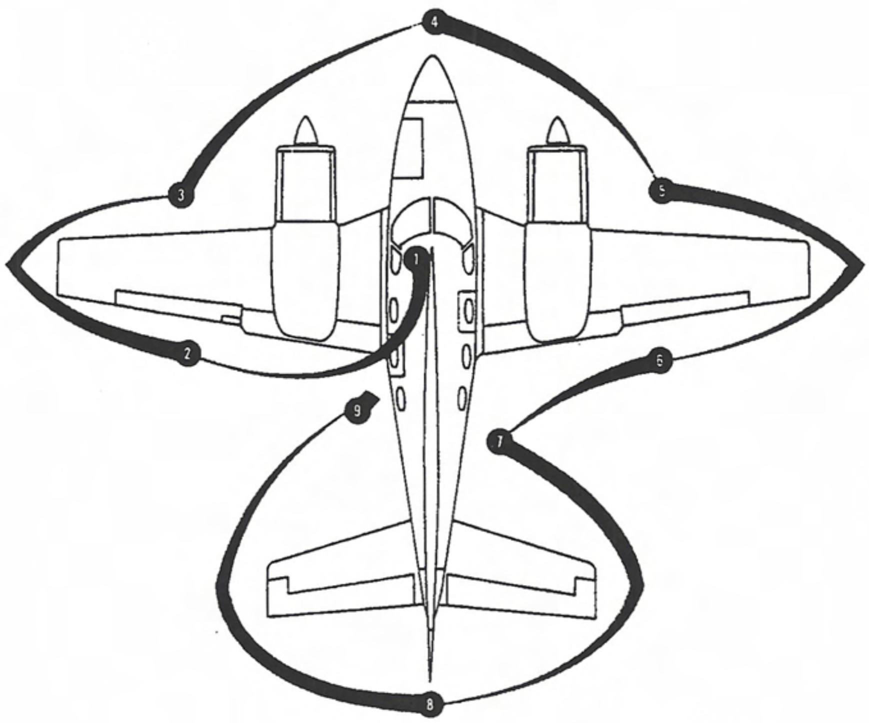
On aft cabin bulkhead upholstery panel (Duke A60):

MAX. BAGGAGE LOAD
ON FLOOR
315 LBS.

SECTION II

NORMAL PROCEDURES

All speeds quoted in this section are Indicated Airspeeds (IAS)



PREFLIGHT INSPECTION

1. Cockpit Check

1. Control Locks - REMOVE and STOW
2. Parking Brake - SET
3. All Switches - OFF
4. Landing Gear Handle - DOWN
5. Battery Switch - ON
6. Fuel Quantity Indicators - CHECK QUANTITY (See LIMITATIONS for take-off fuel)
7. Cowl Flap Switches - OPEN
8. Battery Switch - OFF
9. Oxygen Pressure - CHECK
10. Trim Tabs (3) - SET TO ZERO

2 Left Wing, Trailing Edge

1. Wing Root Fuel Sump - DRAIN
2. Flaps - CHECK
3. Aileron - CHECK FREEDOM OF MOVEMENT, TAB NEUTRAL WHEN AILERON NEUTRAL

3. Left Wing, Leading Edge

1. Position Light - CHECK
2. Fuel - CHECK QUANTITY; Cap - SECURE
3. Stall Warning Vane - CHECK FREEDOM OF MOVEMENT
4. Deice Boots - CHECK
5. Tie Down, Chocks - REMOVE
6. Engine Oil - CHECK QUANTITY; Cap - SECURE
7. Propeller and Propeller Deice Boots - CHECK
8. Engine Air Intakes - CHECK FOR OBSTRUCTIONS
9. Engine Cowling and Cowl Flap - CHECK
10. Fuel Sumps (2) - DRAIN
11. Wheel Well Doors, Tire, Brake and Shock Strut - CHECK
12. Landing Gear Down-Lock Mechanism and Up-Lock Rollers - CHECK FOR CONDITION
13. Pressurization Intercooler Inlet - CLEAR

4. Nose Section

1. Baggage Door - CHECK
2. Wheel Well Door, Tire and Shock Strut - CHECK
3. Heater Fuel Strainer - DRAIN
4. Pitot(s) - REMOVE COVER, EXAMINE FOR OBSTRUCTIONS
5. Nose Cone - CHECK
6. Ram Air Inlet - CLEAR

5. Right Wing, Leading Edge

1. Pressurization Intercooler Inlet - CLEAR
2. Wheel Well Doors, Tire, Brake and Shock Strut - CHECK
3. Landing Gear Down-Lock Mechanism and Up-Lock Roller - CHECK FOR CONDITION
4. Fuel Sumps (2) - DRAIN
5. Engine Cowling and Cowl Flap - CHECK
6. Engine Air Intakes - CHECK FOR OBSTRUCTIONS
7. Propeller and Propeller Deice Boots - CHECK
8. Engine Oil - CHECK QUANTITY; Cap - SECURE
9. Tie Down, Chocks - REMOVE
10. Deice Boots - CHECK
11. Fuel - CHECK QUANTITY; Cap - SECURE
12. Position Light - CHECK

6. Right Wing, Trailing Edge

1. Aileron - CHECK FOR FREEDOM OF MOVEMENT
2. Flaps - CHECK
3. Wing Root Sump - DRAIN

7. Fuselage, Right Side

1. Static Port - CLEAR OF OBSTRUCTIONS
2. Antennas - CHECKED
3. Emergency Locator Transmitter - ARMED

8. Empennage

1. Position Light - CHECK
2. Rudder Mounted Rotating Beacon - CHECK
3. Control Surfaces - CHECK
4. Tab - ELEVATOR TAB NEUTRAL WITH ELEVATOR NEUTRAL
5. Deice Boots - CHECK
6. Tie Down - REMOVE

9. Fuselage, Left Side

1. Static Port - CLEAR OF OBSTRUCTIONS

NOTE

If night flight is anticipated, exterior lights should be checked for operation.

BEFORE STARTING

1. Cabin Door, Escape Hatch and Baggage - SECURED
2. Seat and Rudder Pedals - ADJUSTED
3. Seat Belts - FASTENED
4. Flight Controls - FREEDOM OF MOVEMENT and PROPER RESPONSE
5. Cowl Flaps - CHECK OPEN
6. Circuit Breakers - IN
7. Fuel Selectors - ON

STARTING

1. Propeller Controls - FORWARD (Low Pitch)
2. Mixture Controls - IDLE CUT-OFF
3. Battery Switch - ON

NOTE

If external power is used start right engine first.

4. Boost Pumps - ON
5. Start Engines

   a. Cold Starts:

      (1) Throttle 1000 rpm position (approximately 1/2 inch open).
      (2) Mixture control FULL FORWARD for 2 to 3 seconds to prime then to IDLE CUT-OFF.
      (3) Magneto/Start Switch - START
      (4) When the engine starts, return the Magneto/Start switch to BOTH. Slowly advance the mixture control to FULL RICH.

   b. Flooded Engine:

      (1) Mixture Control - IDLE CUT-OFF
      (2) Throttle - 1/2 OPEN
      (3) Magneto/Start Switch - START
      (4) When engine starts, return the Magneto/Start switch to BOTH. Retard the throttle and slowly advance the mixture control to FULL RICH position.

   c. Hot Starts:

      (1) Throttle 1300 to 1500 rpm position (approximately 1 inch open).
      (2) Mixture Controls - IDLE CUT-OFF
      (3) Magneto/Start Switch - START

NOTE

A small prime may be necessary if the engine does not start after a few revolutions.

      (4) When the engine starts, return the Magneto/Start switch to BOTH. Slowly advance the mixture control to FULL RICH.

6. Throttle 1000 to 1500 rpm
7. Oil Pressure - ABOVE RED RADIAL WITHIN 30 SECONDS
8. Generator Switch - ON.
9. External Power (if used) - DISCONNECT
10. Use the same procedure to start other engine.
11. Fuel Boost Pumps - OFF

NOTE

Continuous use of the fuel boost pumps is recommended for ground operation in ambient temperatures of 90°F (32°C) or above.

AFTER STARTING AND TAXI

1. Brakes - CHECK
2. Voltage and Loadmeters - CHECK
3. Avionics - ON
4. Lights - AS REQUIRED
5. Cabin Temperature and Mode - AS REQUIRED
6. Annunciator Warning Lights - PRESS-TO-TEST
7. Instruments - CHECK

CAUTION

Never taxi with a flat shock strut.

BEFORE TAKE-OFF

1. Parking Brake - SET
2. Engine Warm-up - 1000 TO 1500 RPM
3. Fuel Boost Pumps - ON

NOTE

With engine speed below 2000 rpm, a diaphragm failure in the engine driven pump will cause engine roughness and a drop in rpm when the fuel pump is turned on.

4. Fuel Selectors - CROSSFEED. (For 10-15 seconds)
5. Fuel Selectors - RETURN BOTH TO ON
6. Instruments - CHECK, NORMAL INDICATION AND SET
7. Flaps - CHECK OPERATION AND SET
8. Electric Trim - CHECK OPERATION
9. Trim - SET TO TAKE-OFF RANGE
10. Propeller Synchronizer - OFF
11. Landing Gear Safety System (If Installed) - CHECK
12. Autopilot - CHECK
13. Throttles - 2000 RPM
14. Magnetos - CHECK (175 rpm maximum drop. within 50 rpm of each other.)

NOTE

Avoid operation on one magneto for more than 5 to 10 seconds.

15. Pressurization - SET.
16. Throttles - 1500 RPM
17. Propellers - FEATHER CHECK (No more than 500 rpm drop) Repeat 2 to 3 times in cold weather
18. Gyro Pressure and Load Meters - CHECK
19. Throttles - IDLE
20. Parking Brake - RELEASE

TAKE-OFF

POWER SETTINGS:

Take-off and Maximum Continuous . . . . 41.5 in. Hg - 2900 RPM

1. Power - SET take-off power before brake release.
2. Airspeed - ACCELERATE to and maintain take-off speed
3. Landing Gear - RETRACT when aircraft is positively airborne.
4. Airspeed - ESTABLISH DESIRED CLIMB SPEED when clear of obstacles.

CRUISE CLIMB

1. Power - SET CRUISE CLIMB POWER (35.5 in. Hg - 2750 rpm)
2. Fuel Flow - 194 LBS/HR/ENGINE
3. Propeller Synchronizer - ON
4. Airspeed - ESTABLISH CRUISE-CLIMB SPEED
5. Cowl Flaps - AS REQUIRED (MAINTAIN 225°C CYLINDER HEAD TEMPERATURE OR LESS)

NOTE

Use of fuel boost pump may be discontinued at any time except that excessive fluctuations of fuel flow readings indicate a need for continued use.

MAXIMUM PERFORMANCE CLIMB

1. Power - SET MAXIMUM CONTINUOUS POWER
2. Fuel Boost Pumps - ON
3. Mixtures - FULL RICH
4. Cowl Flaps - OPEN
5. Propeller Synchronizer - ON
6. Airspeed - ESTABLISH 138 MPH/120 KTS

CRUISE

1. Power - SET AS DESIRED (Use Horsepower Calculator or Cruise Power Settings tables)
2. Fuel Flow - LEAN AS REQUIRED (Lean to recommended fuel flow if Turbine Inlet Temperature (TIT) is below 900°C).
3. Fuel Boost Pumps - OFF. (Unless needed to prevent fuel flow fluctuations.)
4. Cowl Flaps - AS REQUIRED (maintain 225°C cylinder head temperature or less)
5. Battery Condition - CHECK (Refer to page 2-8)

OPERATIONAL SPEEDS

Minimum Single-Engine Control	98 mph/85 kts
Single-Engine Best Angle-of-Climb	115 mph/100 kts
Single-Engine Best Rate-of-Climb	127 mph/110 kts
Two-Engine Best Angle-of-Climb	114 mph/99 kts
Two-Engine Best Rate-of-Climb	138 mph/120 kts
Cruise Climb:	
SL - 20,000 feet	162 mph/140 kts
20 - 25,000 feet	150 mph/130 kts
25 - 30,000 feet	138 mph/120 kts

DESCENT

1. Altimeter - SET
2. Cowl Flaps - CLOSED
3. Windshield Anti-ice and Defroster - AS REQUIRED (On before descent into warm, moist air)
4. Pressurization - SET
5. Power - AS REQUIRED

BEFORE LANDING

1. Pressurization - ZERO DIFFERENTIAL PRESSURE
2. Seat Belts - FASTENED
3. Fuel Boost Pumps - ON
4. Propeller Synchronizer - OFF
5. Mixtures - FULL RICH
6. Propellers - SET AT 2750 RPM
7. Flaps - APPROACH (15°) (Maximum Extension Speed 200 mph/174 kts)
8. Landing Gear - DOWN (Maximum Extension Speed 200 mph/174 kts).
9. Flaps - FULL DOWN (30°) (Maximum Extension Speed 155 mph/134 kts)
10. Airspeed - ESTABLISH LANDING APPROACH SPEED

BALKED LANDING

1. Power - 2900 RPM and 41.5 in. Hg
2. Airspeed - BALKED LANDING CLIMB SPEED
3. Flaps - UP
4. Gear - UP
5. Cowl Flaps - AS REQUIRED

AFTER LANDING

1. Landing and Taxi Lights - AS REQUIRED
2. Flaps - UP
3. Trim Tabs - SET TO ZERO
4. Cowl Flaps - OPEN

NOTE

Boost pumps may be turned off if ambient temperature is below 90°F (32°C.)

SHUT DOWN

1. Parking Brake - SET
2. Battery - CHECK CONDITION and CHARGE (Refer to Battery Condition Check)
3. Electrical and Avionics Equipment - OFF
4. Cabin Temp Mode - OFF
5. Propellers - LOW PITCH (High rpm)
6. Throttles - 1000 RPM
7. Fuel Boost Pumps - OFF
8. Mixtures - IDLE CUT-OFF
9. Magneto/Start Switches - OFF, after engines stop
10. Battery and Generator Switches - OFF
11. Controls - LOCKED
12. If airplane is to be parked for an extended period of time, install wheel chocks and release the parking brake as greatly varying ambient temperatures may build excessive pressures on the hydraulic system.

ADDITIONAL FUNCTIONAL CHECKS

NICKEL-CADMIUM BATTERY CONDITION CHECK

It is recommended that one of the following battery condition checks be accomplished for each flight and an engine shut down check be accomplished each week.

DURING CRUISE FLIGHT

1. Battery Switch - OFF (Momentarily)
2. Loadmeter - NOTE CHANGE (Both loadmeters on, either loadmeter may be used)

NOTE

The change in loadmeter indication is the battery charge current and should be less than .025 (no perceivable needle movement). If the result of the test is not satisfactory, turn the Battery Switch - OFF and proceed to destination. (The battery switch should be turned on for landing in order to avoid electrical spikes caused by power fluctuations.) A Shutdown Battery Condition Check should be made after landing. If the battery indicates unsatisfactory, it should be removed and checked by a qualified Nickel-Cadmium Battery shop.

DURING ENGINE SHUTDOWN

1. One Generator - OFF
2. Engine Speed (Engine with Generator On) - 1000 RPM (Voltmeter indicating approximately 28 volts)
3. After loadmeter needle stabilizes, momentarily turn the battery switch off and note change in meter indication

NOTE

The change in loadmeter indication is the battery charge current and should be .025 (no preceivable needle movement). If the result of the first test is not satisfactory, allow the battery to charge repeating the test each 90 seconds. If the results are not satisfactory within 3 minutes, the battery should be removed and checked by a qualified Nickel-Cadmium Battery Shop.

ENVIRONMENTAL CONTROLS

PRESSURIZATION SYSTEM

PREFLIGHT (Manual Control System)

1. Pressurization Air Controls - CLOSED (In)
2. Pressurization Dump Switch - PRESSURIZATION MODE
3. Cabin Altitude Controller - SET 1000 FEET BELOW FIELD ELEVATION
4. Throttles - 2500 RPM
5. Test Switch - PRESS-TO-TEST (Note momentary cabin descent) RELEASE SWITCH
6. Cabin Altitude Controller - SET 1000 FEET ABOVE TAKE-OFF FIELD OR DESTINATION FIELD ELEVATION WHICH EVER IS HIGHEST.

PREFLIGHT (Motorized Controller System)

1. Pressurization Air Controls - CLOSED (In)
2. Directional Toggle Switch - OFF
3. Drive Motor Rate Rheostat - FULL INCREASE
4. Cabin Altitude Controller - MANUALLY SET TO FIELD ELEVATION
5. Throttles - 2500 RPM
6. Test/Dump Switch - TEST (Note momentary cabin descent) RETURN TO OFF
7. Directional Toggle Switch - UP (Set to 1000 feet above field elevation) THEN OFF
8. Drive Motor Rate Rheostat - MID RANGE
9. Red Altitude Selector Ring - SET TO 500 FEET ABOVE CRUISE ALTITUDE

IN FLIGHT

When Cabin Rate-of-Climb indicates zero

1. Directional Toggle Switch - UP (To raise cabin to selected altitude)

On descent when differential pressure is below 4.0 psi

1. Directional Toggle Switch - DOWN (To lower cabin to 1000 feet above destination field elevation).

CAUTION

Insure that cabin differential pressure is ZERO to avoid landing with a pressurized cabin.

COLD WEATHER OPERATION

PREFLIGHT INSPECTION

In addition to the normal preflight exterior inspection, remove ice, snow, and frost from the wings, tail, control surfaces and hinges, propellers, windshield, fuel cell filler caps and fuel vents. The wing contour may be changed by these formations sufficiently that its lift qualities are considerably disturbed and sometimes completely destroyed. Complete your normal preflight procedures, including a check of the flight controls for complete freedom of movement.

Conditions for accumulating moisture in the fuel cells are most favorable at low temperatures due to the condensation increase and the moisture that enters as the systems are serviced. Therefore, close attention to draining the fuel system sumps will assume particular importance during cold weather.

ENGINES

Use engine oil in accordance with the Consumable Materials. At temperatures of 10°F and below preheat engines prior to start. Give particular attention to the oil cooler and engine sump to ensure proper preheat. A start with congealed oil in the system may produce an indication of normal pressure immediately after the start, but then the oil pressure may decrease when residual oil in the engine is pumped back with the congealed oil in the sump. If an engine heater capable of heating both the engine sump and cooler is not available, the oil should be drained while the engines are hot and stored in a warm area until the next flight.

The airplane is equipped with an external power receptacle, and, during very cold weather, it is advisable to use external power for starting when available.

Normal engine starting procedures will be used. If there is no oil pressure within the first 30 seconds of running, or if oil pressure drops after a few minutes of ground operation, shut down and check for broken oil lines, oil cooler leaks or the possibility of congealed oil.

During warm-up, watch engine temperatures closely, since it is quite possible to exceed the cylinder head temperature limit in trying to bring up the oil temperature. Exercise the propellers several times to remove cold oil from the pitch change mechanisms. The propellers should also be cycled occasionally in flight. During letdown and landing, give special attention to engine temperatures, since the engines cool quickly.

STARTING ENGINES USING EXTERNAL POWER

1. Battery switch - ON
2. Generator, Electrical and Avionics Equipment Switches - OFF
3. Connect external power unit.
4. Set the output of the power unit at 27.0 to 28.5 volts.
5. Auxiliary power unit - ON
6. Start right engine first (use normal start procedures)
7. After engine has been started, turn auxiliary power unit OFF
8. Generator Switches - ON
9. Disconnect external power before starting left engine.

TAXIING

Avoid taxiing through water, slush, or muddy surfaces if possible. In cold weather, water, slush, or mud, when splashed onto landing gear mechanisms or control surface hinges, may freeze, preventing free movement and resulting in structural damage.

OXYGEN SYSTEM

OPERATION

1. Place the system in operation by rotating the valve to the fully ON position. (The shutoff valve on the oxygen cylinder must also be open.)

CAUTION

The shutoff valves of all high pressure oxygen systems should be opened slowly to prevent possiblity of damage to the system.

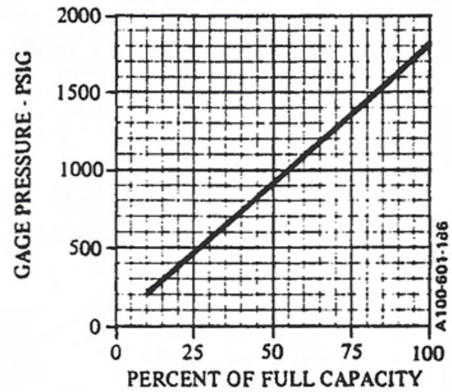
2. Select mask and hose. All are identical and provide the same flow to both pilot and passengers. Check for proper fit of mask and adjust if necessary. Proper fit is important at higher altitudes.
3. Plug in the oxygen mask and check for oxygen flow by noting whether the bag expands or by checking the flow indicator in the hose.
4. Discontinue use by unplugging outlets. The control valve should also be off to ensure complete oxygen flow stoppage. Closing the control valve on the bottle is not recommended except during servicing or prolonged periods of inactivity.

DURATION

Prior to the flight, check for an adequate oxygen supply for the number of people and the trip duration. Determine the supply pressure and convert it to percent of capacity on the Oxygen Available Graph. Find the duration on the Oxygen Duration Table and multiply by the percent of capacity.

OXYGEN AVAILABLE WITH PARTIALLY FULL BOTTLE

1. Determine percent of full bottle from airplane gage pressure.
2. Multiply oxygen duration in minutes by percent of full bottle.



OXYGEN DURATION

Oxygen duration is computed for Scott oxygen masks which regulate the flow rate to 2.5 Standard Liters Per Minute (SLPM). These masks, identified by an aluminum anodized color coded plug-in, are approved for altitudes up to 27,000 feet.

Cylinder Volume Cubic Feet	Number of People Using 1	2	3	4	5	6
	Duration in Minutes					
11	112	55	37	28	22	18
22	222	112	74	54	44	37
49	501	250	167	125	100	83
64	668	334	222	167	133	111

OXYGEN DURATION

Oxygen duration is computed for Scott oxygen masks which regulate the flow rate to 3.0 Standard Liters Per Minute (SLPM). These masks, identified by a green color coded plug-in, are approved for altitudes up to 30,000 feet.

Cylinder Volume Cubic Feet	Number of People Using 1	2	3	4	5	6
	Duration In Minutes					
11	93	46	31	23	18	15
22	187	93	62	46	37	31
49	415	208	138	103	83	69
64	543	271	181	135	108	90

SECTION III

EMERGENCY PROCEDURES

All airspeeds quoted in this section are indicated airspeeds (IAS)

The following information is presented to enable you to form, in advance, a definite plan of action for coping with the most probable emergency situations which could occur. Where practicable, the emergencies requiring immediate corrective action are treated in check list form for easy reference and familiarization. Other situations, in which more time is usually permitted to decide on and execute a plan of action, are discussed at some length. In order to supply one safe speed for each type of emergency situation the airspeeds presented are derived at 6775 lbs.

SINGLE-ENGINE OPERATION

Two major factors govern single-engine operation; airspeed and lateral/directional control. The airplane can be safely maneuvered or trimmed for normal hands-off operation and sustained in this configuration by the operative engine AS LONG AS SUFFICIENT AIRSPEED IS MAINTAINED.

SINGLE-ENGINE BEST RATE-OF-CLIMB SPEED, 127 MPH/110 KTS

The single-engine best rate-of-climb speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time with gear up, flaps up, and inoperative propeller feathered.

SINGLE-ENGINE BEST ANGLE-OF-CLIMB SPEED, 115 MPH/100 KTS

The single-engine best angle-of-climb speed is the airspeed which delivers the greatest gain in altitude in the shortest possible horizontal distance with gear up, flaps up, and inoperative propeller feathered.

MINIMUM SINGLE-ENGINE CONTROL SPEED, 98 MPH/85 KTS

The minimum single-engine control speed is the airspeed below which the airplane cannot be controlled laterally and directionally in flight with one engine operating at take-off power and the other engine with its propeller windmilling.

DETERMINING INOPERATIVE ENGINE

The following checks will help determine which engine has failed.

1. DEAD FOOT - DEAD ENGINE. The rudder pressure required to maintain directional control will be on the side of the good engine.
2. THROTTLE. Partially retard the throttle for the engine that is believed to be inoperative; there should be no change in control pressures or in the sound of the engine if the correct throttle has been selected. AT LOW ALTITUDE AND AIRSPEED THIS CHECK MUST BE ACCOMPLISHED WITH EXTREME CAUTION.

Do not attempt to determine the inoperative engine by means of the tachometer or the manifold pressure. These indicators often indicate near normal readings.

ENGINE FIRE ON GROUND

1. Mixture Controls - IDLE CUT-OFF
2. Continue to crank affected engine
3. Fuel Selector Valves - OFF
4. Throttle - FULL OPEN
5. Battery and Generator Switches - OFF
6. Shut-down other engine
7. Extinguish with fire extinguisher

ENGINE FAILURE DURING GROUND ROLL

1. Throttle - CLOSED
2. Braking - MAXIMUM
3. Fuel Selector Valves - OFF
4. Battery and Generator Switches - OFF

NOTE

Braking effectivity is improved if the brakes are not locked.

ENGINE FAILURE AFTER LIFT-OFF

The most important aspect of engine failure is the necessity to maintain lateral and directional control, and to achieve and maintain normal take-off airspeed or above. The following procedures provide for minimum diversion of attention while flying the airplane.

NOTE

If airspeed is below 98 mph/85 kts reduce power on operative engine as required to maintain lateral and directional control.

1. Landing Gear and Flaps - UP
2. Throttle (inoperative engine) - CLOSE
3. Propeller (inoperative engine) - FEATHER
4. Power (operative engine) - AS REQUIRED
5. Airspeed - AT OR ABOVE NORMAL TAKE-OFF SPEED

After positive control of the airplane is established:

6. Secure inoperative engine:
   a. Mixture - IDLE CUT-OFF
   b. Fuel Selector - OFF
   c. Fuel Boost Pump - OFF
   d. Magneto/Start Switch - OFF
   e. Generator Switch - OFF
   f. Cowl Flap - CLOSED
7. Electrical Load - MONITOR (Maximum load of 1.0 on remaining engine)

ENGINE FIRE IN FLIGHT

Shut down the affected engine according to the following procedure and land immediately.

1. Mixture - IDLE CUT-OFF
2. Fuel Selector Valve - OFF
3. Propeller - FEATHERED
4. Pressurization Air Shutoff Control - PULL
5. Fuel Boost Pump - CHECK OFF
6. Magneto/Start Switch - OFF
7. Generator Switch - OFF
8. Oxygen - AS REQUIRED

EMERGENCY DESCENT

1. Propeller Controls - 2900 RPM
2. Throttles - CLOSED
3. Airspeed - 200 MPH/174 KTS
4. Landing Gear - DOWN
5. Flaps - APPROACH (15°)
6. Oxygen - AS REQUIRED

MAXIMUM GLIDE (FORCED LANDING)

Feather propellers, retract the wing flaps, landing gear, and cowl flaps. The glide ratio in this configuration is slightly over 2 nautical miles of gliding distance for each 1000 feet of altitude at an airspeed of 127 mph/110 kts.

SINGLE-ENGINE LANDING

On final approach and when it is certain that the field can be reached:

1. Landing Gear - DOWN
2. Flaps - APPROACH
3. Airspeed NORMAL LANDING APPROACH SPEED
4. Power - AS REQUIRED to maintain 800 ft/min rate of descent

When it is certain there is no possibility of go-around:

5. Flaps - DOWN
6. Execute Normal Landing

SINGLE ENGINE GO-AROUND

WARNING

Level flight might not be possible for certain combinations of weight, temperature and altitude. In any event, DO NOT attempt a single engine go-around after flaps have been fully extended.

1. Power - MAXIMUM ALLOWABLE
2. Flaps - UP
3. Landing Gear - UP
4. Airspeed - AT OR ABOVE TAKE-OFF SPEED

LANDING GEAR SAFETY SYSTEM

In the event of an emergency, automatic extension of the landing gear may be prevented by placing the landing gear safety system ON-OFF-TEST switch in the OFF position, thus inactivating the safety system.

LANDING GEAR MANUAL EXTENSION

1. Airspeed - BELOW 200 MPH/174 KTS (Lower airspeeds make landing gear extension easier)
2. Landing Gear Relay Circuit Breaker (Right Upper Side Panel) - PULL
3. Landing Gear Position Handle - DOWN
4. Remove safety boot from handcrank handle at rear of front seats. Engage handcrank and turn clockwise as far as possible (approximately 50 turns).
5. If electrical system is operative, check landing gear position lights and warning horn.
6. Disengage Handcrank.

CAUTION

The manual extension system is designed only to lower the landing gear; do not attempt to retract the gear manually.

WARNING

After emergency landing gear extension do not move any landing gear controls or reset any switches or circuit breakers until aircraft is on jacks as failure may have been in the gear up circuit and gear might retract on ground.

GEAR UP LANDING

Make a normal approach and when the landing spot is assured:

1. Cowl Flaps - CLOSED
2. Wing Flaps - DOWN
3. Throttle(s) - CLOSED
4. Mixture(s) - IDLE CUT-OFF
5. Fuel Selector Valves - OFF
6. Battery, Generator and Magneto Switches - OFF
7. Keep wings level during touch-down
8. Evacuate airplane as soon as it stops

EMERGENCY EXIT

The emergency exit door is located at the forward right cabin window with the handle behind the curtain and may be opened as follows:

1. Lift cover and release latch.
2. Pull handle fully down.
3. Pull door into the cabin.

AIR START

CAUTION

The pilot should determine the reason for the engine failure before attempting an air start.

Do not use engine starter above 20,000 feet.

NOTE

The oil cooler may be damaged during an air start after a prolonged shut down, if the temperature is 0°C or below.

For the engine to be started:

1. Mixture - IDLE CUT-OFF
2. Fuel Selector Valve - ON
3. Fuel Boost Pump - ON
4. Magneto/Start Switch - ON
5. Throttle - NORMAL START POSITION (1/2 inch open)
6. Prime - MIXTURE FULL RICH THEN IDLE CUT-OFF
7. Propeller

   a. WITHOUT UNFEATHERING ACCUMULATORS:

      (1) Propeller Control - MOVE FORWARD OF THE FEATHERING DETENT TO MID-RANGE
      (2) Magneto/Start Switch - START

   b. WITH UNFEATHERING ACCUMULATORS:

      (1) Propeller Control - FORWARD OF FEATHERING DETENT UNTIL ENGINE ATTAINS 600 RPM; THEN BACK TO DETENT
      (2) Oil Pressure - STABILIZED

NOTE

If propeller does not unfeather or the engine does not turn, return the propeller control to the feather position and secure the engine.

8. Mixture - FULL RICH AT 1000 RPM
9. Throttle - AS NECESSARY TO PREVENT OVERSPEED; warm up at 15 inches Hg manifold pressure
10. Oil Pressure, Oil and Cylinder Head Temperatures - NORMAL INDICATION
11. Generator Switch - ON
12. Power - AS REQUIRED

SINGLE-ENGINE OPERATION ON CROSSFEED

Left engine inoperative and fuel being supplied from left side.

1. Left Fuel Boost Pump - ON
2. Left Fuel Selector - OFF
3. Right Fuel Selector - CROSSFEED
4. Left Fuel Boost Pump - OFF

Right engine inoperative and fuel being supplied from right side.

1. Right Fuel Boost Pump - ON
2. Right Fuel Selector - OFF
3. Left Fuel Selector - CROSSFEED
4. Right Fuel Boost Pump - OFF

CAUTION

Continuous operation of Fuel Boost Pump may be required if excessive fuel flow fluxuations are encountered.

EMERGENCY STATIC AIR SOURCE *(Those airplanes that do not have Kit 60-5019-1 installed)*

THE EMERGENCY STATIC AIR SOURCE SHOULD BE USED FOR CONDITIONS WHERE THE NORMAL STATIC SOURCE HAS BEEN OBSTRUCTED. When the aircraft has been exposed to moisture and/or icing conditions (especially on the ground), the possiblity of obstructed static ports should be considered. Partial obstructions will result in the rate of climb indication being sluggish during a climb or descent. Verification of suspected obstruction is possible by switching to the alternate system and noting a sudden sustained change in rate of climb. This may be accompanied by abnormal indicated airspeed and altitude changes beyond normal calibration differences.

Whenever any obstruction exists in the normal static air system or, the emergency static air source is desired for use:

1. Alternate Static Air Valve (Red knob) - ROTATE COUNTER CLOCKWISE APPROXIMATELY 9 TURNS TO STOP
2. For Airspeed Calibration and Altimeter Correction, refer to FAA Performance Section

CAUTION

Be certain the Alternate Static Air Valve is in the CLOSED position when system is not needed.

ALTERNATE STATIC AIR SOURCE *(Those airplanes that have Kit 60-5019-1 installed)*

THE ALTERNATE STATIC AIR SOURCE SHOULD BE USED FOR CONDITIONS WHERE THE NORMAL STATIC SOURCE HAS BEEN OBSTRUCTED' When the aircraft has been exposed to moisture and/or icing conditions (especially on the ground), the possibility of obstructed static ports should be considered. Partial obstructions will result in the rate of climb indication being sluggish during a climb or descent. Verification of suspected obstruction is possible by switching to the alternate system and noting a sudden sustained change in rate of climb. This may be accompanied by abnormal indicated airspeed and altitude changes beyond normal calibration differences.

Whenever any obstruction exists in the normal static air system or, the alternate static air source is desired for use:

1. Alternate Static Air Switch - ON.
2. For Airspeed Calibration and Altimeter Correction, refer to FAA Performance Section

UNSCHEDULED ELECTRIC ELEVATOR TRIM (Without Autopilot)

1. Aircraft Attitude - MAINTAIN using elevator control.
2. Actuate Thumb Switch in the opposite direction to open circuit breaker.
3. ON-OFF Switch (On Instrument Panel) - OFF.
4. Retrim with manual trim wheel.

PRESSURIZATION SYSTEM

Any time the differential pressure goes into the red arc, either reschedule the cabin altitude selector or dump all pressure with the DUMP switch.

CAUTION

Idle power on both engines will cause a loss of pressurization. Don oxygen masks as required.

The following table sets forth the average time of Useful Consciousness (time from onset of hypoxia until loss of effective performance at various altitudes).

30,000 ft MSL	1 to 2 minutes
28,000 ft MSL	2-1/2 to 3 minutes
25,000 ft MSL	3 to 5 minutes
22,000 ft MSL	5 to 10 minutes
12-18,000 ft MSL	30 min. or more

LANDING GEAR RETRACTION AFTER PRACTICE MANUAL EXTENSION

After a practice manual extension of the landing gear, the gear may be retracted electrically, as follows:

1. Handcrank - CHECK STOWED
2. Landing Gear Relay Circuit Breaker - IN
3. Landing Gear Handle - UP

SIMULATED SINGLE-ENGINE PROCEDURE

ZERO THRUST (Simulated Feather)

When establishing zero thrust operation, use the power settings listed below. By using this power setting to establish zero thrust, you avoid the inherent difficulties of restarting a shut down engine and preserve almost instant power to counter any attendant hazard. To set up a zero thrust conditions:

1. Propeller Lever - RETARD TO FEATHER DETENT
2. Throttle Lever - SET 12 in. Hg MANIFOLD PRESSURE

NOTE

This setting will approximate Zero Thrust at low altitudes using recommended Single-Engine Climb speeds.

SPINS

If a spin is entered inadvertently:

Immediately move the control column full forward, apply full rudder opposite to the direction of the spin and reduce power on both engines to idle. These three actions should be done as near simultaneously as possible; then continue to hold this control position until rotation stops and then neutralize all controls and execute a smooth pullout. Ailerons should be neutral during recovery.

NOTE

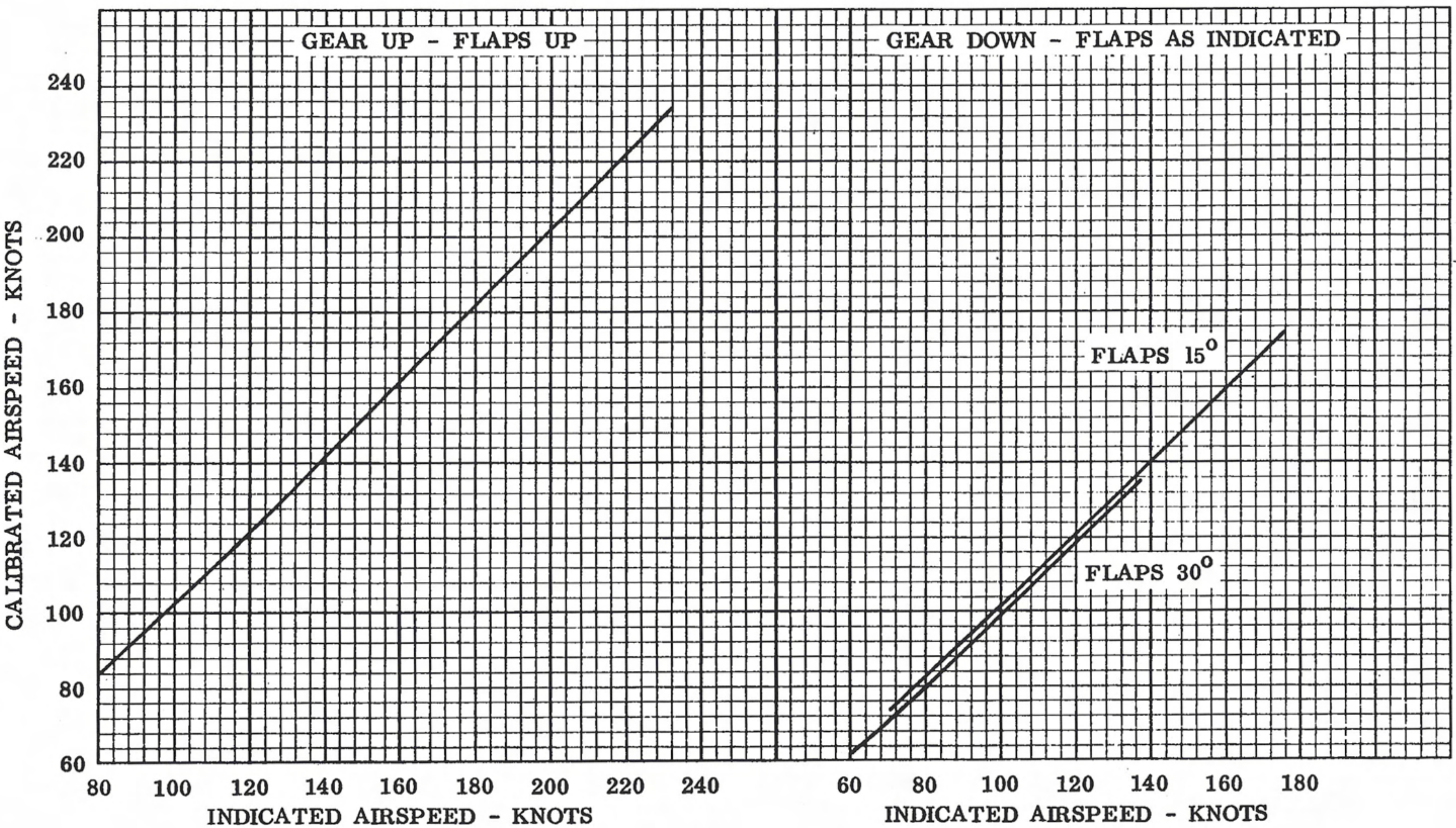
Federal Aviation Administration Regulations do not require spin demonstration of airplanes of this weight; therefore, no spin tests have been conducted. The recovery technique is based on the best available information.

SECTION IV

FAA PERFORMANCE

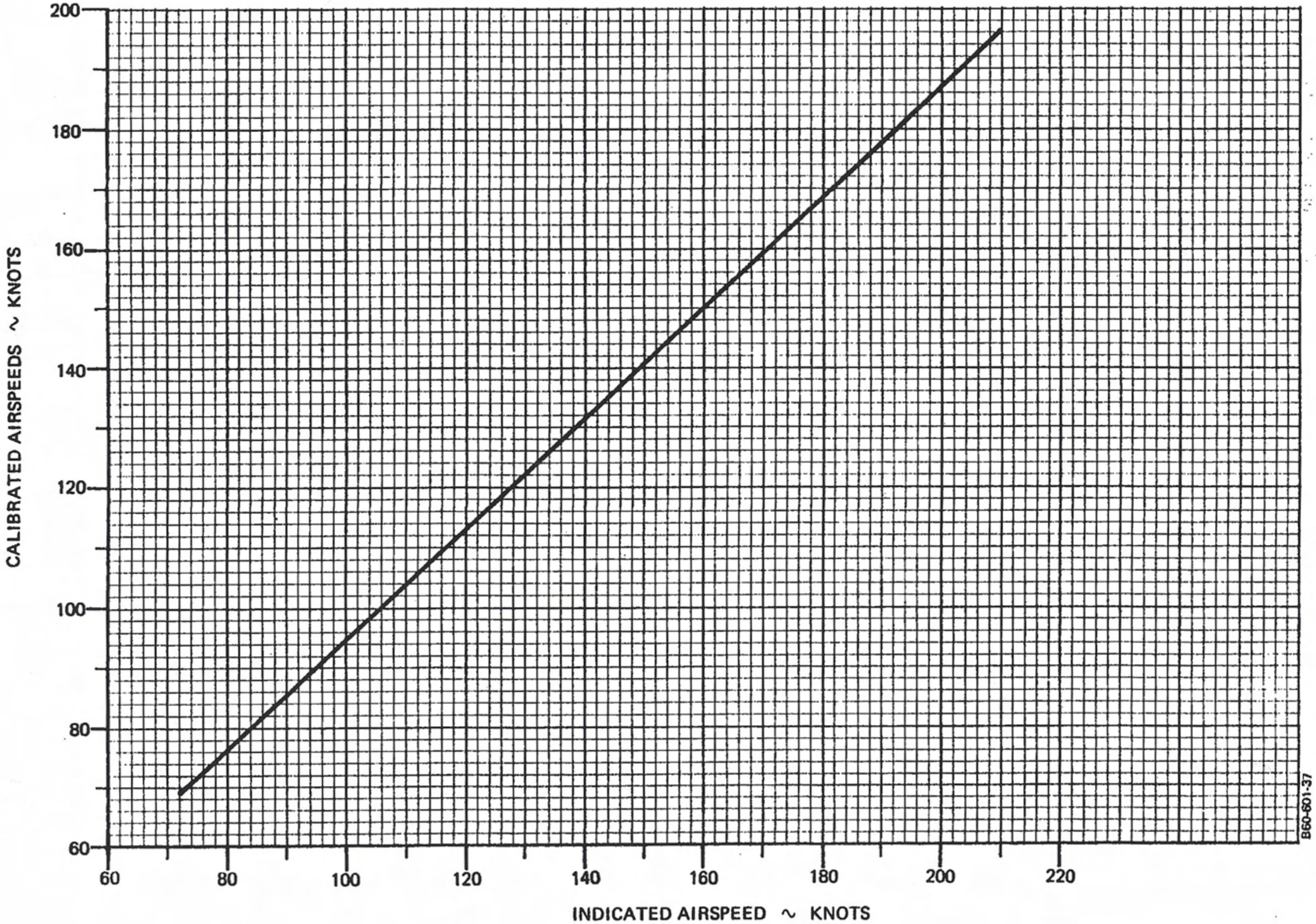
TABLE OF CONTENTS

AIRSPEED CALIBRATION
NORMAL SYSTEM

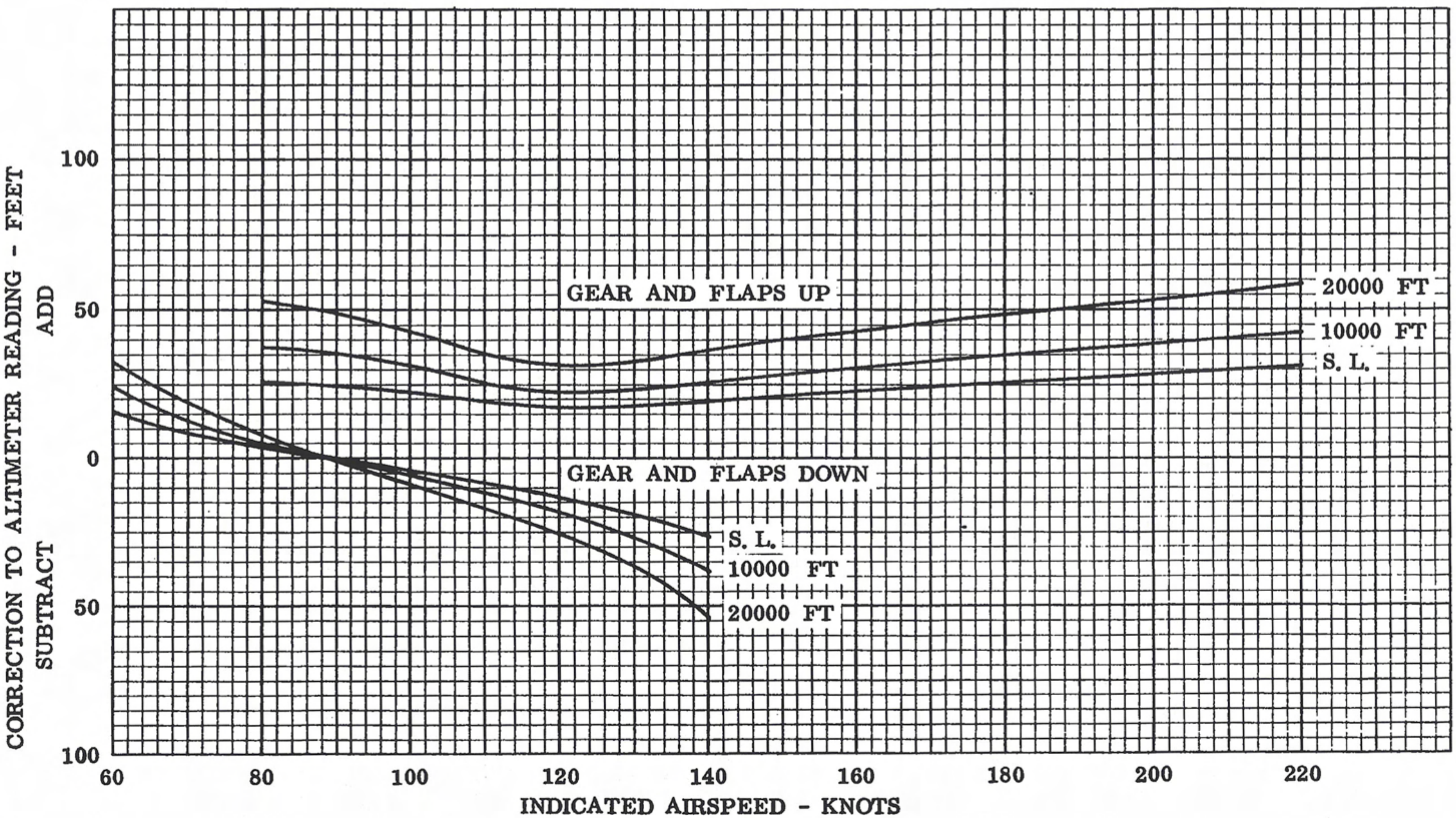


AIRSPEED CALIBRATION — ALTERNATE SYSTEM

NOTE: INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR
APPLICABLE FOR ALL GEAR AND FLAP POSITIONS

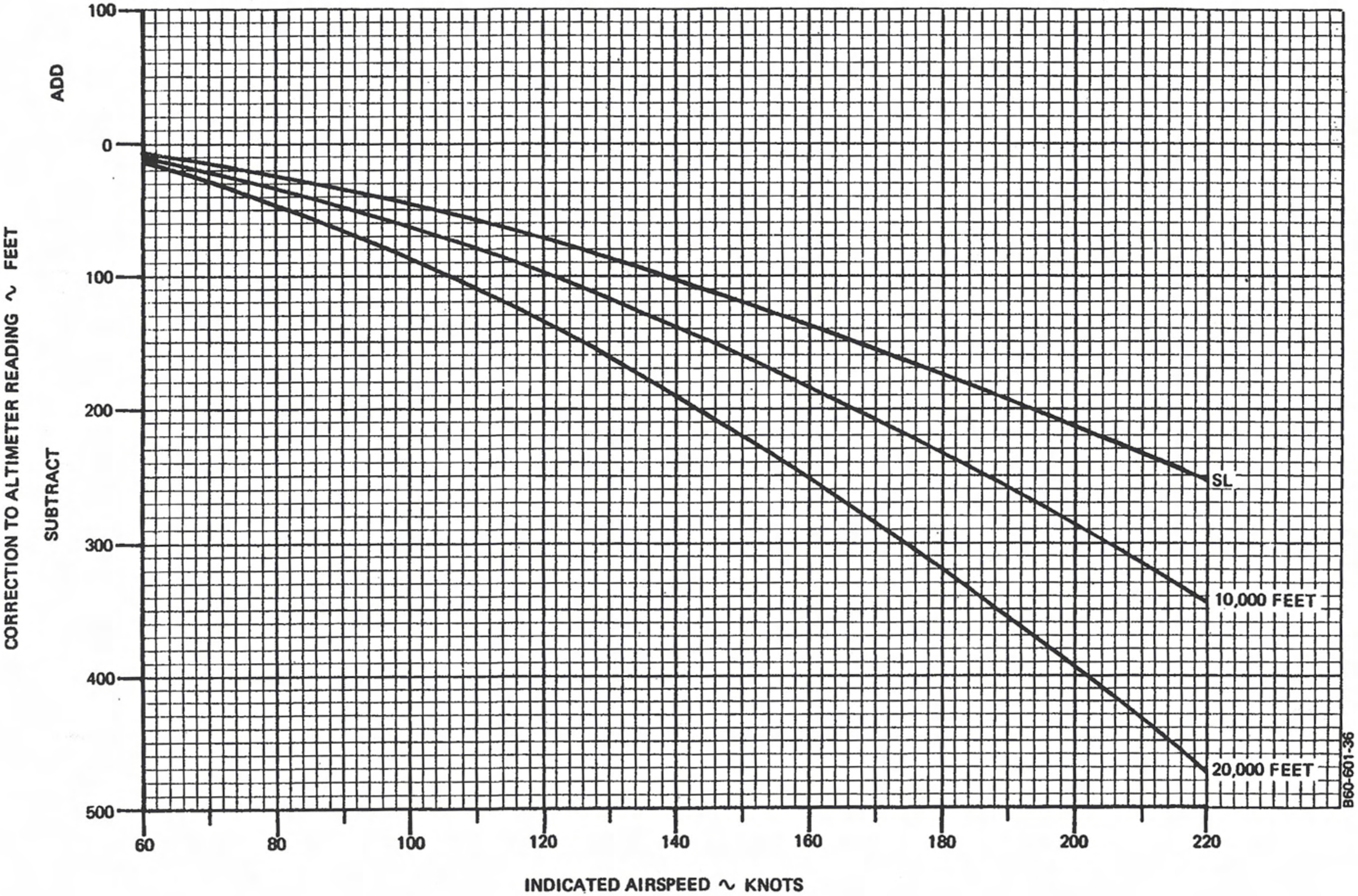


ALTIMETER CORRECTION
NORMAL SYSTEM

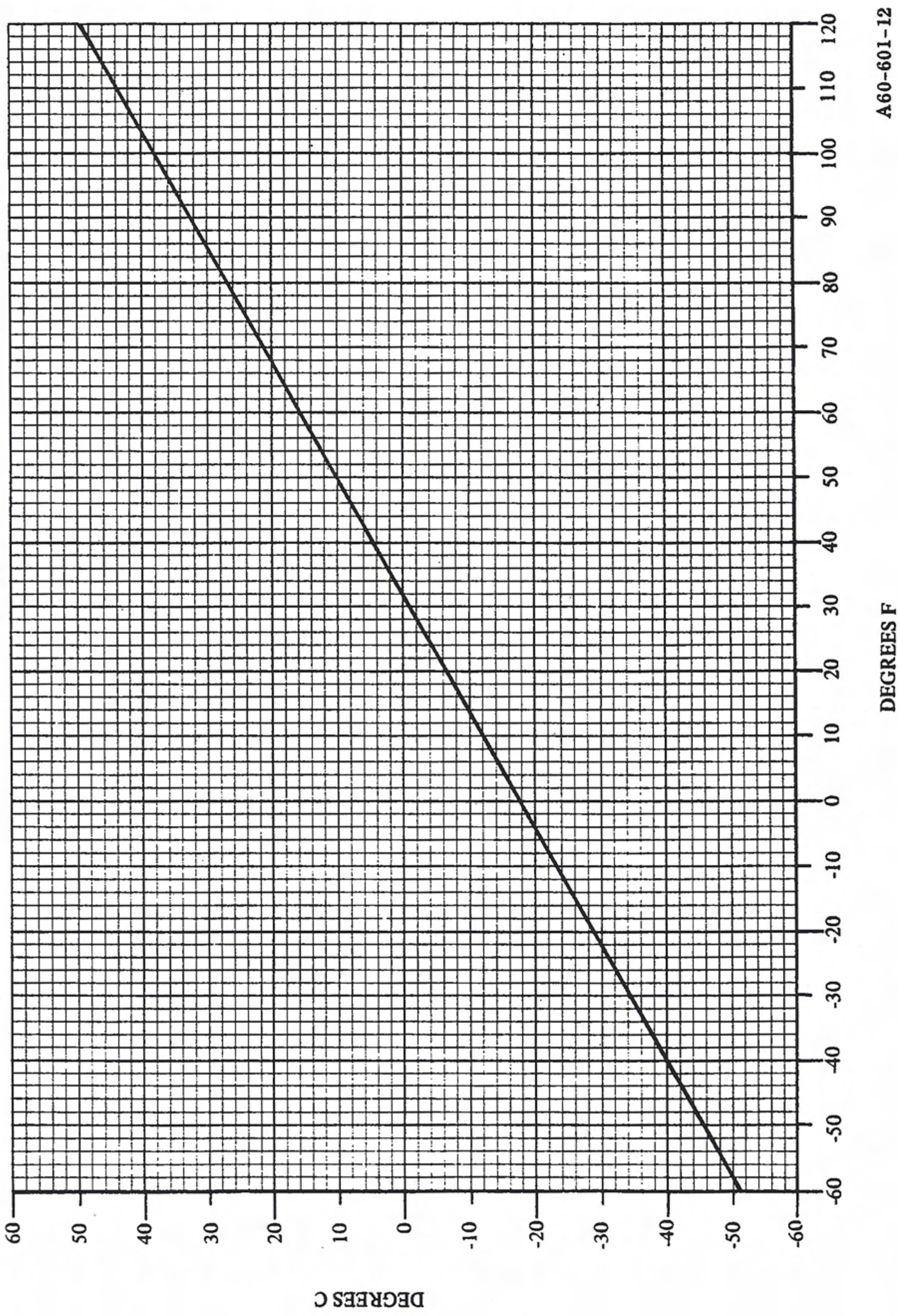


ALTIMETER CORRECTION — ALTERNATE SYSTEM

NOTE: INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR
APPLICABLE FOR ALL GEAR AND FLAP POSITIONS



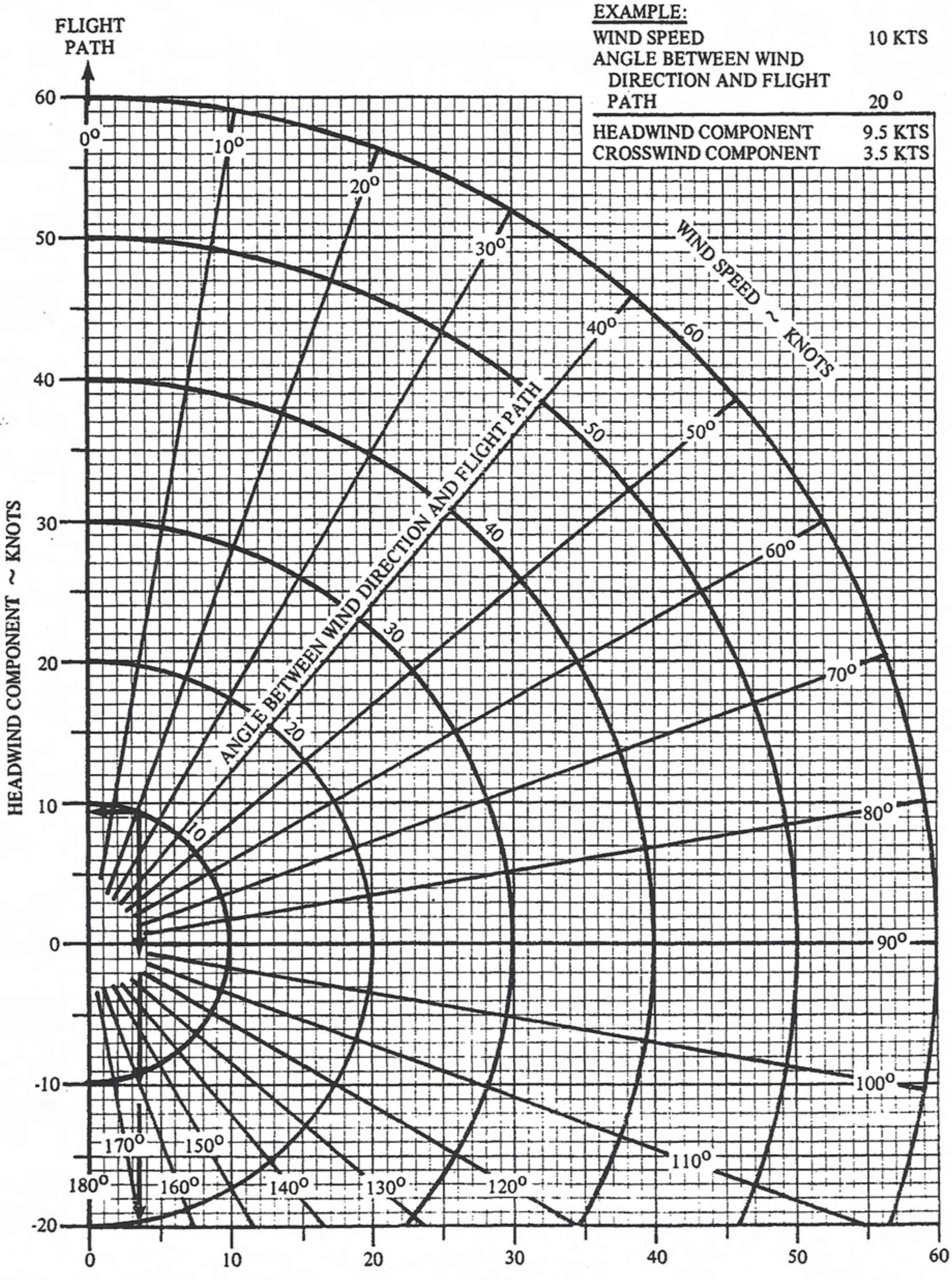
TEMPERATURE CONVERSION
°C vs °F



WIND COMPONENTS

DEMONSTRATED CROSSWIND IS 25 KNOTS

EXAMPLE:	
WIND SPEED	10 KTS
ANGLE BETWEEN WIND DIRECTION AND FLIGHT PATH	20°
HEADWIND COMPONENT	9.5 KTS
CROSSWIND COMPONENT	3.5 KTS



STD-601-1

NORMAL TAKE-OFF

ASSOCIATED CONDITIONS:

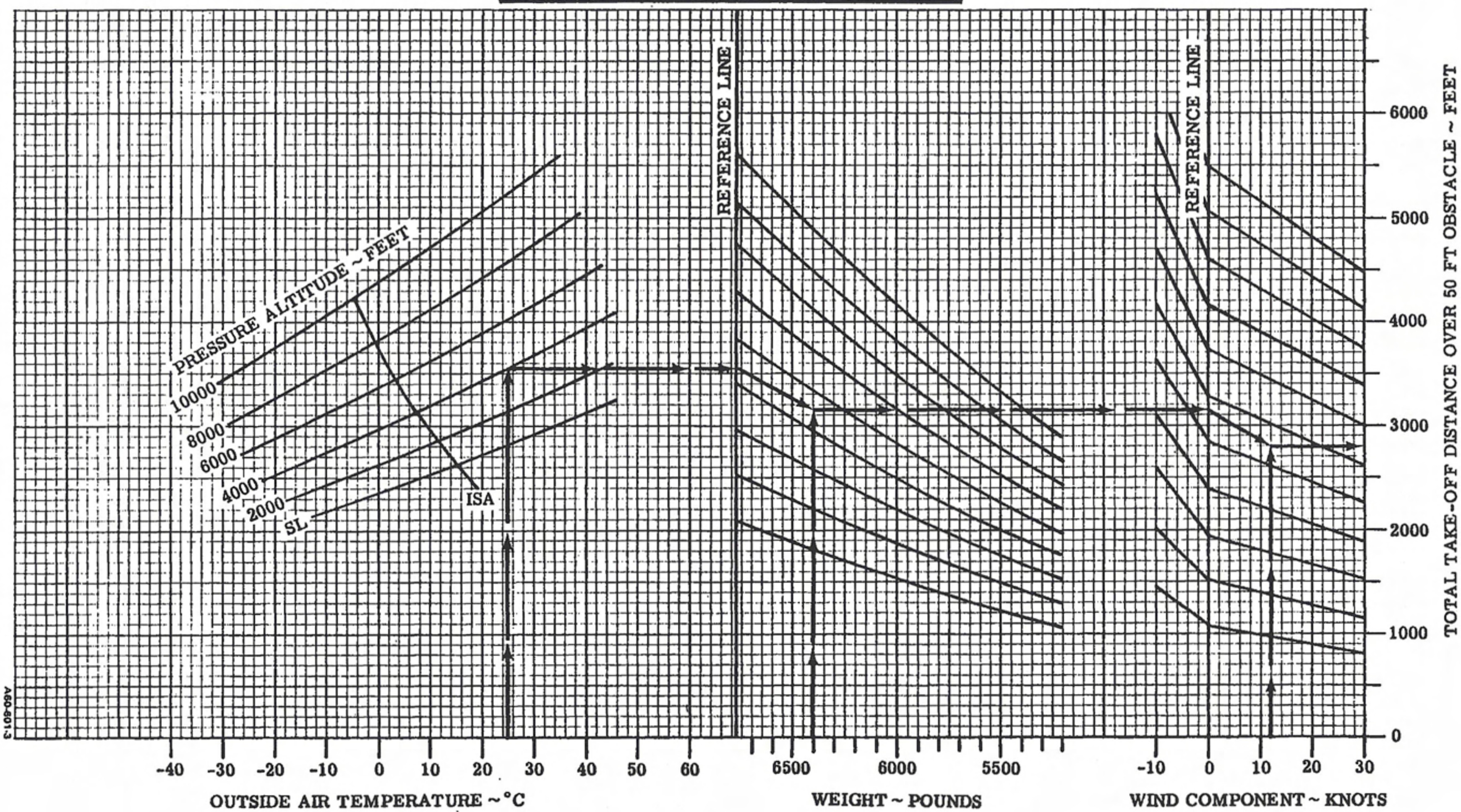
POWER	TAKEOFF POWER SET PRIOR TO BRAKE RELEASE
FLAPS	UP
COWL FLAPS	OPEN
RUNWAY	PAVED, LEVEL, DRY SURFACE
TAKE-OFF SPEED	IAS AS TABULATED

NOTE: GROUND ROLL IS APPROXIMATELY 79% OF TOTAL TAKE-OFF DISTANCE OVER 50 FT OBSTACLE.

WEIGHT POUNDS	TAKE-OFF SPEED (ASSUMES ZERO INST. ERROR)			
	LIFT-OFF		50 FT	
	MPH	KTS	MPH	KTS
6775	108	94	108	94
6400	107	93	107	93
6000	106	92	106	92
5600	104	90	104	90
5200	102	89	102	89

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	4000 FT
TAKE-OFF WEIGHT	6400 LBS
HEAD WIND COMPONENT	12 KNOTS
TOTAL DISTANCE	2800 FT
GROUND ROLL (79% OF 2800)	2212
TAKE-OFF SPEED	
LIFT-OFF	93 KIAS
50 FT	93 KIAS



TWO-ENGINE CLIMB

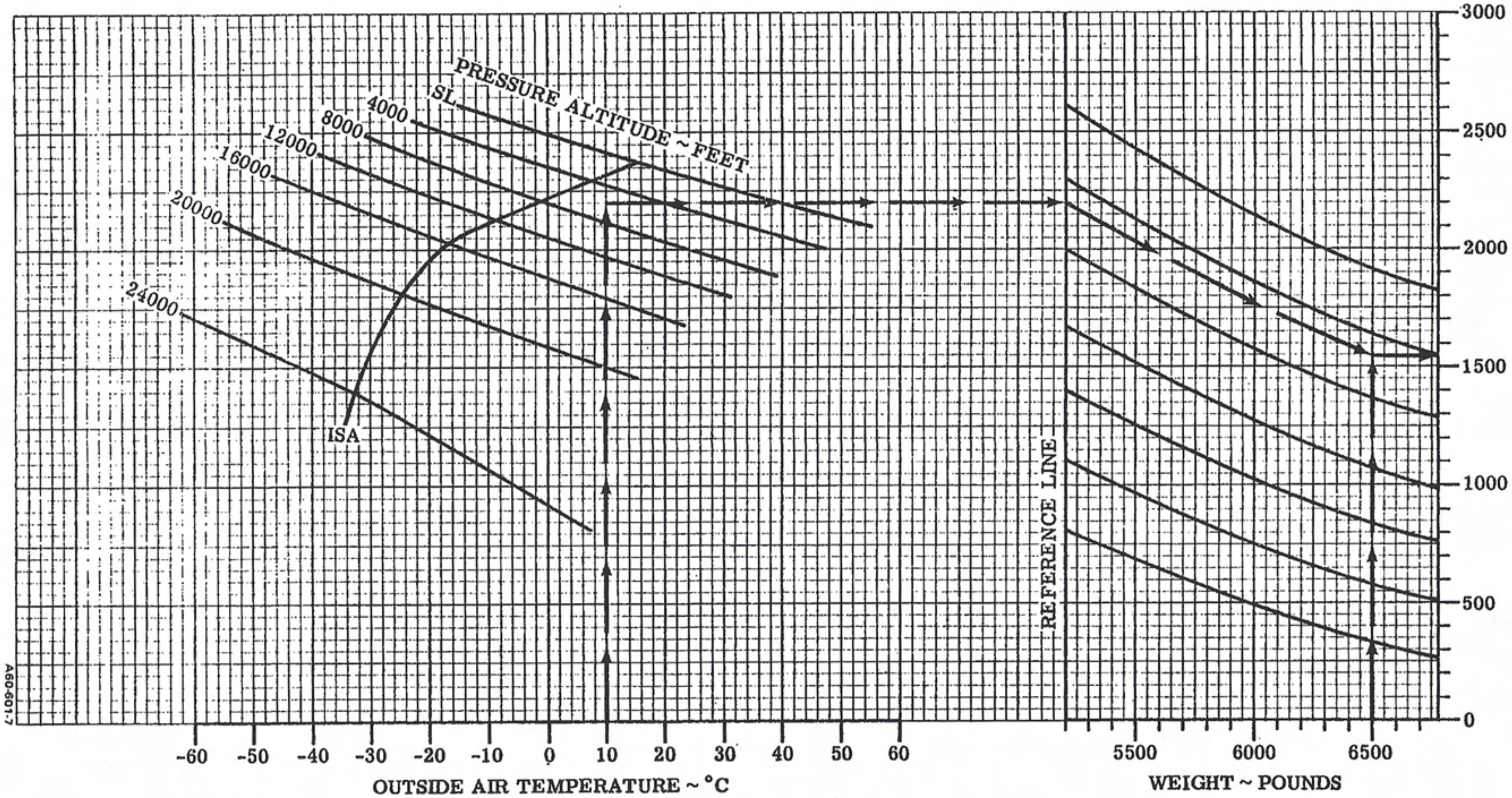
ASSOCIATED CONDITIONS:

POWER	MAXIMUM CONTINUOUS
GEAR	UP
FLAPS	UP
COWL FLAPS	OPEN
CLIMB SPEED	IAS AS TABULATED

WEIGHT POUNDS	CLIMB SPEED (ASSUMES ZERO INST. ERROR)	
	MPH	KNOTS
6775	138	120
6400	137	119
6000	133	116
5600	132	115
5200	130	113

EXAMPLE:

OAT	10°C
PRESSURE ALTITUDE	6000 FT
WEIGHT	6500 LBS
RATE OF CLIMB	1550 FT/MIN
CLIMB SPEED	119 KIAS



SINGLE-ENGINE CLIMB

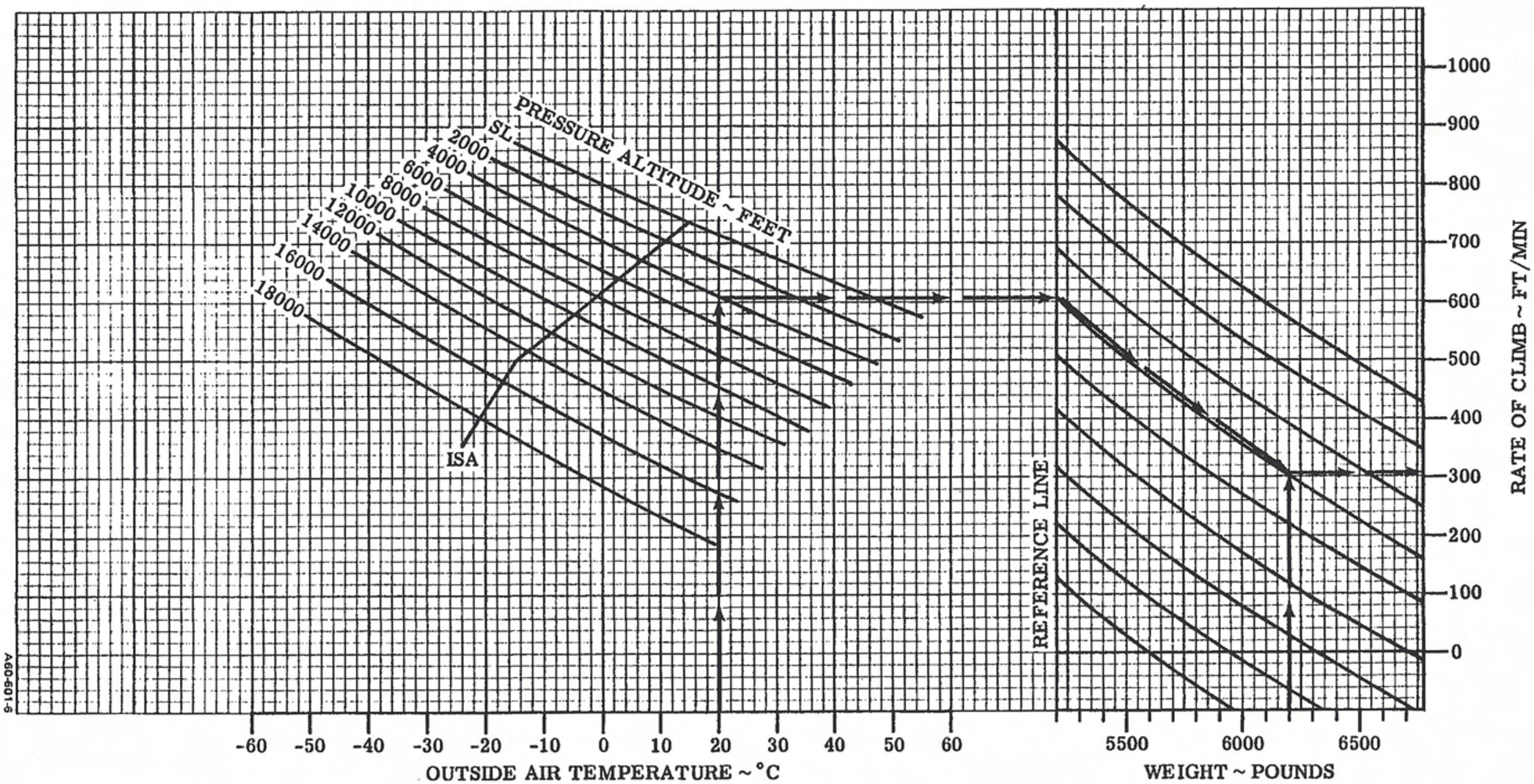
ASSOCIATED CONDITIONS:

POWER	MAXIMUM CONTINUOUS
GEAR	UP
FLAPS	UP
COWL FLAPS	OPEN
INOPERATIVE PROPELLER	FEATHERED
CLIMB SPEED	IAS AS TABULATED

WEIGHT POUNDS	CLIMB SPEED ~ KNOTS (ASSUMES ZERO INST. ERROR)	
	MPH	KNOTS
6775	127	110
6400	124	108
6000	122	106
5600	120	104
5200	119	103

EXAMPLE:

OAT	20°C
PRESSURE ALTITUDE	4000 FT
WEIGHT	6200 LBS
RATE OF CLIMB	305 FT/MIN
CLIMB SPEED	107 KIAS



BALKED LANDING CLIMB

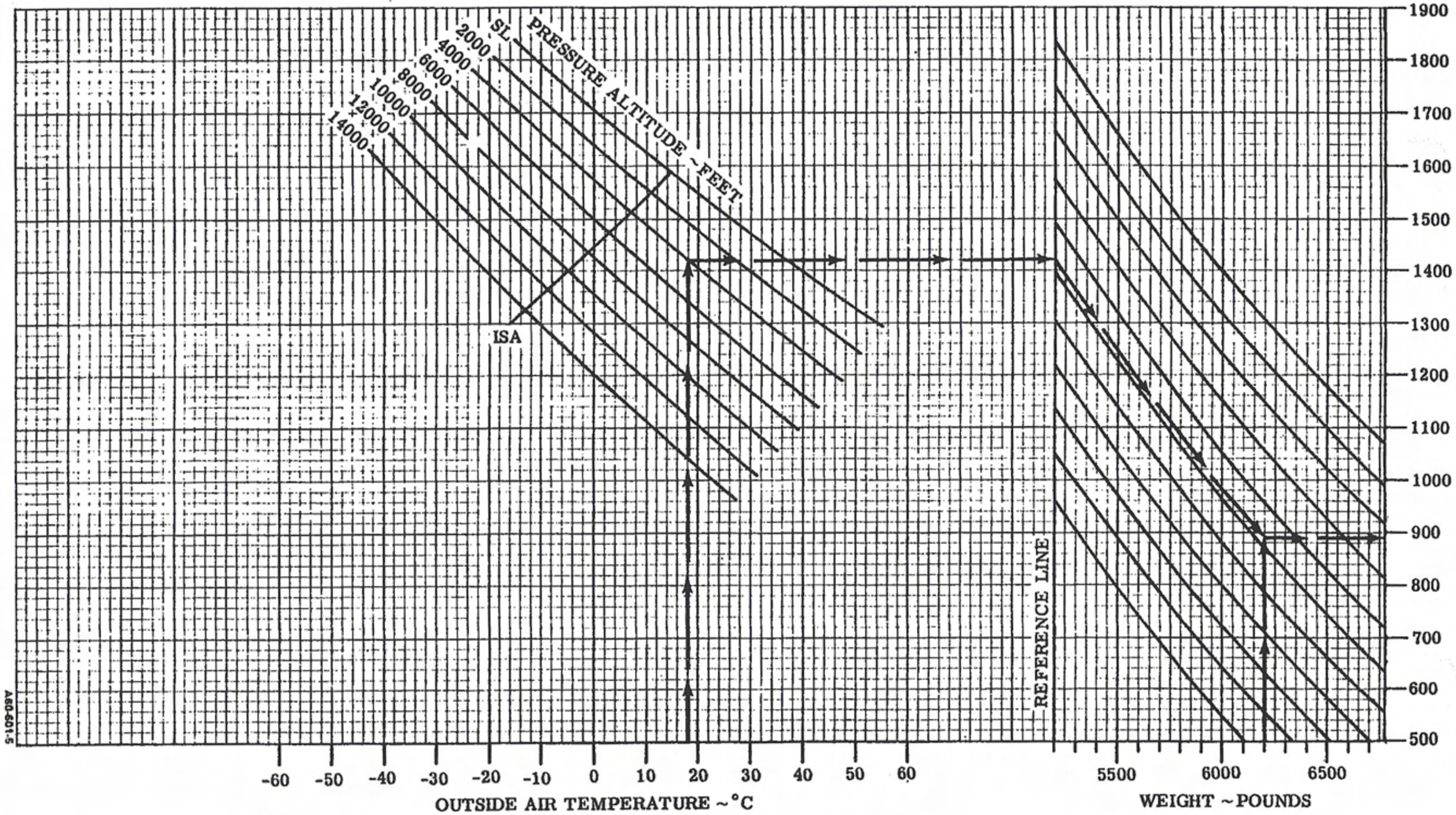
ASSOCIATED CONDITIONS:

POWER	TAKE-OFF
GEAR	DOWN
FLAPS	30°
CLIMB SPEED	IAS AS TABULATED

WEIGHT POUNDS	CLIMB SPEED ~ KNOTS (ASSUMES ZERO INST. ERROR)	
	MPH	KNOTS
6775	115	100
6400	114	99
6000	112	97
5600	110	96
5200	108	94

EXAMPLE:

OAT	18°C
PRESSURE ALTITUDE	4000 FT
WEIGHT	6200 LBS
RATE OF CLIMB	890 FT/MIN
CLIMB SPEED	98 KIAS



NORMAL LANDING

ASSOCIATED CONDITIONS:

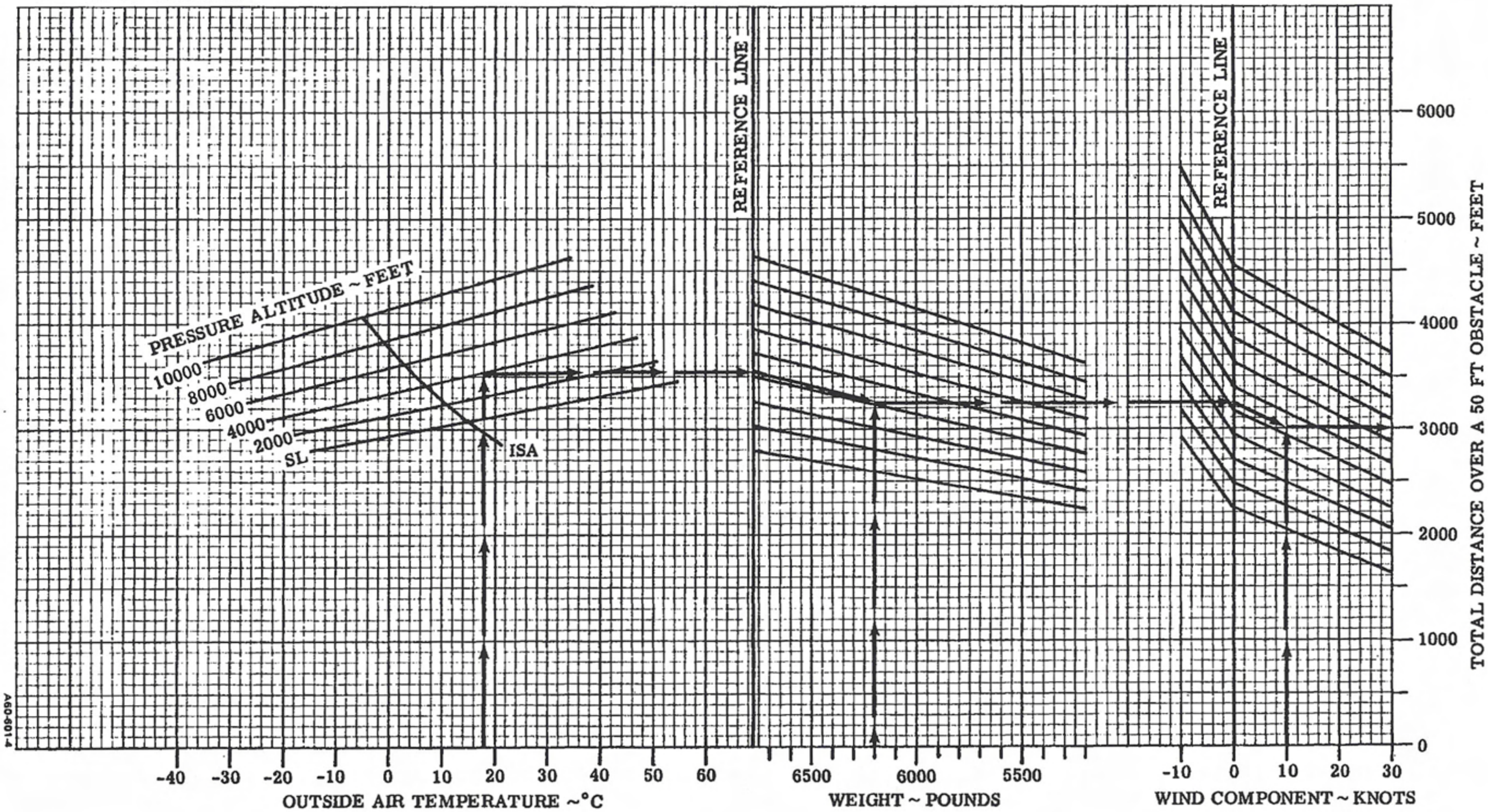
POWER	AS REQUIRED TO MAINTAIN 800 FT/MIN ON FINAL APPROACH
FLAPS	30°
RUNWAY	PAVED, LEVEL, DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

NOTE: GROUND ROLL IS APPROXIMATELY 43% OF TOTAL DISTANCE OVER A 50 FT OBSTACLE

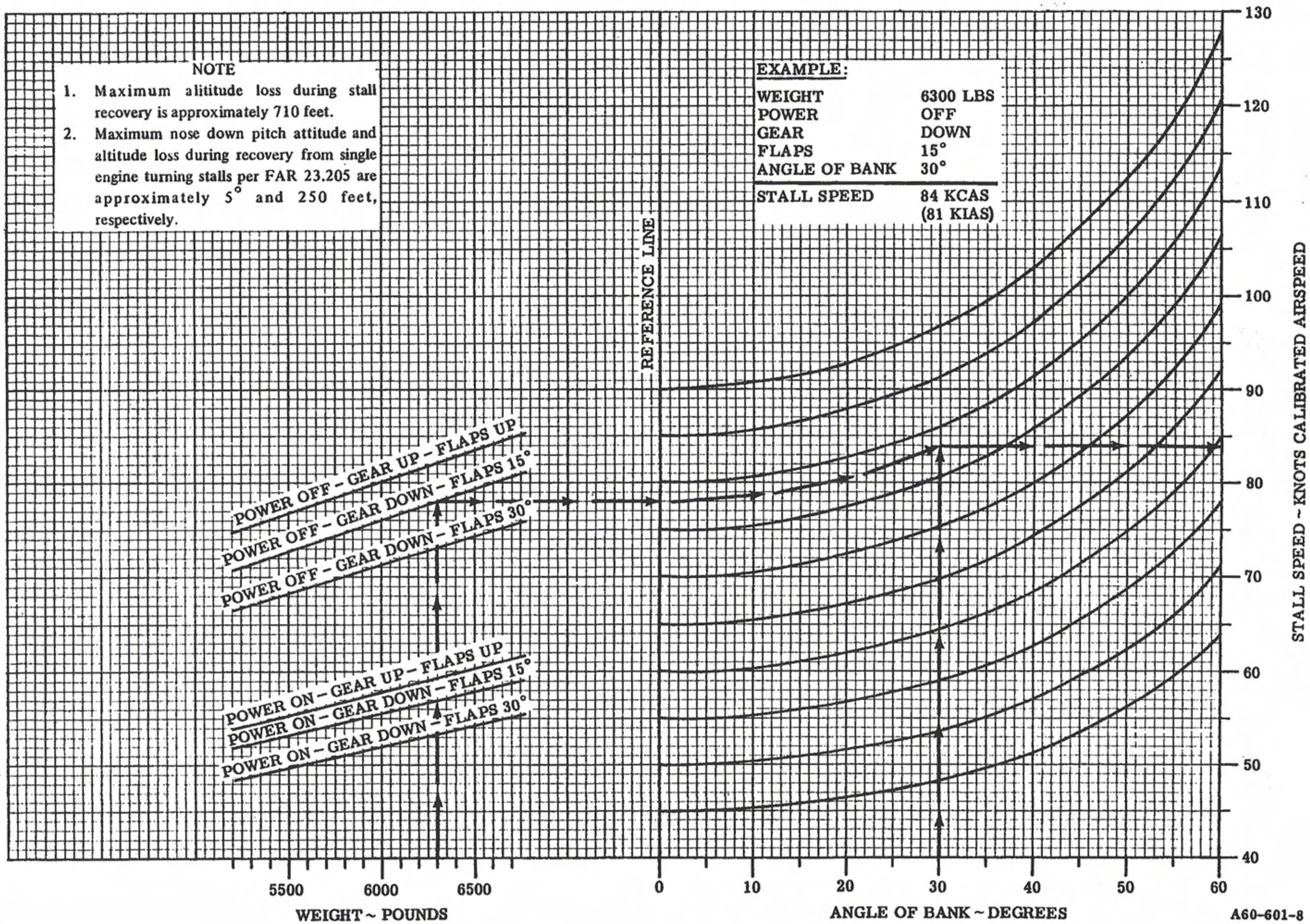
WEIGHT POUNDS	APPROACH SPEED KNOTS (ASSUMES ZERO INST. ERROR)	
	MPH	KNOTS
6775	113	98
6400	110	96
6000	107	93
5600	104	90
5200	98	85

EXAMPLE:

OAT	18° C
PRESSURE ALTITUDE	4000 FT
LANDING WEIGHT	6200 LBS
HEAD WIND COMPONENT	10 KNOTS
TOTAL DISTANCE OVER A 50 FT OBSTACLE	3000 FT
GROUND ROLL (43% OF 3000)	1290 FEET
APPROACH SPEED	95 KIAS



STALL SPEEDS



Airplane Flight Manual Supplements
Duke 60 & A60 FAA Airplane Flight Manual, P/N 60-590000-5E

LOG OF SUPPLEMENTS

FAA Supplement must be in the airplane for flight operation when subject equipment is installed.

Part Number	Subject	Revision Number	Date
60-590001-3	BEECHCRAFT B-5P and B-VIII Flight Control System	1	February 20, 1970
60-590001-9	BEECHCRAFT H-14 Autopilot	3	December 15, 1972
60-590001-11	Continuous Pressure Operated Surface Deice System	4	August 31, 1973
60-590001-13	Goodrich Electrothermal Propeller Deice System	4	June, 1981
60-590001-15	Landing Gear Safety System	1	February 20, 1970
60-590001-17	Flight In Known Icing Conditions	4	June, 1981
60-590001-19	Woodward Electronic Propeller Synchronizer	1	August 31, 1973
60-590001-21	Area Navigation System, King KNC-610 and King KN-74	3	August 15, 1975
60-590001-23	Reduced Power Procedures, Duke A60, For Certification in Switzerland	2	March 20, 1973
60-590001-31	Nickel-Cadmium Battery Charge Current Detector	2	October 1, 1973
131426	Wet Wing Tip Fuel System		April 1, 1977
131787	AiResearch Pressurization System (Kit 60-5024)		August, 1981

NOTE: Supplements applicable to equipment other than that installed may, at the discretion of the owner/operator, be removed from the manual.

BEECHCRAFT DUKE 60 & A60 LANDPLANE
AIRCRAFT FLIGHT MANUAL SUPPLEMENT
BEECHCRAFT B-5P & B-VIII FLIGHT CONTROL SYSTEMS

The information in this document is FAA approved material which, together with the appropriate basic FAA approved placarding, is applicable and must be carried in the airplane when it is modified by the installation of a BEECHCRAFT B-5P or B-VIII Flight Control System.

The basic aircraft placarding may be superseded by items contained in this supplement. For limitations and procedures not contained in this supplement, consult the Flight Manual and basic placarding.

I. LIMITATIONS

A. Autopilot master shall be OFF during take-off and landing.

B. Autopilot shall not be used for coupled localizer or VOR approaches if the VOR-LOC indicator coupled to the autopilot is affected during radio transmission.

C. Coupled approaches shall be conducted using only the VOR-LOC receiver-indicator combinations demonstrated to perform satisfactorily in accordance with FAA approved Brittain Ground and Flight Check Procedures Manual No. 3957: VOR-LOC receiver-indicator combinations not so demonstrated shall be placarded "DO NOT USE THIS RADIO FOR COUPLED APPROACHES".

D. The autopilot shall not be used for coupled back course localizer approaches unless the aircraft is equipped with a Brittain "Back Course" selector or equivalent, as specified in Brittain Ground and Flight Check Procedures Manual No. 3957, which provides for positive indication to the pilot of the selected "Back Course" mode.

II. OPERATING PROCEDURES

A. NORMAL

1. Make certain aircraft is properly trimmed before engaging autopilot.

2. To engage autopilot, pull autopilot master ON and rotate mode selector switch to desired mode.

NOTE

When the autopilot master is ON and the mode selector switch is "OFF", the autopilot provides stability augmentation only.

3. Turns may be made by selecting the manual (MAN) mode and rotating the TURN knob left or right.

4. Command aircraft pitch attitude with aircraft elevator trim. Power variations will establish climb or descent.

5. To maintain a desired altitude, adjust the aircraft elevator trim system until the pitch trim indicator in the autopilot controller is in neutral position and the aircraft is in level flight. Engage the altitude hold.

6. The pitch trim indicator in the autopilot controller provides a visual reference of elevator trim status. When the indicator bar is above center, the aircraft has nose-up trim and vice-versa.

a. To Fly a Magnetic Heading

Rotate the heading azimuth to desired magnetic heading and select heading (HDG) mode.

b. To Fly a VOR Course

(1) Rotate omni bearing selector (OBS) and autopilot heading azimuth to desired course.

(2) Select capture (CAP) mode. Aircraft will turn to intercept the VOR course. The maximum capture angle is 45 degrees.

(3) As VOR needle approaches center position, select track (TRK) mode.

NOTES

VOR-LOC left/right needle indication may be interrupted or lost during transmission with some NAV-COM systems. In this case, the autopilot will steer the aircraft towards the heading selected on the autopilot heading azimuth.

Some NAV-COM systems may produce an erroneous deflection of the left/right needle during transmission. In this instance, the autopilot will steer the aircraft in the direction of momentary needle displacement.

When the mode selector switch is in the track (TRK) position, VOR needle deflection greater than half scale will cause the autopilot to revert to magnetic heading information for approximately one minute.

c. To Fly a VOR Approach

(1) Rotate omni bearing selector (OBS) and autopilot heading azimuth to approach course.

(2) Select capture (CAP) mode. Aircraft will turn to intercept the VOR course. When aircraft heading is within 60° of the selected course, select localizer (LOC) or approach (APP) mode. Aircraft will complete the interception and track the selected course.

(3) If the VOR approach requires a course change over the station, select the final approach course on the omni bearing selector (OBS) and the autopilot heading azimuth as soon as positive station crossing has been made.

d. To Fly a Localizer Approach

(1) Rotate autopilot heading azimuth to inbound localizer course.

(2) Select localizer (LOC) or approach (APP) mode after aircraft heading is within 60° of localizer course. Aircraft will turn to intercept the localizer.

CAUTION

VOR-LOC indicators not equipped with failure warning flags indicate loss of usable navigation signal by loss of TO-FROM indication.

(3) Maximum airspeed during localizer intercept is 140 knots.

(4) Autopilot may be used during missed approach procedure; select heading (HDG) or track (TRK) as desired. Mode selector may be returned to localizer (LOC) or approach (APP) mode after passing localizer antenna if desired.

e. To Fly a Back Course Localizer Approach

(1) Place the back course switch in the back course position.

WARNING

Localizer needle deflection is not reversed by the back course switch.

(2) Rotate the autopilot heading azimuth to the localizer back course.

(3) Select Localizer (LOC) or Approach (APP) mode after the aircraft heading is within 60° of the localizer back course. The aircraft will turn to intercept the localizer back course.

(4) Thirty seconds after passing the final approach fix, select Track (TRK) mode.

B. EMERGENCY

1. In the event of the autopilot or aircraft pressure malfunction, disengage by pushing the autopilot master in. The autopilot can be overpowered at any time without damage to the aircraft or components.

2. In the event of navigation signal malfunction, disengage the navigation/steering portion of the autopilot by selecting the OFF, MAN or HDG mode.

3. Maximum altitude loss after nose-down hardover in cruise configuration is 110 feet (based on pilot recovery after three seconds).

4. Maximum altitude loss after nose-down hardover in approach configuration is 60 feet (based on pilot recovery after one second).

5. Maximum overpower forces at the pilot's controls are as follows:

CONTROL	OVERPOWER FORCE
Aileron	11 lbs.
Elevator	42 lbs.
Rudder	25 lbs.

FAA Approved:

Virgil H Adamson

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60 & A60 LANDPLANE
AIRCRAFT FLIGHT MANUAL SUPPLEMENT
BEECHCRAFT H-14 AUTOPILOT

The information in this document is FAA approved material which, together with the appropriate basic FAA approved placarding, is applicable and must be carried in the aircraft when it is modified by the installation of a BEECHCRAFT H-14 Autopilot, alone or in combination with Altitude Hold, ILS Coupler, or Automatic Trim.

The information in this document supersedes the basic placarding only where covered in the items contained in this manual. For limitations and procedures not contained in this manual, consult the basic placarding.

I. LIMITATIONS

A. Disengage autopilot before take-off.

B. Do not use autopilot under 200 feet above terrain.

C. In case of engine failure during an ILS approach, disengage autopilot.

D. Approach localizer at an angle of 70° or less with the approach coupler operating.

E. Disengage NAV switch during VOR or R-NAV approaches.

II. OPERATING PROCEDURES

A. *NORMAL OPERATING PROCEDURES.*

1. Starting.

The autopilot may be turned on any time after the aircraft engines have been started. Since the equipment is transistorized, no warm-up time is required. However, make certain that the gyros are erect and stable prior to engaging the system. Electrical power to the autopilot can be interrupted by pulling the autopilot circuit breaker.

2. Preflight Check.

a. Check to see that the gyro pressure supply is indicating between 3.5 and 5.5 inches of mercury. Make sure that both gyros are erect and stable.

b. Move the Turn Control to the right. The aileron control wheel should move to the right to full autopilot deflection. This is somewhat less than full aileron.

c. Turn the Turn Control to the left of center. The control wheel should move an equal amount to the left side. Intermediate positions of the ailerons are difficult to obtain during ground check, as there is no balancing signal on the servos or control surfaces.

d. Disengage the autopilot and re-engage with the elevator control column in the center of travel. Hold a light back pressure to counteract the weight of the elevator. Rotate the autopilot Pitch Control wheel forward. The control column should move forward. The auto trim system should cause the elevator trim indicator to move in a down direction (same direction of movement as the autopilot pitch control wheel). Rotate the autopilot Pitch Control wheel aft. The control column should move aft. The auto trim system should cause the elevator trim indicator to move in an up direction (same direction of movement as the autopilot pitch control wheel).

e. Engage the Altitude Switch by pushing it in. It should remain in. Move the pitch control wheel. The altitude switch should pop out.

f. When an ILS frequency can be received, engage the ILS (with the Altitude Switch on, the Turn Control in the detent position, and the D.G. uncaged). The altitude switch may drop out depending on the glideslope needle position. The aileron control will move in the direction of the ILS needle. Move the Turn Control out of the detent; the ILS switch should drop to the OFF position.

g. With the Turn Control in the detent position, and the directional gyro uncaged, manually turn the aircraft to the left (smaller heading). The aileron control wheel should move to the right. Turning the airplane to the right of the engaged heading should cause the aileron control wheel to move to the left. This check is usually performed while taxiing.

h. Disengage the autopilot. All controls should be free through full travel. Reset manual trim for take-off position.

WARNING

After disengaging autopilot, RECHECK AIRCRAFT PITCH TRIM PRIOR TO TAKE-OFF.

3. In-Flight Operation.
The autopilot may be engaged above 200 feet after take-off. First manually trim the airplane (this is not critical and manual trimming may be done on all axes while the autopilot is engaged). Center the pitch trim indicator with the pitch control. (On aircraft equipped with the Four Switch Push Button Solenoid Held Type Flight Controller, this function is automatic.) Place the turn control in the center detent position. Press the autopilot engage switch in. The switch should remain engaged. Disengage the autopilot by pressing the switch to OFF or pressing the autopilot disconnect button on the pilot's control wheel. If the autopilot is engaged with the Turn Control out of detent, the aircraft will assume a bank angle proportional to the position of the Turn Control.

The yaw damper comes on when the autopilot is turned on, but the yaw damper may be turned on separately while the autopilot is off by pushing in the YAW DAMPER button to the right of the autopilot ON-OFF switch.

a. Maneuvering In Flight.
With the autopilot engaged, the aircraft may be maneuvered through a ± 18° of pitch with the Pitch Control wheel and 30° left and right bank angles with the Turn Control (on aircraft equipped with the Four Switch Rocker Type Flight Controller) or through a ± 22° of pitch with the Pitch Control wheel and 30° left and right bank angles with the Turn Control (on aircraft equipped with the Four Switch Push Button Solenoid Held Type Flight Controller). The rudder is automatically coordinated during all turns, and yaw dampening is included any time the autopilot is engaged. There is no minimum airspeed restriction for operation of the autopilot. Gear and flap operation plus change of airspeed may be performed normally with the autopilot engaged. If automatic pitch trim is not included in this system, manually retrim the elevator for flight condition changes by centering the pitch trim indicator. Trim the direction opposite the needle indication. The rudder axis may be trimmed to center the ball at any time during autopilot operation.

b. Heading Operation.
The autopilot is electrically connected to the directional gyro for heading control whenever this gyro is engaged and the Turn Control is in the center (detent) position. The heading control is automatically disengaged when the Turn Control is used to bank the aircraft and automatically re-engages three (3) seconds after the Turn Control is returned to the center (detent) position.

c. Altitude Control Operation.

The altitude control may be engaged by pressing the ON portion of the altitude switch. It is automatically disengaged whenever a pitch signal is applied through the Pitch Control wheel or directly by pressing the OFF portion of the altitude switch. The aircraft will hold the pressure altitude existing at the time the switch is depressed. For best operation, engage the altitude control in level flight. If the altitude switch is engaged in a normal climb or dive, the aircraft will level off slightly beyond the selected altitude. When the altitude switch is disengaged, the aircraft will assume the climb or dive attitude existing at the time that the altitude switch was depressed.

d. ILS Coupler Operation.

The ILS coupler receives information from the radio ILS receivers to follow the localizer and glidepath. The proper ILS frequency must be tuned in and the OFF warning flags must be out of sight before using the ILS coupler. Let down, orientation, and procedure turn (approach at 70° or less to the beam heading) may be performed with the autopilot. Engage the altitude switch when the authorized altitude for the procedure turn is reached. Engage the ILS switch when the ILS localizer needle is one-half the distance from full deflection and is moving toward center. Air speed during localizer intercept shall not exceed 140 knots. The aircraft will automatically bracket the beam. When the aircraft intercepts the glideslope, the altitude switch will automatically disengage and the glideslope coupler will provide the proper pitch control to hold the aircraft on the glidepath. Airspeed during the descent is controlled by the throttles. In case of a missed approach, disengage the ILS coupler by moving the Turn Control out of the detent, or by pressing the OFF portion of the ILS switch.

NOTE

In the event the glide path of the ILS System is inoperative, or a glide path receiver is not included in the aircraft's radio equipment, fly the altitude and glide path with the Pitch Control wheel.

B. *EMERGENCY PROCEDURES.*

1. Maximum altitude losses during malfunction tests were:

CONFIGURATION	ALTITUDE LOSS
Climb	100 ft.
Cruise	150 ft.
Descent	500 ft.
Approach/ILS Coupler	50 ft.
Single Engine Approach/ILS Coupler	80 ft.

2. Overpower forces at the pilot's controls are as follows:

CONTROL	OVERPOWER FORCE
Aileron	22 lbs.
Elevator	33 lbs.
Rudder	50 lbs.

3. If failure of either engine is experienced during level flight, disengage autopilot, manually trim, and re-engage autopilot.

CAUTION

In case of an engine failure during an ILS approach, disengage the autopilot and continue approach manually.

4. For normal operation - Pressure from either engine is sufficient to operate the autopilot and the instruments.

Approved: [signature]

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60, A60 & B60 LANDPLANE

AIRPLANE FLIGHT MANUAL SUPPLEMENT

CONTINUOUS PRESSURE OPERATED SURFACE DEICE SYSTEM

The information in this document is FAA approved material which together with the FAA Approved Airplane Flight Manual must be in the airplane during all flight operations when equipped with a Continuous Pressure Operated Surface Deice System installed in accordance with Beech Aircraft Corporation FAA approved data.

I. LIMITATIONS

1. Airplanes equipped with only the Continuous Pressure Operated Surface Deice System are not approved for flight in known icing conditions. (Refer to Airplane Flight Manual Supplement, FLIGHT IN KNOWN ICING CONDITIONS, P/N 60-590001-17.)
2. Stall speeds are increased 4 knots in all configurations with surface deice system operating.
3. Instrument Markings:
   Pneumatic pressure gage: Green Arc 7 psi to 20 psi; Red Line at 20 psi.

II. PROCEDURES (Procedures outlined for safety of flight when icing is inadvertantly encountered).

1. BEFORE TAKE-OFF.
   a. Power - 2000 RPM.
   b. Deice Switch - ONE-CYCLE (UP).
   c. Pneumatic Pressure - 15 to 18 PSI (while boots are inflating).
   d. Wing Boots - CHECK VISUALLY FOR INFLATION AND HOLD DOWN.
2. IN FLIGHT

When ice accumulates 1/2 to 1 inch.

   a. Deice Switch: ONE-CYCLE (UP).
   b. Pneumatic Pressure - 15 to 18 PSI (while boots are inflating).
   c. Repeat - AS REQUIRED.

CAUTION

Rapid cycles in succession or cycling before at least 1/2 inch of ice has accumulated, may cause the ice to grow outside the contour of the inflated boots and prevent ice removal.

NOTE

Either engine will supply sufficient vacuum and pressure for deice operation.

III. EMERGENCY PROCEDURE.

1. Failure of ONE CYCLE Operation.
   a. Deice Switch - MANUAL (Do not hold more than 8 seconds)

CAUTION

The boots will inflate only as long as the switch is held in the MANUAL position. When the switch is released the boots will deflate.

2. Failure of boots to deflate.
   a. Pull circuit breaker on copilot's subpanel.

APPROVED: H. H. Schultz

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60, A60 & B60 LANDPLANE

AIRPLANE FLIGHT MANUAL SUPPLEMENT

GOODRICH ELECTROTHERMAL PROPELLER DEICE SYSTEM

The information in this document is FAA approved material which together with the FAA Approved Airplane Flight Manual must be in the airplane during all flight operations when equipped with Goodrich Electrothermal Propeller Deice System installed in accordance with Beech Aircraft Corporation FAA approved data.

I. LIMITATIONS

1. Airplanes equipped with only the Electrothermal Propeller Deice System are not approved for flight in known icing conditions. (Refer to Airplane Flight Manual Supplement, FLIGHT IN KNOWN ICING CONDITIONS, P/N 60-590001-17).
2. Propeller Deice should not be operated when propellers are static.

II. NORMAL PROCEDURES (Procedures outlined for safety of flight when icing is inadvertently encountered).

1. BEFORE TAKEOFF
   a. Propeller Deice Switch - ON
   b. Deice Ammeter - 14 to 18 AMPERES
   c. To check the automatic timer, watch the deice ammeter closely for at least two minutes. A small momentary deflection approximately every 30 seconds (on serials prior to P-579) or 90 seconds (on serials P-579 and after) shows that the timer is switching and indicates normal system operation. Normal operating range is 14 to 18 amperes.
   d. Propeller Deice Switch - Off

2. IN FLIGHT
   a. Propeller Deice Switch - ON. The system may be operated continuously in flight and will function automatically until the switch is turned off.
   b. Relieve propeller imbalance due to ice by increasing rpm briefly and returning to the desired setting. Repeat as necessary.

III. EMERGENCY PROCEDURES

An abnormal reading on the Propeller Deice Ammeter indicates need for the following action:

1. Zero Amps.
   Check prop deice circuit breaker. If the circuit breaker has tripped, a wait of approximately 30 seconds is necessary before resetting. If ammeter reads 0 and the circuit breaker has not tripped or if the ammeter still reads 0 after the circuit breaker has been reset, turn the switch off and consider the prop deice system inoperative.
2. Zero to 14 Amps.
   If the prop deice system ammeter occasionally or regularly indicates less than 14 amps, operation of the prop deice system can continue unless serious propeller imbalance results from irregular ice throw-offs.
3. 18 to 23 Amps.
   If the prop deice system ammeter occasionally or regularly indicates 18 to 23 amps, operation of the prop deice system can continue unless serious imbalance results from irregular ice throw-offs.
4. More than 23 Amps.
   If the prop deice system ammeter occasionally or regularly indicates more than 23 amps, the system should not be operated unless the need for prop deicing is urgent.

Approved: Donald St Peter

For W.H. Schultz
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60 & A60 LANDPLANE
AIRCRAFT FLIGHT MANUAL SUPPLEMENT
LANDING GEAR SAFETY SYSTEM

This document is to be inserted in Section XIV FAA Approved Equipment, Pilot's Operating Manual when the airplane is equipped with the Landing Gear Safety System.

I. LIMITATIONS: The Landing Gear Safety System is designed to prevent gear-up landings and premature or inadvertent operation of the Landing Gear Mechanism. The System is to be used as a safety backup device only; normal usage of the Landing Gear Position Switch is mandatory.

II. PROCEDURES

A. Normal Procedures:

1. Landing Gear Extension - With the Landing Gear Safety System Switch in the ON position, the Landing Gear will be automatically extended when: (1) The airspeed is below approximately 120 KTS IAS and (2) both engines are operating at a throttle position corresponding to approximately 17 inches or less of manifold pressure. The ON-OFF and Test Safety System Switch is located below and to the right of the Landing Gear Switch.
2. Landing Gear Retraction - With the Landing Gear Safety System Switch in the ON position, the Landing Gear will not retract unless: (1) The Landing Gear Position Switch Handle is in the UP position, (2) the airspeed is above approximately 85 KTS IAS and (3) one or both engines are operating at a throttle position corresponding to approximately 17 inches or more of manifold pressure.
3. If it is desired to operate the gear without the safety feature, place the ON-OFF Switch in the OFF position.

B. Emergency Procedures:

In the event of an emergency, automatic extension of the Landing Gear may be prevented by placing the Landing Gear Safety System ON-OFF Switch in the OFF position, thus deactivating the safety system.

C. Preflight Check:

1. Throttles - Closed or Retarded
2. Battery Master Switch - ON
3. Landing Gear Circuit Breaker - Either in or out
4. Place the ON-OFF TEST Switch in the TEST Position. Proper functioning of the Automatic Landing Gear Extension Portion of the system is indicated by the noise or movement of the solenoid in the Landing Gear Position Switch. The ON-OFF TEST Switch returns normally to the ON position unless the Pilot intentionally places the switch in the OFF position.
5. Landing Gear Circuit Breaker - In before Take-off.

Approved:

Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60, A60, AND B60 LANDPLANES

AIRPLANE FLIGHT MANUAL SUPPLEMENT

FLIGHT IN KNOWN ICING CONDITIONS

The information in this document is FAA approved material which, together with the FAA Approved Airplane Flight Manual, must be in the airplane during all flight operations when the airplane has been certified as properly equipped for flight into known icing conditions per Special Conditions issued to Beech Aircraft Corporation via FAA Letter CE 213 dated 1 June 1967.

LIMITATIONS

1. Airplane must be equipped with the following items and all equipment listed must be operable:
   a. Wing and Empennage Continuous Pressure Operated Surface Deice System
   b. Goodrich Electrothermal Propeller Deice System
   c. Fuel Vent Heaters
   d. Heated Stall Warning (Goodrich 3E1793 or Safe Flight 190-1, 190-3, or 191-52)
   e. Pitot Heat
   f. Left Windshield Heat
   g. Antenna Mast capable of withstanding ice loads
   h. Windshield Defroster
   i. Wing Ice Lights
   j. FAA Approved Airplane Flight Manuals (P/N 60-590000-5E or 60-590000-11 with latest revision)
   k. FAA Approved Airplane Flight Manual Supplements
   P/N 60-590001-11 dated August 31, 1973 or later, Continuous Pressure Operated Surface Deice System
   P/N 60-590001-13 dated August 31, 1973 or later, Goodrich Electrothermal Propeller Deice System

2. When the above listed equipment is installed and operational, a placard will be placed on the Operation Limitation panel which states "THIS AIRPLANE IS APPROVED FOR FLIGHT IN KNOWN ICING CONDITIONS".

NORMAL PROCEDURES

BEFORE TAKEOFF

1. Surface Deice System - CHECK
   a. Power - 2000 RPM
   b. Deice Switch - ONE-CYCLE (UP)
   c. Pneumatic Pressure - 15 to 18 PSI
   d. Wing Boots - CHECK VISUALLY FOR INFLATION AND HOLD-DOWN.

2. Electrothermal Propeller Deice - CHECK
   a. PROP HT Switch - ON
   b. PROP AMP Indicator - CHECK 14 to 18 AMPERES
   c. Automatic Timer - CHECK PROPELLER AMMETER FOR TWO MINUTES. Needle deflection every 30 seconds (serials prior to P-579) or 90 seconds (serials P-579 and after) indicates normal operation.

3. Fuel Vent Heat
   a. Left Switch - ON
   b. Right Switch - ON

NOTE

Switches should remain ON throughout operation.

4. Pitot Heat and Heated Stall Warning
   a. Left Pitot Heat Switch - ON (Note deflection on Loadmeter.)
   b. Right Pitot Heat and Stall Warning Switch - ON (Note deflection on loadmeter.) (Stall warning heat is reduced or disconnected by a landing gear switch to protect against overheat during ground operation.)

NOTE

Switches may be left on throughout flight. Prolonged operation on the ground could damage the Pitot Heat System.

5. Left Windshield Heat - CHECK:

FOR AIRPLANES WITH WINDSHIELD HEAT INVERTER VOLTMETER

   a. Propellers - 1200 to 1500 RPM
   b. Both Generators - ON
   c. WSHLD - HT Switch - ON

CAUTION

On airplanes prior to P-556, the inverter voltmeter should indicate in the green band (220 to 260). Indication outside of the green band indicates insufficient windshield heat. On airplanes P-556 and after, voltmeter indication will be cyclic. The voltmeter should indicate in the green band until the heated section reaches approximately 110°F, at which time the voltmeter will drop to 0. When the heated section cools to approximately 90°F the inverter will reactivate and the voltmeter will indicate in the green band. Indications above 0 but outside the green band indicate insufficient windshield heat.

   d. Windshield - CHECK (Feel for warming)

NOTE

WSHLD HT switch may be left on for flight operation.

FOR AIRPLANES WITHOUT WINDSHIELD HEAT INVERTER VOLTMETER

   a. Propeller - 1200 TO 1500 RPM
   b. One Generator (left or right) - OFF
   c. WSHLD-HT Switch - ON (Note increase on operative loadmeter - minimum of .20 units)

CAUTION

Loadmeter increase of less than .20 units indicates insufficient windshield heat.

   d. Windshield - CHECK (Feel for warming)

NOTE

WSHLD HT switch may be left on for flight operation.

e. Both Generators - ON

6. Defrost Air - CHECK OPERATION

7. Wing Ice Lights - CHECK

IN FLIGHT

1. Surface Deice System

When ice accumulates 1/2 to 1 inch:

a. Deice Switch - ONE CYCLE (UP)
b. Pneumatic Pressure Gage - CHECK 15 - 18 PSI (while system is on pressure cycle).
c. Repeat as required.

CAUTION

Rapid cycles in succession, or cycling before at least 1/2 inch of ice has accumulated, may cause the ice to grow outside the contour of the inflated boots and prevent ice removal.

NOTE

Either engine will supply sufficient vacuum and pressure for deice operation.

Failure of ONE-CYCLE function can be overcome by use of the MANUAL switch.

2. Electrothermal Propeller Deice
   a. PROP HT Switch - ON

NOTE

Systems may be operated continuously in flight. Relieve propeller imbalance by increasing rpm. If PROP AMPS reads above 18 amperes or below 14 amperes, refer to Emergency Procedures in this supplement.

3. Fuel Vent Heat
   a. Left and right switches ON before takeoff. Continuous operation is recommended.

4. Left and Right Pitot Heat (Heated Stall Warning Switch combined with or in place of Right Pitot Switch) - Switches ON
   a. May be turned on before takeoff. System may be operated continuously in flight. Check both switches ON when encountering visible moisture.

CAUTION

Prolonged use of Pitot Heat on the ground will damage the heating elements..

5. Heated Windshield
   a. WSHLD HT Switch(es) - ON AS REQUIRED (Heat should be applied before ice forms.)

CAUTION

The electrically heated windshield should be turned off for a 15-second period to allow the pilot to take a reading on the standby compass for the purpose of resetting the directional gyro.

Ground use of windshield heat is limited to 10 minutes.

6. Defrost Air
   a. Defrost Air - PULL ON (Before entering icing condition)

NOTE

For maximum windshield defrosting, PULL OFF pilot and copilot air and place vent blower switch in HI position.

7. Wing Ice Light
   a. Use wing ice light as required.

EMERGENCY PROCEDURES

1. Surface Deice System
   a. Failure of ONE-CYCLE Operation - HOLD TO MANUAL (8 seconds maximum).
   b. Failure of Boots to Deflate - PULL SURF SYS CIRCUIT BREAKER IN COPILOT'S SUB-PANEL.

2. Electrothermal Propeller Deice Abnormal Ammeter Reading
   a. Zero Amps.
      Check prop deice circuit breaker. If the circuit breaker has tripped, a wait of approximately 30 seconds is necessary before resetting. If ammeter reads 0 and the circuit breaker has not tripped or if the ammeter still reads 0 after the circuit breaker has been reset, turn the switch off and consider the prop deice system inoperative.
   b. Zero to 14 Amps.
      If the prop deice system ammeter occasionally or regularly indicates less than 14 amps, operation of the prop deice system can continue unless serious propeller imbalance results from irregular ice throw-offs.
   c. 18 to 23 Amps.
      If the prop deice system ammeter occasionally or regularly indicates 18 to 23 amps, operation of the prop deice system can continue unless serious imbalance results from irregular ice throw-offs.
   d. More than 23 Amps.
      If the prop deice system ammeter occasionally or regularly indicates more than 23 amps, the system should not be operated unless the need for prop deicing is urgent.

PERFORMANCE

CAUTION

Stalling airspeeds should be expected to increase when ice has accumulated on the airplane due to the distortion of the wing airfoil. For the same reason, stall warning devices may not be accurate and should not be relied upon. Maintain a comfortable margin of airspeed above the normal stall airspeed with ice on the airplane.

Approved: Donald St Peter

for W. H. Schultz
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60, A60 & B60 LANDPLANE

AIRPLANE FLIGHT MANUAL SUPPLEMENT

for the

WOODWARD ELECTRONIC PROPELLER SYNCHRONIZER

The information in this document is FAA Approved material which, together with the basic airplane flight manual is applicable and must be attached to the basic manual when the airplane is modified by the installation of the Woodward Electronic Propeller Synchronizer in accordance with STC SA250CE.

The information in this document supersedes the basic manual only where covered in the items contained herein. For Limitations, Procedures, and Performance not contained in the supplement, consult the basic Airplane Flight Manual.

I. LIMITATIONS

The following placard must be mounted on or near the synchronizer control switch:

"PROP SYNCH MUST BE OFF FOR TAKEOFF AND LANDING"

II. NORMAL PROCEDURES

1. Synchronize the engines manually.
2. Position control switch to ON position.
3. If a change in rpm setting is desired, move both master (right) and slave propeller governor control levers together.
4. If synchronization is not maintained with the switch ON, indicating the actuator has reached the end of its travel, turn switch OFF and repeat procedures above. With the switch in the OFF position, the actuator is returned to the center of its travel.

III. PERFORMANCE

No change in airplane performance results from the installation of the synchronizer.

IV. FUNCTIONAL TEST

The rpm range of the synchronizer may be checked in cruise by slowly moving only the master propeller control toward both high and low rpm until propellers are no longer synchronized.

Note the range of rpm over which the slave engine remains synchronized with the master engine. This is the limited range provided for safety and is the maximum speed adjustment range beyond which the slave engine cannot be adjusted by the synchronizer.

Approved: V. H. Schultz
for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT LANDPLANES, DUKE 60, A60 and B60

AIRPLANE FLIGHT MANUAL SUPPLEMENT

KING KNC-610 AREA NAVIGATION SYSTEM
and
KING KN-74 AREA NAVIGATION SYSTEM

GENERAL

This document is to be attached to the FAA Approved Airplane Flight Manual when the airplane is equipped with a King KNC-610 Area Navigation System or King KN-74 Area Navigation System which has been installed in accordance with BEECHCRAFT FAA approved data.

The information in this document supersedes the basic FAA Approved Airplane Flight Manual only where covered in the items contained herein.

LIMITATIONS

1. This system shall not be used as a primary system under IFR conditions except on approved approach procedures, approved area navigation airways, and random area navigation routes when approved by Air Traffic Control.

2. This system is to be used only with colocated facilities (VOR and DME signals originate from the same geographical location).

EMERGENCY PROCEDURES

CAUTION

DME may unlock due to loss of signal with certain combinations of distance from station, altitude, and angle of bank.

1. VOR or DISTANCE flag appears while in RNAV mode:
   a. Selected Frequency - CHECK FOR CORRECT FREQUENCY
   b. VOR or DISTANCE flag intermittent or lost - UTILIZE OTHER NAVIGATION EQUIPMENT AS REQUIRED.

2. VOR or DISTANCE flag appears while in APPR mode:
   a. If flag appears while on an approach, execute a missed approach and utilize another approved facility.

NORMAL PROCEDURES

1. VHF NAV - ON
2. DME - ON
3. Mode Selector - SELECT VOR/DME, RNAV, or APPR
4. NAV Frequency - SET
5. DME Frequency - SET
6. Waypoint Bearing - SET WAYPOINT RADIAL FROM VORTAC
7. Waypoint Distance - SET WAYPOINT DISTANCE FROM VORTAC
8. OBS Control - DESIRED MAGNETIC COURSE
9. Self-Test - ACTUATE (must have VOR reception)

PERFORMANCE - No change

Approved: H. H. Schultz
for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE A60 LANDPLANE

AIRPLANE FLIGHT MANUAL SUPPLEMENT

for

DUKE A60 REDUCED POWER PROCEDURES FOR CERTIFICATION IN SWITZERLAND

This document is applicable to the Duke A60, when certificated in Switzerland, and must be attached to the FAA Approved Flight Manual. This is to outline changes in aircraft limitations and procedures required for certification in Switzerland.

In order to meet the noise level requirements for operation of the Duke A60 in Switzerland, all two-engine operations, except take-off, must be conducted with 2750 RPM and 35.5 in. Hg, maximum. This Supplement provides FAA Approved performance information for reduced-power two-engine climb.

ENGINE OPERATING LIMITS

Take-Off and Single Engine Operation . . . . 41.0 in. Hg and 2900 RPM, 380 BHP

Maximum Two Engine Climb Power . . . . 35.5 in. Hg and 2750 RPM, 323 BHP

INSTRUMENT MARKINGS

Manifold Pressure

Normal Operating Range (Green Arc) . . . . 14 - 35.5 in. Hg

Maximum (Red Radial) . . . . 41.5 in. Hg

Tachometer

Normal Operation (Green Arc) . . . . 2350 - 2750 rpm

Maximum (Red Radial) . . . . 2900 rpm

REDUCED POWER OPERATION

Maximum Two-Engine Climb Power Graph . . . . page 2 of 3

EMERGENCY OPERATION

In event of engine failure during two engine climb, fully advance propeller control levers and throttles, then feather propeller of the inoperative engine.

Single Engine Climb Graph. page 3 of 3

Approved:

Chester A. Rembleske
BEECH AIRCRAFT CORPORATION
DOA CE-2

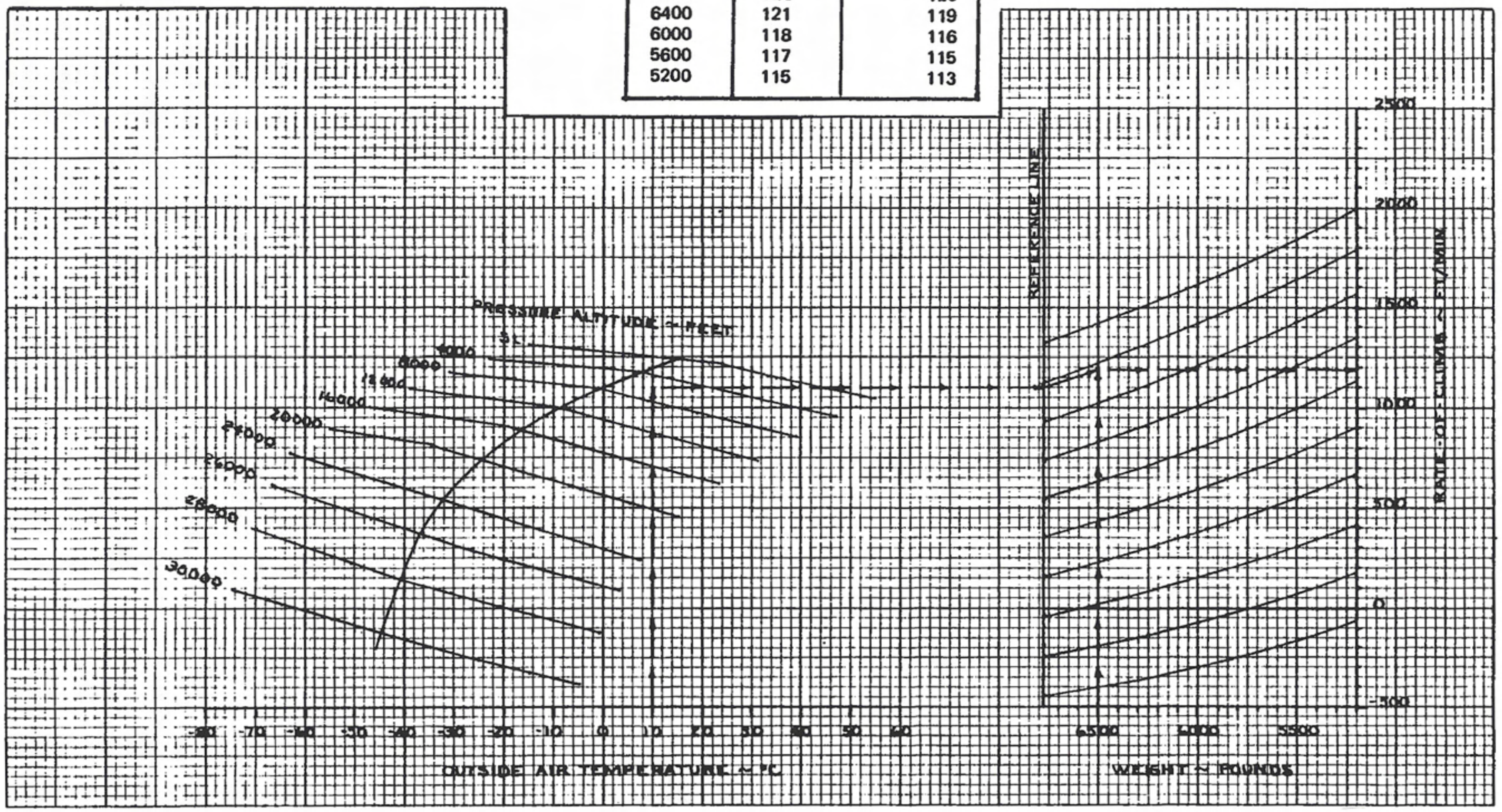
FAA Approved
Date: March 20, 1973
P/N 60-590001-23

MAXIMUM TWO-ENGINE CLIMB POWER

ASSOCIATED CONDITIONS:	
POWER	2750 RPM & 35.5 IN.HG M.P. OR FULL THROTTLE
GEAR	UP
FLAPS	UP
COWL FLAPS	OPEN
CLIMB SPEED	IAS AS TABULATED

WEIGHT POUNDS	CLIMB SPEED ~ KNOTS	
	CAS	IAS (ASSUMES 0 INST. ERROR)
6775	122	120
6400	121	119
6000	118	116
5600	117	115
5200	115	113

EXAMPLE:	
OAT	10°C
PRESS. ALT.	6000 FT
WEIGHT	6500 LBS
RATE-OF-CLIMB	1190 FT/MIN
CLIMB SPEED	119 KIAS



SINGLE-ENGINE CLIMB

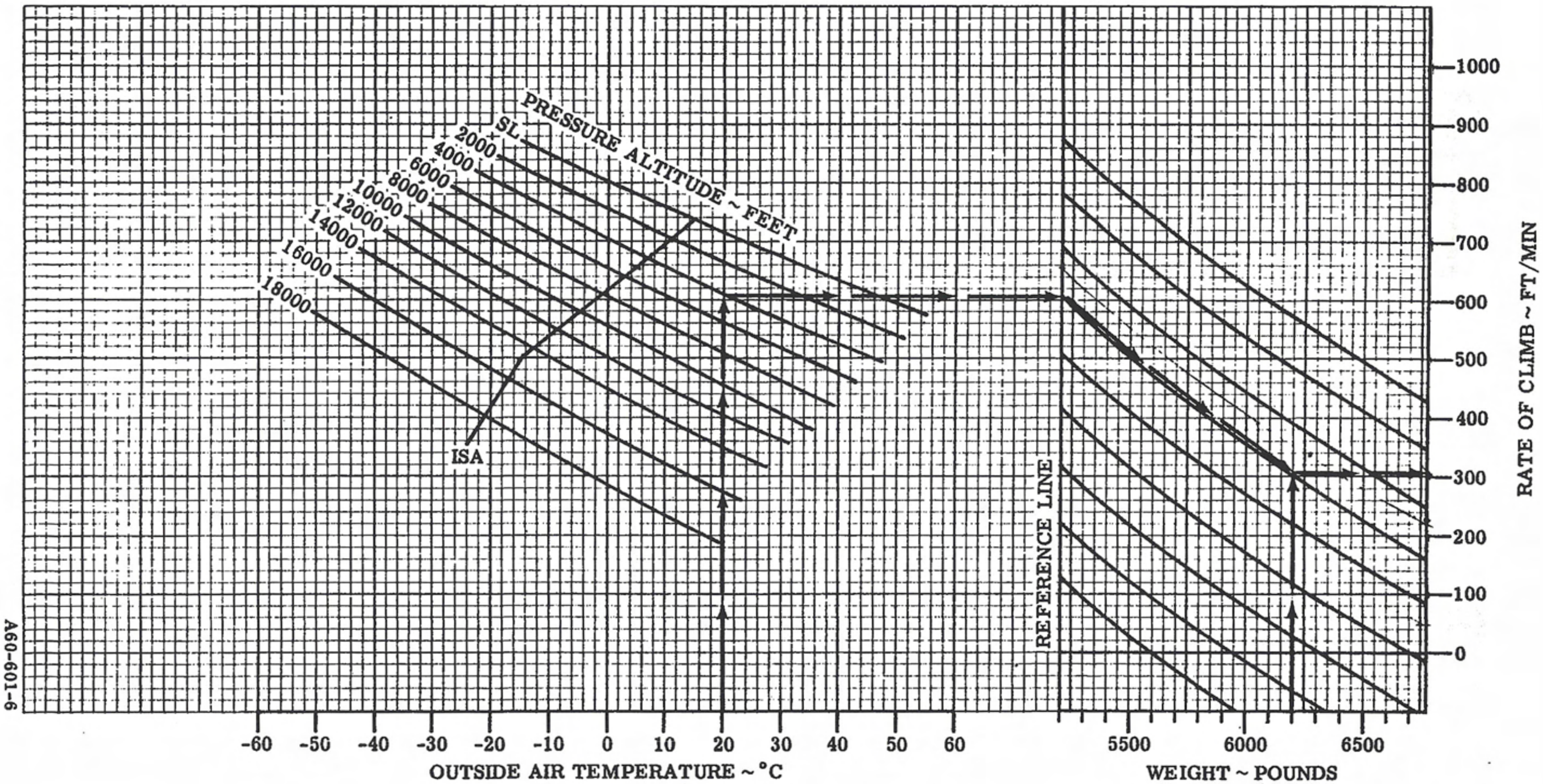
ASSOCIATED CONDITIONS:

POWER	41 IN. HG, 2900 RPM
GEAR	UP
FLAPS	UP
COWL FLAPS	OPEN
INOPERATIVE PROPELLER	FEATHERED
CLIMB SPEED	IAS AS TABULATED

WEIGHT POUNDS	CLIMB SPEED ~ KNOTS	
	CAS	IAS (ASSUMES ZERO INST. ERROR)
6775	112	110
6400	110	108
6000	108	106
5600	106	104
5200	105	103

EXAMPLE:

OAT	20°C
PRESSURE ALTITUDE	4000 FT
WEIGHT	6200 LBS
RATE OF CLIMB	305 FT/MIN
CLIMB SPEED	107 KIAS



BEECHCRAFT DUKES 60 & A60 LANDPLANES

AIRPLANE FLIGHT MANUAL SUPPLEMENT

for the

NICKEL-CADMIUM BATTERY CHARGE CURRENT DETECTOR

The information in this supplement is FAA Approved material, which, along with the basic FAA Approved Airplane Flight Manual, is applicable to the operation of the airplane when equipped with the Nickel-Cadmium Battery Charge Current Detector, P/N 100-364285-1, approved by Letter ACE-210, dated September 25, 1973, FAA Central Region, Engineering and Manufacturing Branch, Wichita, Kansas and installed in accordance with Beech FAA Approved Drawings or by Kit 60-3005.

The Battery Charge Current Detector consists of a circuit which illuminates an amber light on the instrument panel whenever the battery charge current is above normal. The system is designed for a continuous monitor of the battery condition.

The purpose of the Battery Charge Current Detector is to inform the pilot of battery charge currents which may damage the battery. The system senses all battery current and provides a visual indication of above normal charge current. Following a battery engine start, the battery recharge current is very high and causes the illumination of the BATTERY CHARGE light, thus providing an automatic self test of the detector and the battery. As the battery approaches a full charge and the charge current decreases to a satisfactory amount, the light will extinguish. This will normally occur within a few minutes after an engine start, but may require a longer time, if the battery has a low state of charge, low charge voltage per cell, or low battery temperature.

The light may occasionally reappear for short intervals when heavy loads switch off, or engine speeds are varied near generator cut-in speed. High battery temperatures or high charge voltage per cell will result in a high overcharge current which will eventually damage the battery and lead to thermal runaway. Illumination of the BATTERY CHARGE light in flight alerts the pilot that conditions exist that may eventually damage the battery. The battery should be turned off to prevent battery damage. The following procedures outline the actions to be taken in the event the BATTERY CHARGE light illuminates.

NORMAL PROCEDURES

BEFORE STARTING ENGINES

1. Caution Light (BATTERY CHARGE) - PRESS TO TEST for illumination

DURING ENGINE START

Provided sufficient energy is used from the battery during the first engine start, the amber caution light, placarded BATTERY CHARGE, will illuminate approximately 6 seconds after the generator is on the line. This indicates a charge current above normal. The light should extinguish within 5 minutes. Failure to do so indicates a partially discharged battery. Continue to charge the battery. Make a check each 90 seconds using the During Engine Shutdown procedure outlined below, until the charge current fails to decrease and the light extinguishes. Failure of the light to extinguish indicates an unsatisfactory condition. The battery should be removed and checked by a qualified Nickel-Cadmium Battery shop.

IN FLIGHT

The illumination of the amber caution light, placarded BATTERY CHARGE, in flight indicates a possible malfunction of the battery. Turn the Battery Switch - OFF. The caution light should extinguish and the flight may proceed to destination. Failure of the light to extinguish with the battery switch off indicates a battery system or a charge current detector system malfunction. The aircraft should be landed as soon as practicable. (The battery switch should be turned on for landing in order to avoid electrical transients caused by power fluctuations.) After landing perform the During Engine Shutdown Battery Condition Check outlined below. If the battery indicates unsatisfactory, it should be removed and checked by a qualified Nickel-Cadmium Battery shop.

DURING ENGINE SHUTDOWN

Battery - CONDITION AND CHARGE (If the BATTERY CHARGE light is extinguished, the battery is charged and the condition is good. If the light is illuminated and fails to extinguish within 3 minutes of charging, perform the following check:)

1. One Generator - OFF
2. Engine Speed (Engine with Generator On) - 1000 RPM (Voltmeter indicating approximately 28 volts)
3. After loadmeter needle stabilizes, momentarily turn the battery switch off and note change in meter indication.

NOTE

The change in loadmeter indication is the battery charge current and should be no more than .025 (only perceivable needle movement). If the result of this check is not satisfactory, allow the battery to charge repeating the test each 90 seconds. If the results are not satisfactory within 3 minutes, the battery should be removed and checked by a qualified Nickel-Cadmium Battery shop.

Approved: W. H. Schultz

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

FAA Approved
Date: October 1, 1973
P/N 60-590001-31

BEECHCRAFT DUKE 60/A60 LANDPLANES

PILOT'S OPERATING HANDBOOK AND
FAA APPROVED AIRPLANE FLIGHT MANUAL
SUPPLEMENT

for the

WET WING TIP FUEL SYSTEM

GENERAL

This document is to be attached to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the airplane is equipped with the wet wing tip fuel system in accordance with BEECHCRAFT drawings by Beech Kit 60-9006-1

The information in this document supersedes or adds to the basic handbook only where covered in the items contained herein.

DESCRIPTIVE DATA

FUEL CAPACITY.. *237 Gallons.*

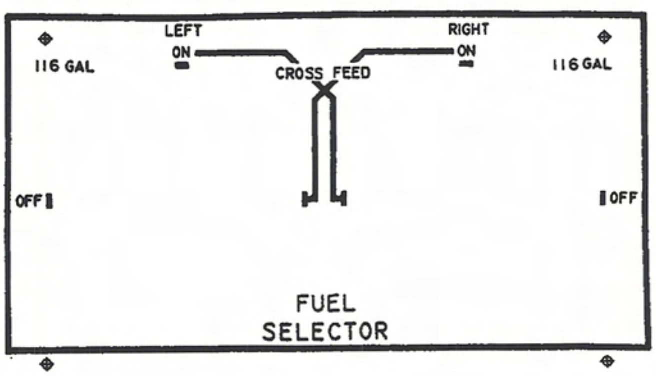
LIMITATIONS

The following limitations must be observed in the operation of this airplane.

FUEL

USABLE FUEL .... *232 Gallons.*

PLACARDS:



EMERGENCY PROCEDURES

No change.

NORMAL PROCEDURES

PREFLIGHT INSPECTION

LEFT WING LEADING EDGE

Fuel - CHECK QUANTITY; CAP(S) SECURE. ALWAYS CHECK WING TIP TANK FIRST. DO NOT REMOVE INBOARD CAP IF FUEL IS VISIBLE IN TIP TANK.

Wing Tip Tank Sump - DRAIN

Position Light - CHECK

Wheel Well Doors, Tire, Brake, Shock Strut, and Landing Light - CHECK

RIGHT WING LEADING EDGE

Wheel Well Doors, Tire, Brake, Shock Strut, and Landing Light - CHECK

Fuel - CHECK QUANTITY; CAP(S) SECURE. ALWAYS CHECK WING TIP TANK FIRST; DO NOT REMOVE INBOARD CAP IF FUEL IS VISIBLE IN TIP TANK.

Wing Tip Tank Sump - DRAIN

Position Light - CHECK

PERFORMANCE

No change.

FAA Approved
Issued: April 1, 1977
P/N 131426

WEIGHT AND BALANCE

WEIGHING INSTRUCTIONS

Full useable fuel of the 232-gallon fuel system has a center of gravity at fuselage station 139.7.

USEFUL LOAD WEIGHTS AND MOMENTS

USABLE FUEL				
GALLONS	WEIGHT	192 GAL. MOM/100	202 GAL. MOM/100	232 GAL. MOM/100
10	60	80	78	78
20	120	161	158	158
30	180	243	239	239
40	240	325	321	321
50	300	407	403	403
60	360	490	485	485
70	420	574	568	568
80	480	657	652	652
90	540	741	735	735
100	600	825	819	819
110	660	910	903	903
120	720	995	987	987
130	780	1080	1072	1072
140	840	1165	1157	1157
150	900	1250	1243	1243
160	960	1336	1328	1328
170	1020	1421	1413	1413
180	1080	1506	1499	1499
190	1140	1591	1584	1584
192	1152	1607	- - -	- - -
200	1200		1668	1668
202	1224		1685	- - -
210	1260			1754
220	1320			1841
230	1380			1927
232	1392			1945

SYSTEMS DESCRIPTION

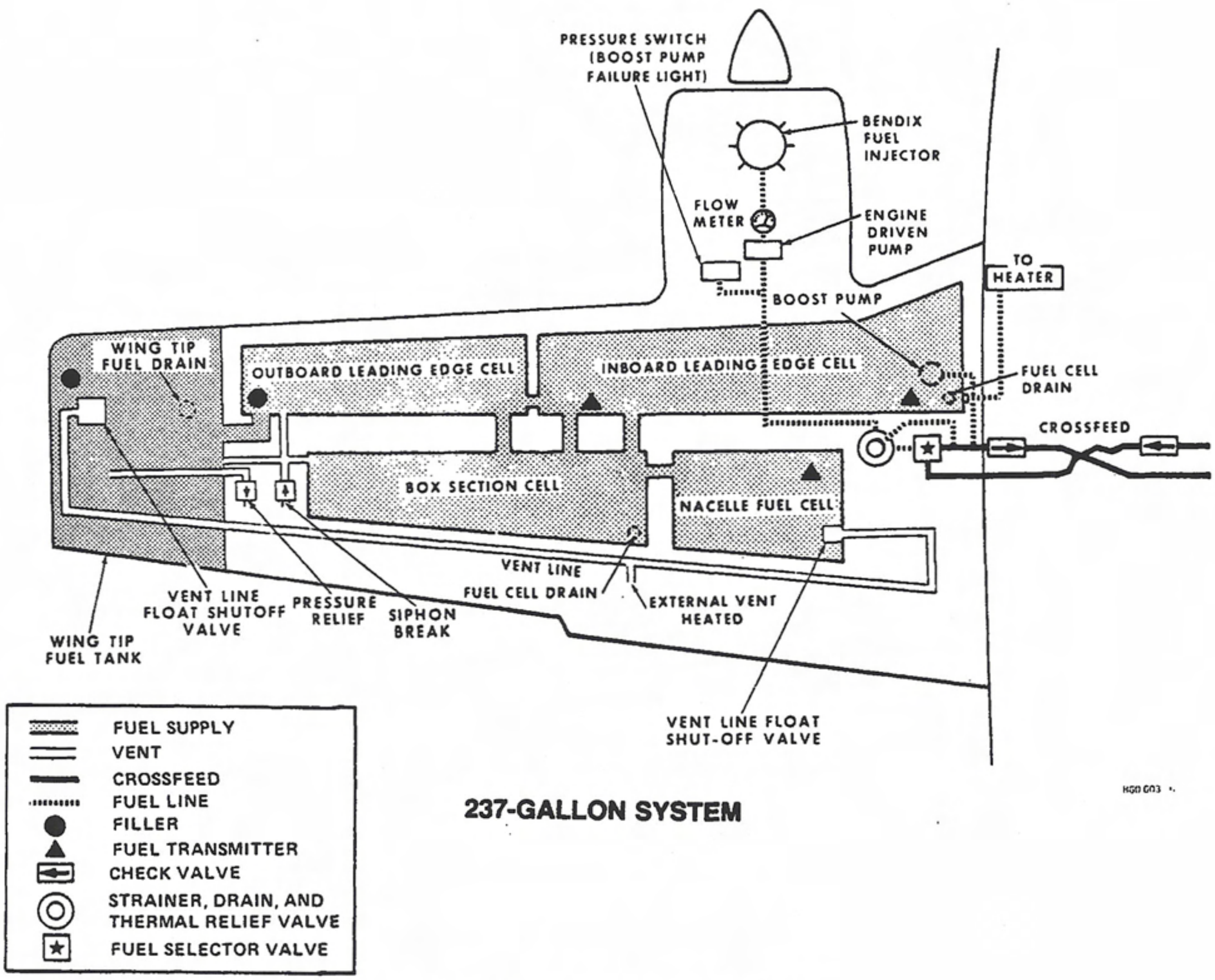
FUEL CELLS

The fuel system consists of inboard and outboard leading edge fuel cells, box section fuel cell, nacelle fuel cell, and a wing tip fuel tank in each wing. All of the fuel cells and the wing tip tank are interconnected making all of the usable fuel in each wing available to its engine when the fuel selector valve is turned ON. The interconnected fuel cells are serviced through a single fuel filler on each wing; however, the wing tip tanks have individual fuel fillers.

CAUTION

When the wing tip tanks are filled with fuel, DO NOT open the outboard wing leading edge filler caps as fuel will overflow from those openings.

The fuel system has six fuel drain valves, two in each wing and one in each wing tip tank.



237-GALLON SYSTEM

FUEL SYSTEM SCHEMATIC

HANDLING, SERVICING AND MAINTENANCE

SERVICING

FUEL SYSTEM

Fuel Cells

The 237-gallon fuel system has a filler cap in each outboard leading edge and in each wing tip.

CAUTION

Caution must be taken when the wing tip tanks are filled with fuel. DO NOT remove the outboard wing leading edge filler cap, as fuel will overflow from that opening. If this occurs, wash the fuel from the wing surface.

NOTE

To obtain the maximum capacity of the fuel system, fill the fuel system from the wet wing tip tank fillers.

The fuel system should be filled from the outboard wing leading edge filler cap when airplane must stand for several days. Check and fill to capacity at wet wing tip filler cap before flight if required for the mission.

Fuel Drains

The fuel system has six fuel drain valves, two in each wing and one in each wing tip tank. The fuel system should be purged of water before each flight. The wing tip tank flush type fuel drain requires a drain wrench provided in the loose tools and accessories.

Approved:

for Chester A. Rembleske
Beech Aircraft Corporation
DOA CE-2

BEECHCRAFT DUKE 60 (P-3 thru P-126 except P-123), A60 (P-123, P-127 thru P-246) AND B60 (P-247 thru P-307) LANDPLANES FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT for the AIRESEARCH PRESSURIZATION SYSTEM (KIT 60-5024)

GENERAL

The information in this supplement is FAA-approved material and must be attached to the Pilot's Operating Handbook and FAA-Approved Airplane Flight Manual when the airplane has been modified by installation of the AiResearch Pressurization system (Kit 60-5024) in accordance with Beech-approved data.

The information in this supplement supersedes or adds to the basic Pilot's Operating Handbook and FAA-Approved Airplane Flight Manual only as set forth within this document. Users of the manual are advised always to refer to the supplement for possibly superseding information and placarding applicable to operation of the airplane.

LIMITATIONS - No change

EMERGENCY PROCEDURES - No change

NORMAL PROCEDURES

ENVIRONMENTAL CONTROLS

PRESSURIZATION SYSTEM

BEFORE TAKE-OFF, CONTROLLER

1. Pressurization Air Shut-Off Controls - OPEN (In)
2. Test/Dump Switch - NOR
3. Cabin Altitude Controller - SET OUTER SCALE 1000 FEET BELOW FIELD ELEVATION
4. Throttles - 2500 RPM
5. Test/Dump Switch - HOLD TO TEST (Note momentary cabin descent); RELEASE TO NOR POSITION
6. Cabin Altitude Controller - SET OUTER SCALE TO DESIRED CABIN ALTITUDE OR INNER SCALE TO CRUISE ALTITUDE PLUS 500 FEET
7. Rate Control - SET POINTER TO VERTICAL POSITION

IN FLIGHT (Before Descent), CONTROLLER

1. Cabin Altitude Controller - SET OUTER SCALE TO FIELD ELEVATION PLUS 500 FEET
2. Rate Control - SET TO ACHIEVE ZERO PRESSURE DIFFERENTIAL BEFORE LANDING

NOTE

During descent, adjust power as required to maintain pressurization.

PERFORMANCE - No change

WEIGHT AND BALANCE - No change

SYSTEMS DESCRIPTION

ENVIRONMENTAL SYSTEMS

PRESSURIZATION

CABIN ALTITUDE CONTROLLER

The controller contains a visual display of the selected altitude, an altitude selector, and a rate control. The altitude outer scale indicates the selected cabin altitude and the inner scale indicates the corresponding airplane altitude where the maximum differential pressure would occur.

Before take-off, the altitude may be set either to the desired cabin altitude (outer scale) or to the planned cruising altitude (inner scale) plus 500 feet. Before descent to landing, the outer scale should be set to the field elevation plus 500 feet.

The rate control regulates the rate at which cabin pressure ascends or descends to the selected altitude. The pointer set to the vertical position results in a rate of approximately 500 ft/min.

If the cabin differential pressure reaches the maximum and the airplane is still climbing, the cabin altitude will climb with the airplane altitude.

Approved: Donald H Peters

For W. H. Schultz
Beech Aircraft Corporation
DOA CE-2

SECTION VI

PERFORMANCE

TABLE OF CONTENTS

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DISTANCE TO ACCELERATE TO DECISION SPEED AND STOP

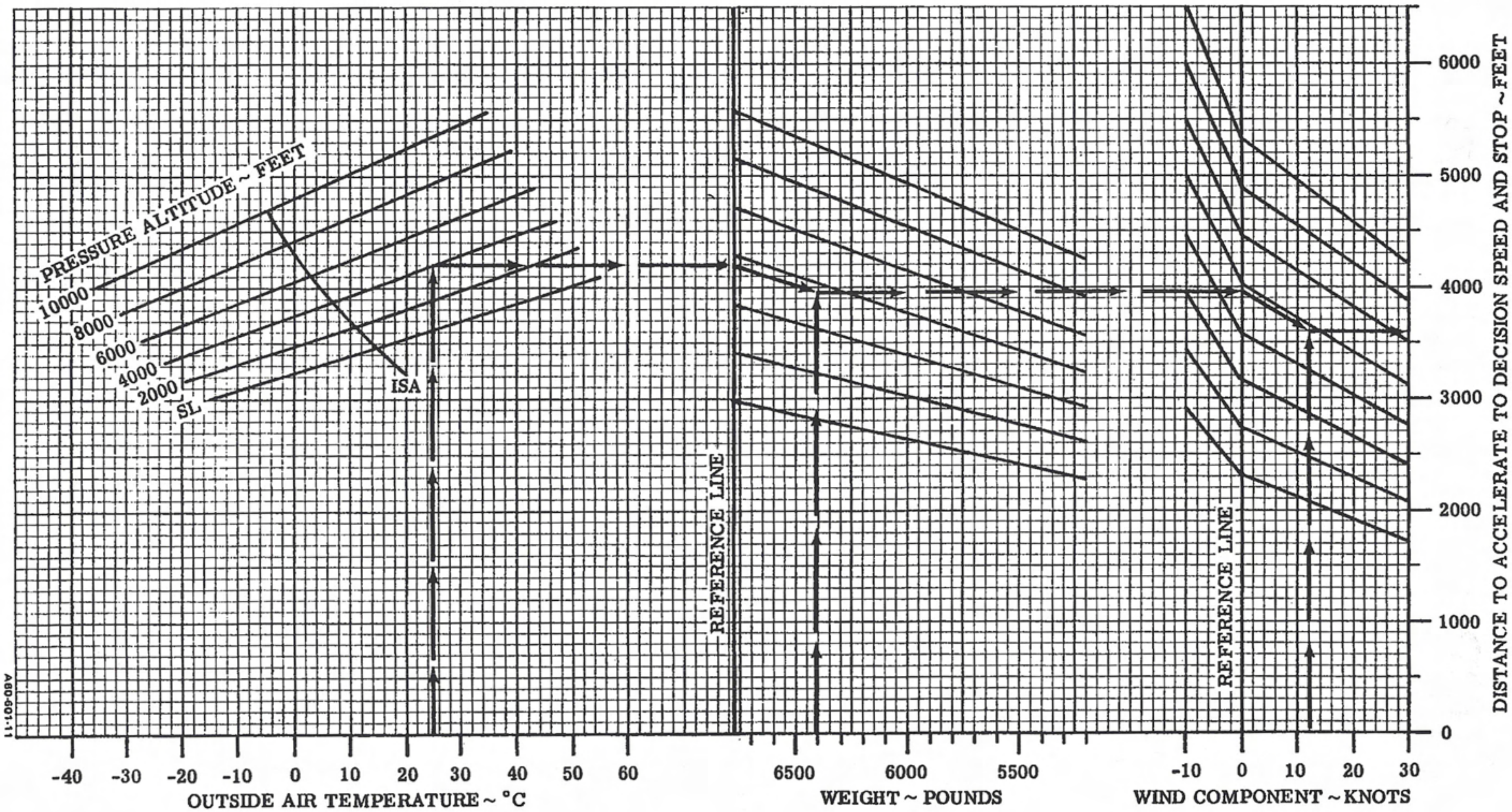
ASSOCIATED CONDITIONS:

POWER	1. TAKE-OFF POWER SET BEFORE BRAKE RELEASE 2. BOTH ENGINES IDLE AT DECISION SPEED
FLAPS	UP
COWL FLAPS	OPEN
RUNWAY	PAVED, LEVEL, DRY SURFACE
BRAKING	MAXIMUM

WEIGHT POUNDS	DECISION SPEED ~ KNOTS (ASSUME ZERO INST. ERROR)	
	MPH	KNOTS
6775	108	94
6400	107	93
6000	106	92
5600	104	90
5200	102	89

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	4000 FT
WEIGHT	6400 LBS
HEAD WIND COMPONENT	12 KNOTS
ACCELERATE AND STOP DISTANCE	3600 FT
DECISION SPEED	93 KIAS



OBSTACLE TAKE-OFF

ASSOCIATED CONDITIONS:

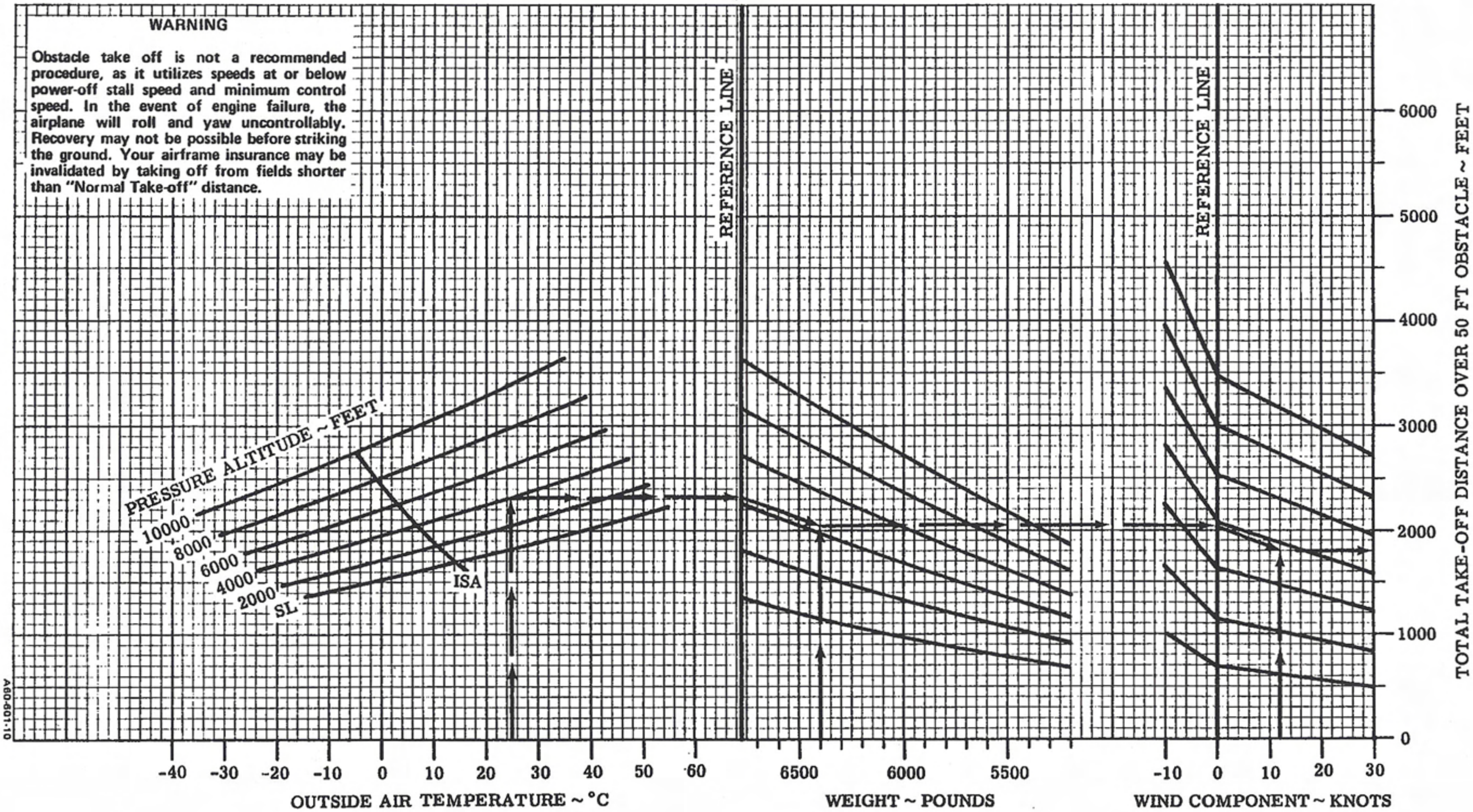
POWER	TAKE-OFF POWER APPLIED PRIOR TO BRAKE RELEASE
FLAPS	15° (HALF FLAP)
RUNWAY	PAVED, LEVEL, DRY SURFACE
TAKE-OFF SPEED	IAS AS TABULATED

NOTE: GROUND ROLL IS APPROXIMATELY 79% OF TOTAL TAKE-OFF DISTANCE OVER 50 FT OBSTACLE.

WEIGHT POUNDS	TAKE-OFF SPEED ~ KNOTS (ASSUMES ZERO INST. ERROR)			
	LIFT-OFF		50 FT	
	MPH	KNOTS	MPH	KNOTS
6775	86	75	86	75
6400	84	73	84	73
6000	83	72	83	72
5600	82	71	82	71
5200	81	70	81	70

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	4000 LBS
TAKE-OFF WEIGHT	6400 LBS
HEAD WIND COMPONENT	12 KTS
TOTAL DISTANCE	1800 FT
GROUND ROLL (79% OF 1800)	1422 FT
TAKE-OFF SPEED	
LIFT-OFF	73 KIAS
50 FT	73 KIAS



OBSTACLE LANDING

ASSOCIATED CONDITIONS:

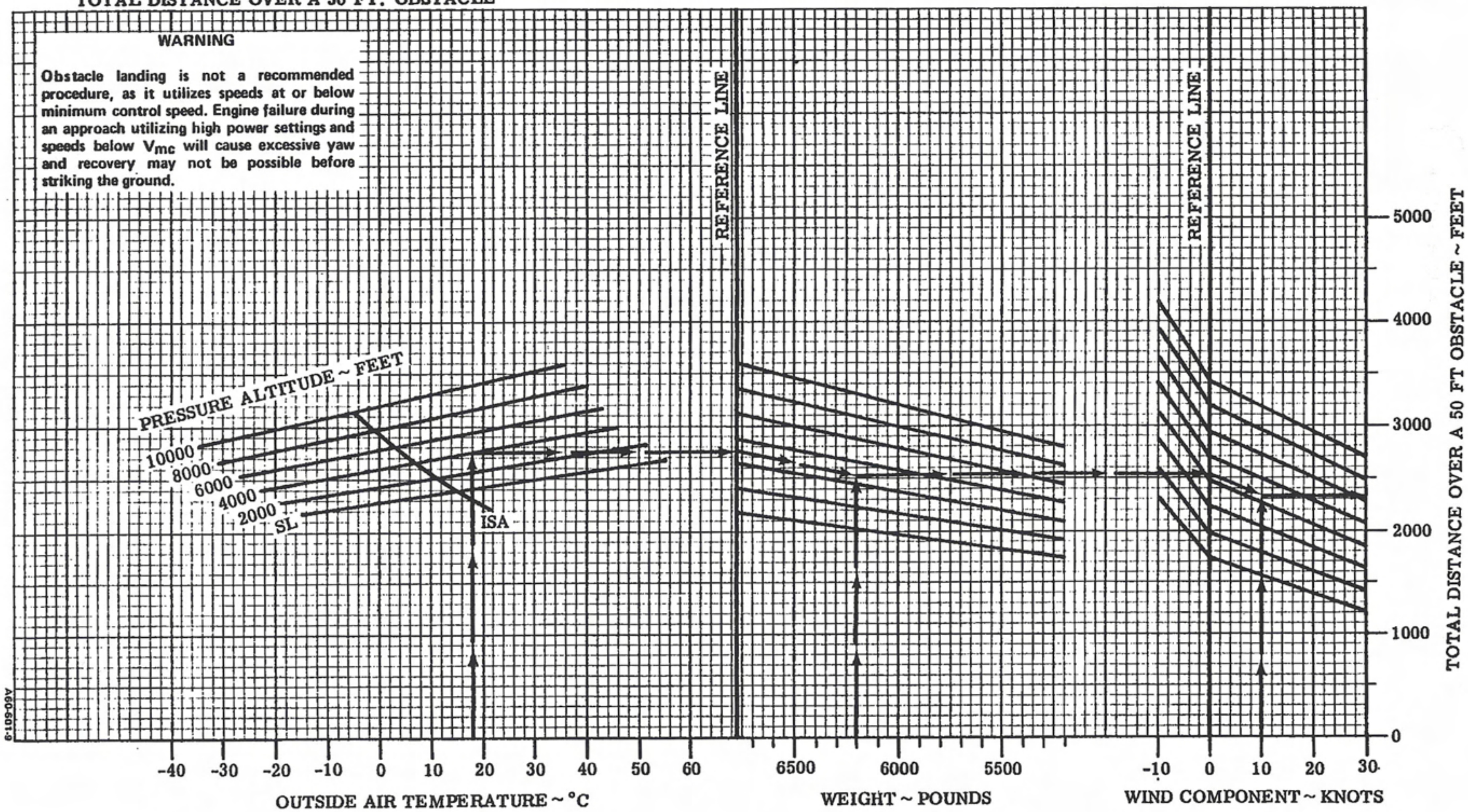
POWER	AS REQUIRED TO MAINTAIN 800 FT/MIN ON FINAL APPROACH
FLAPS	30°
RUNWAY	PAVED, LEVEL, DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

NOTE: GROUND ROLL IS APPROXIMATELY 55% OF TOTAL DISTANCE OVER A 50 FT. OBSTACLE

WEIGHT POUNDS	APPROACH SPEED ~ KNOTS (ASSUMES ZERO INST. ERROR)	
	MPH	KNOTS
6775	99	86
6400	97	84
6000	93	81
5600	90	78
5200	86	75

EXAMPLE:

OAT	18°C
PRESSURE ALTITUDE	4000 FT
LANDING WEIGHT	6200 LBS
HEAD WIND COMPONENT	10 KNOTS
TOTAL DISTANCE OVER A 50 FT OBSTACLE	2325 FT
GROUND ROLL (55% OF 2325)	1279 FT
APPROACH SPEED	83 KIAS



SECTION VII

CRUISE CONTROL

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INTRODUCTION TO CRUISE CONTROL

The graphs and tables in this section present performance information for flight planning at various parameters of power, altitude and temperature. Graphs or tables are included for Cruise Climb, and Cruise at various power settings.

Calculations for flight time, block speed and fuel requirements for a proposed flight are detailed below.

CONDITIONS

Billings Field Elevation . . . . 3606 ft

Route of Trip:
BIL - V19 - CZI - V247 - DGW - V19E - CYS - V19 - DEN

Weather Conditions IFR for Cruise Altitude of 17,000 feet.

Route Segment	Magnetic Heading	Distance NM	MEA Feet	Wind at 17,000 ft	MAG. VAR.	OAT at 17,000 feet °C	OAT at MEA °C	Altimeter Setting
BIL - SHR	114°	88	8000	010/30	16°E	-10	0	29.56
SHR - CZI	136°	57	9000	350/40	15°E	-10	-4	29.60
CZI - DGW	131°	95	8000	040/45	15°E	-10	0	29.60
DGW - CYS	138°	47	8000	040/45	14°E	-10	0	29.60
	169°	46	8000	040/45	14°E	-10	0	29.60
CYS - DEN	166°	81	8000	040/45	14°E	-10	0	29.60

REFERENCE: Enroute Low Altitude Charts L-8 and L-9

Enter the graph for ISA conversion, page 7-4, at the condition indicated:

Enroute:	Pressure Altitude (Approx.)	= 17,000 feet
	OAT	= -10°C
	ISA Condition	= ISA + 9°C

Enter the graph for Cruise Climb, page 7-5, at 3606 and 17,000 feet, 6775 pounds:

Time to Climb	= 20 - 3	= 17 min
Fuel Used to Climb	= 127 - 22	= 105 lbs
Distance Traveled	= 53 - 8	= 45 NM

Enter Cruise Power Settings table for 65% Maximum Continuous Power, page 7-10 at 17,000 feet. Read Cruise data at ISA and ISA + 20°C.

	ISA	ISA + 20oC
Engine Speed - RPM	2500	2500
Manifold Pressure Setting - in. Hg	30.5	31.6
Fuel Flow per Engine - lbs/hr	110	110
Cruise True Airspeed - Knots	205	210

At ISA + 9^{o}C and 17,000 feet:

Engine Speed	= 2500 rpm
Manifold Pressure Setting	= 31.0 in. Hg
Fuel Flow per Engine	= 110 lbs/hr
Cruise True Airspeed	= 207 Knots

Time and fuel used were calculated at 65% Maximum Continuous Power as follows:

$$\text{Time} = \frac{\text{Distance}}{\text{Ground Speed}}$$

Fuel Used = (Time) (Total Fuel Flow)

Results are as follows:

Route	Distance	Estimated Ground Speed	Time At Cruise Altitude	Fuel Used For Cruise
BIL - SHR	43*	220	0 : 12	44
SHR - CZI	57	244	0 : 14	51
CZI - DGW	95	215	0 : 27	99
DGW - CYS	47	219	0 : 13	48
	46	241	0 : 11	40
CYS - DEN	81	239	0 : 20	73

***Distance to Climb - subtracted from Segment Distance.**

DETERMINATION OF FLIGHT TIME BLOCK SPEED AND FUEL REQUIREMENTS

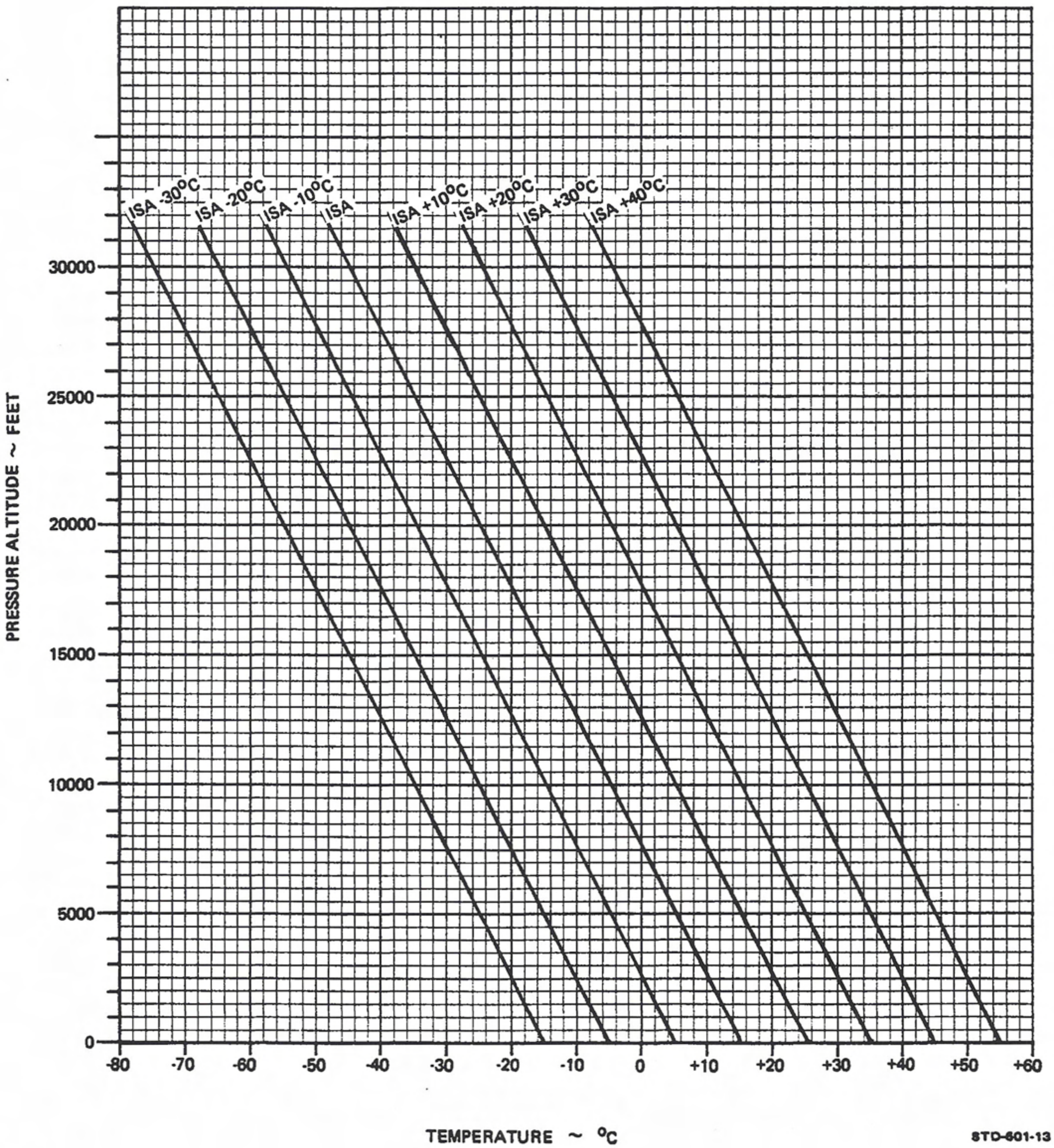
Item	Time Hrs:	:	Mins	Fuel Pounds	Distance Nautical Miles
Start, Runup, Taxi and Take-off acceleration	0	:	00	44	0
Climb	0	:	17	105	45
Cruise	1	:	37	355	369
Total	1	:	54	504	414

Total Flight Time: 1 Hour, 54 Minutes

Block Speed: 414 NM/1:54 = 218 Knots

ISA CONVERSION

PRESSURE ALTITUDE VS OUTSIDE AIR TEMPERATURE



CRUISE CLIMB
STANDARD DAY

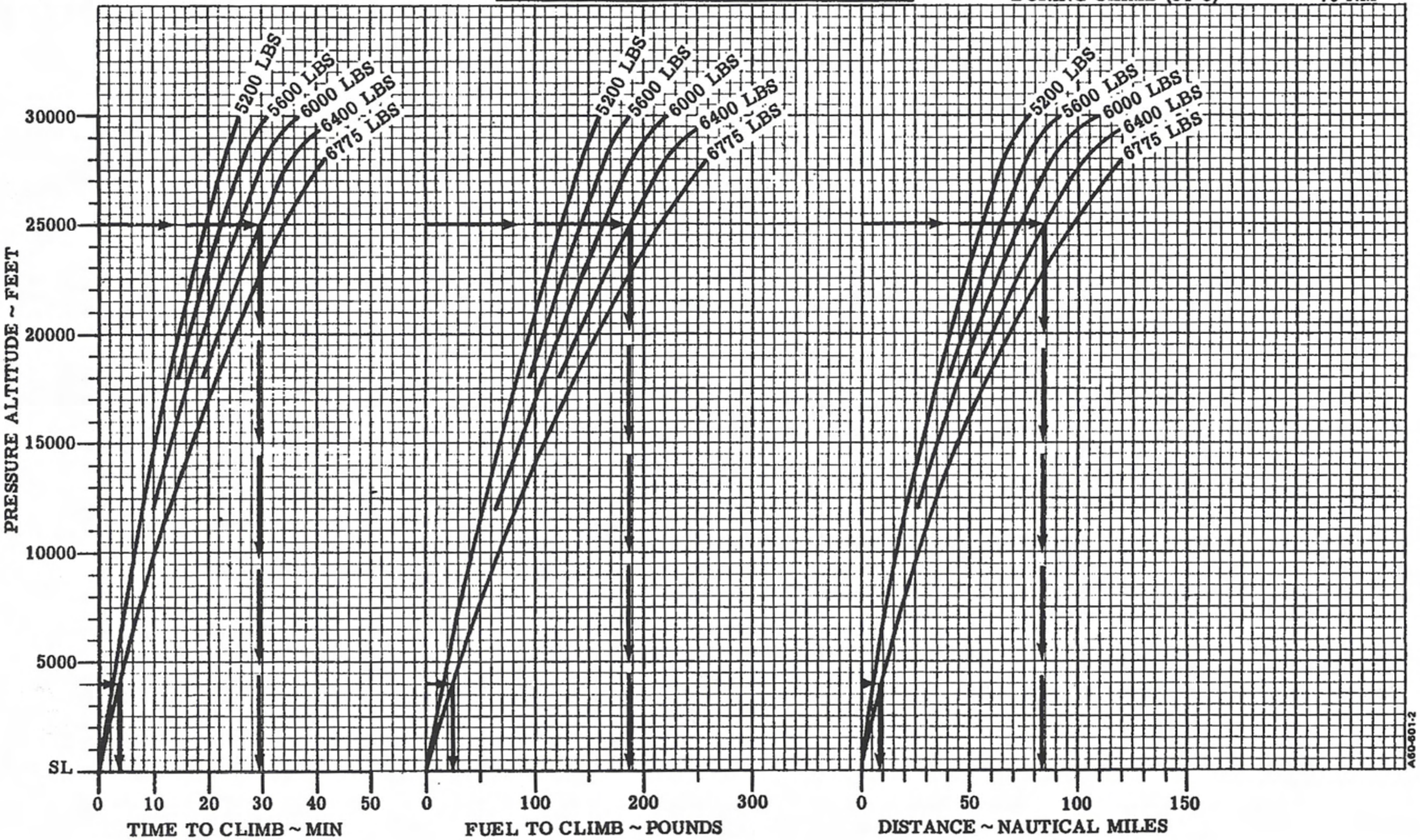
ASSOCIATED CONDITIONS:

ENGINE SPEED	2750 RPM
MANIFOLD PRESSURE	35.5 IN. HG. TO CRITICAL ALTITUDE THEN FULL THROTTLE
FUEL FLOW	194 LB/HR/ENG
CLIMB SPEED	IAS AS TABULATED
FUEL DENSITY	6.0 LB/GAL

ALTITUDE ~ FEET	CLIMB SPEED	
	MPH	KNOTS
SL TO 20000	161	140
20000 TO 25000	150	130
ABOVE 25000	138	120

EXAMPLE:

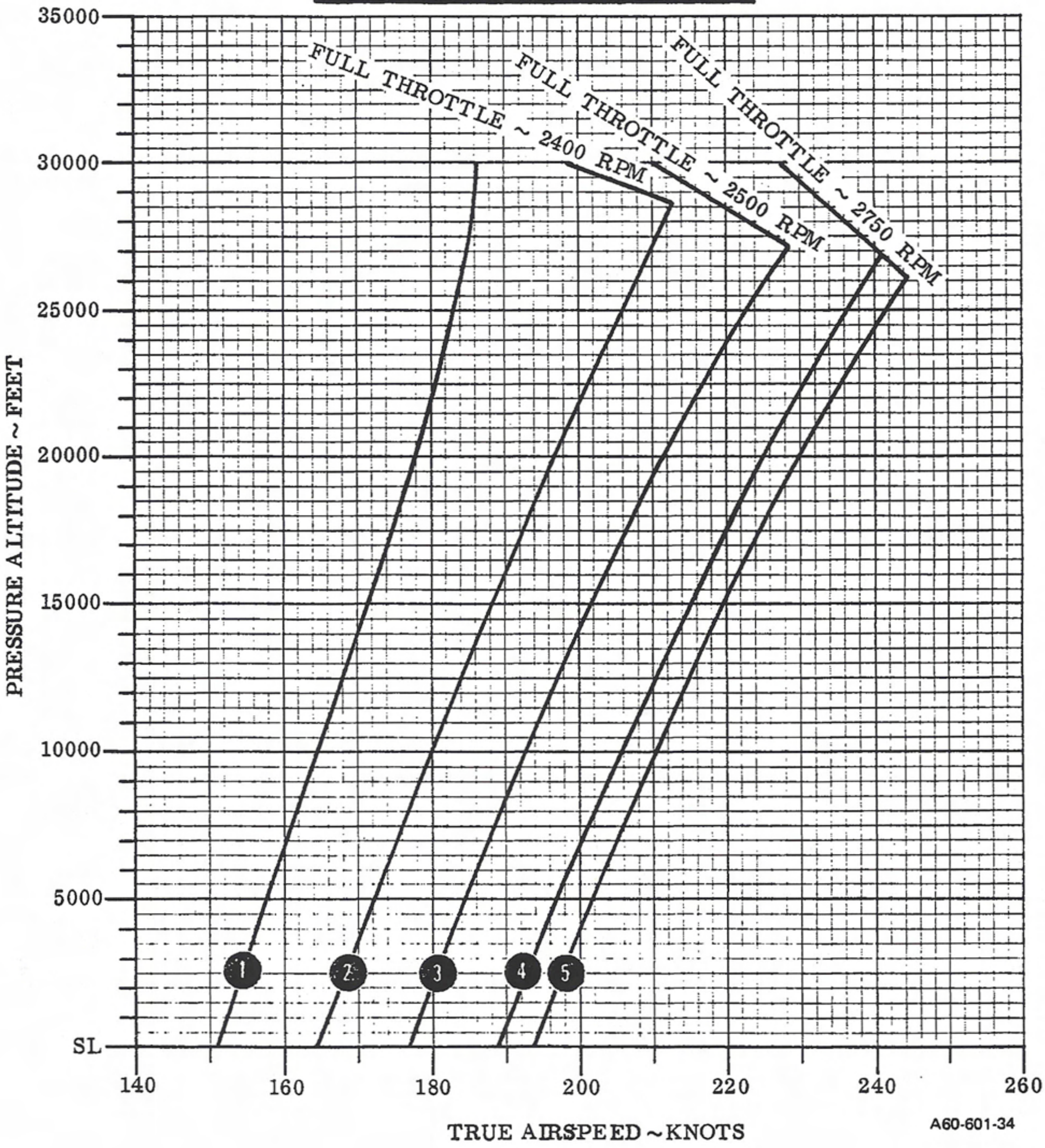
AIRPORT ALTITUDE	4000 FT
CRUISE ALTITUDE	25000 FT
TAKE-OFF WEIGHT	6400 LBS
TIME TO CLIMB (29.5-3.5)	26 MIN
FUEL USED TO CLIMB (186-22)	164 LBS
DISTANCE TRAVELED DURING CLIMB (84-8)	76 NM



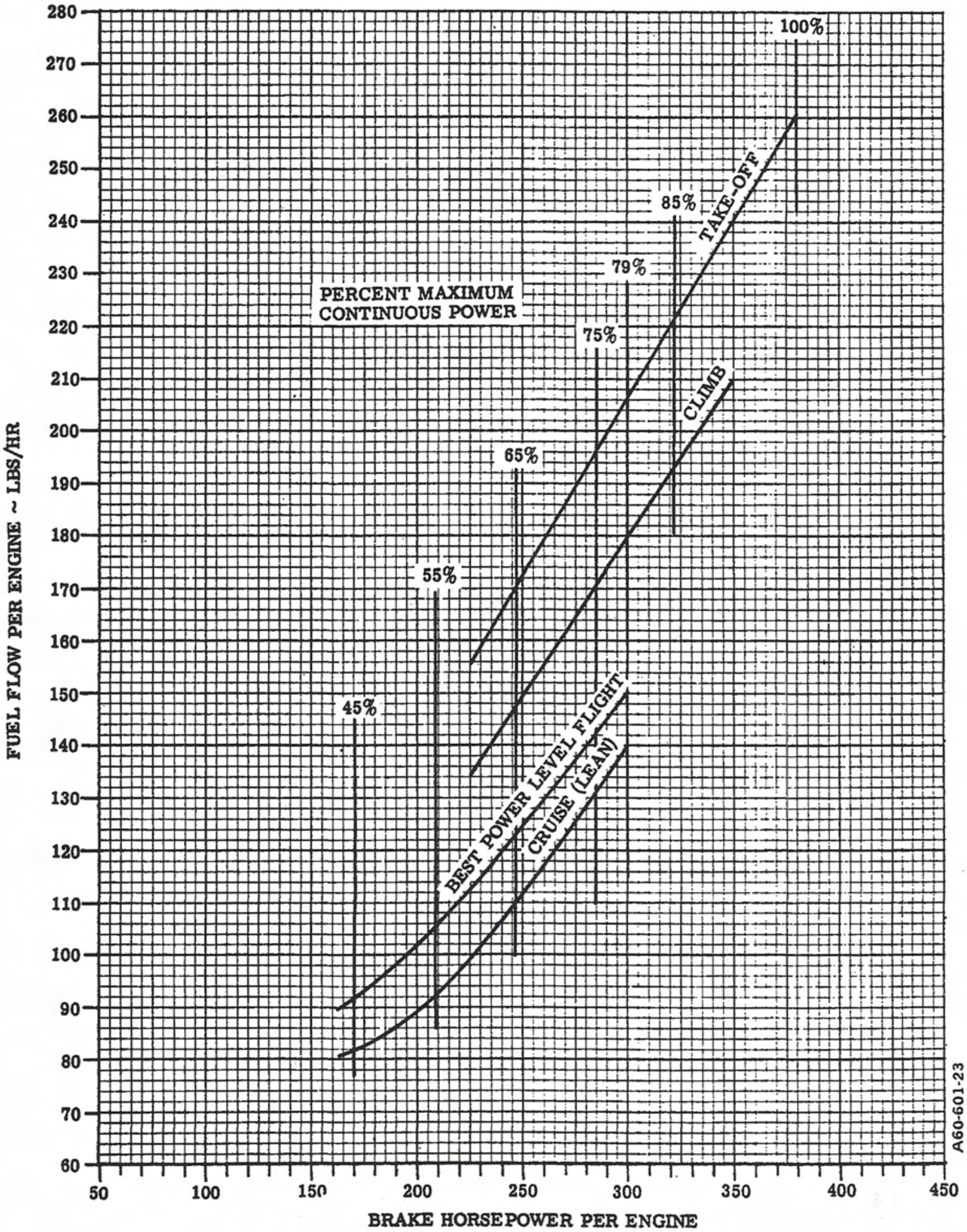
CRUISE OPERATION

STANDARD DAY - 6125 POUNDS

NO.	% POWER	ENGINE SPEED ~RPM	BHP PER ENGINE
1	45	2400	171
2	55	2400	209
3	65	2500	247
4	75	2750	285
5	79	2750	300



FUEL CONSUMPTION vs BRAKE HORSEPOWER



CRUISE POWER SETTINGS

79% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

PRESS ALT.	ISA -36°F (-20°C)							STANDARD DAY (ISA)							ISA +36°F (+20°C)						
	OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN PRESS	FUEL FLOW PER ENGINE		TAS	
FEET	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	-5	2750	32.2	142	23.7	190	219	15	2750	33.2	142	23.7	194	223	35	2750	34.0	142	23.7	197	227
2000	-9	2750	32.2	142	23.7	193	222	11	2750	33.2	142	23.7	196	226	31	2750	34.0	142	23.7	200	230
4000	-13	2750	32.2	142	23.7	196	226	7	2750	33.2	142	23.7	200	230	27	2750	34.0	142	23.7	204	235
6000	-17	2750	32.2	142	23.7	199	229	3	2750	33.2	142	23.7	203	234	23	2750	34.0	142	23.7	207	238
8000	-21	2750	32.2	142	23.7	202	233	-1	2750	33.2	142	23.7	206	237	19	2750	34.1	142	23.7	210	242
10000	-25	2750	32.2	142	23.7	205	236	-5	2750	33.2	142	23.7	210	242	15	2750	34.1	142	23.7	214	246
12000	-29	2750	32.2	142	23.7	209	241	-9	2750	33.2	142	23.7	214	246	11	2750	34.2	142	23.7	217	250
14000	-33	2750	32.2	142	23.7	212	244	-13	2750	33.2	142	23.7	217	250	7	2750	34.3	142	23.7	221	254
16000	-37	2750	32.2	142	23.7	217	250	-17	2750	33.2	142	23.7	221	254	3	2750	34.4	142	23.7	226	260
18000	-41	2750	32.2	142	23.7	220	253	-21	2750	33.4	142	23.7	225	259	-1	2750	34.6	142	23.7	231	266
20000	-44	2750	32.4	142	23.7	224	258	-24	2750	33.6	142	23.7	230	265	-4	2750	35.0	142	23.7	235	270
22000	-48	2750	32.8	142	23.7	229	264	-28	2750	34.0	142	23.7	234	269	-8	2750	35.5	142	23.7	239	275
24000	-53	2750	33.6	142	23.7	233	268	-33	2750	34.9	142	23.7	239	275	-13	2750	36.4	142	23.7	244	281
26000	-57	2750	34.6	127	21.2	238	274	-37	2750	36.0	142	23.6	244	281	-17	2750	36.0	134	22.4	245	282
28000	-61	2750	32.5	109	18.1	234	269	-41	2750	32.5	120	20.0	236	272	-21	2750	32.5	115	19.2	237	273
30000	-64	2750	29.3	109	18.1	226	260	-44	2750	29.3	104	17.3	227	261	-24	2750	29.3	100	16.6	226	260

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE.
2. ACTUAL BRAKE HORSEPOWER FOR FULL THROTTLE CONDITIONS (ABOVE CRITICAL ALTITUDE) MAY BE DETERMINED BY ENTERING THE GRAPH OF FUEL FLOW VS. BRAKE HORSEPOWER AT THE APPROPRIATE FUEL FLOW.
3. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE.

CRUISE POWER SETTINGS

75% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

PRESS ALT.	ISA -36°F (-20°C)							STANDARD DAY (ISA)							ISA +36°F (+20°C)						
	OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN PRESS	FUEL FLOW PER ENGINE		TAS	
FEET	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	-5	2750	30.5	133	22.2	185	213	15	2750	31.9	133	22.2	189	218	35	2750	32.6	133	22.2	192	221
2000	-9	2750	30.5	133	22.2	188	216	11	2750	31.9	133	22.2	192	221	31	2750	32.6	133	22.2	195	224
4000	-13	2750	30.5	133	22.2	191	220	7	2750	31.9	133	22.2	195	224	27	2750	32.6	133	22.2	198	228
6000	-17	2750	30.5	133	22.2	194	223	3	2750	31.9	133	22.2	198	228	23	2750	32.6	133	22.2	202	233
8000	-21	2750	30.5	133	22.2	197	227	-1	2750	31.9	133	22.2	202	233	19	2750	32.7	133	22.2	206	237
10000	-25	2750	30.5	133	22.2	201	231	-5	2750	31.9	133	22.2	205	236	15	2750	32.8	133	22.2	209	241
12000	-29	2750	30.5	133	22.2	204	235	-9	2750	31.9	133	22.2	209	241	11	2750	32.8	133	22.2	213	245
14000	-33	2750	30.5	133	22.2	207	238	-13	2750	31.9	133	22.2	212	244	7	2750	32.9	133	22.2	217	250
16000	-37	2750	30.6	133	22.2	211	243	-17	2750	31.9	133	22.2	217	250	3	2750	32.9	133	22.2	221	254
18000	-41	2750	30.7	133	22.2	215	247	-21	2750	31.9	133	22.2	221	254	-1	2750	33.1	133	22.2	225	259
20000	-44	2750	30.8	133	22.2	219	252	-24	2750	31.9	133	22.2	225	259	-4	2750	33.4	133	22.2	230	265
22000	-48	2750	31.1	133	22.2	224	258	-28	2750	32.4	133	22.2	229	264	-8	2750	33.7	133	22.2	234	269
24000	-53	2750	31.8	133	22.2	228	262	-33	2750	33.1	133	22.2	234	269	-13	2750	34.5	133	22.2	239	275
26000	-57	2750	32.5	133	22.2	232	267	-37	2750	34.0	133	22.2	239	275	-17	2750	35.7	133	22.2	24	281
28000	-61	2750	32.5	127	21.2	234	269	[illegible]	[illegible]	[illegible]	[illegible]	20.0	236	272	-21	2750	32.5	116	19.2	237	271
30000	-64	2750	29.3	109	18.1	226	260	-44	2750	29.3	104	17.3	227	261	-24	2750	29.3	100	16.6	226	260

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE.
2. ACTUAL BRAKE HORSEPOWER FOR FULL THROTTLE CONDITIONS (ABOVE CRITICAL ALTITUDE) MAY BE DETERMINED BY ENTERING THE GRAPH OF FUEL FLOW VS. BRAKE HORSEPOWER AT THE APPROPRIATE FUEL FLOW.
3. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE.

CRUISE POWER SETTINGS

65% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

PRESS ALT.	ISA -36°F (-20°C)							STANDARD DAY (ISA)							ISA +36°F (+20°C)						
	OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN PRESS	FUEL FLOW PER ENGINE		TAS	
FEET	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	-5	2500	28.9	112	18.6	173	199	15	2500	29.8	112	18.6	177	204	35	2500	30.6	112	18.6	180	207
2000	-9	2500	28.9	112	18.6	176	203	11	2500	29.8	112	18.6	180	207	31	2500	20.7	112	18.6	183	211
4000	-13	2500	29.0	112	18.6	179	206	7	2500	29.8	112	18.6	183	211	27	2500	30.9	112	18.6	186	214
6000	-17	2500	29.0	112	18.6	182	209	3	2500	29.9	112	18.6	186	214	23	2500	31.0	112	18.6	190	219
8000	-21	2500	29.2	112	18.6	185	213	-1	2500	30.0	112	18.6	189	218	19	2500	31.1	112	18.6	193	222
10000	-25	2500	29.2	112	18.6	188	216	-5	2500	30.2	112	18.6	193	222	15	2500	31.2	112	18.6	197	227
12000	-29	2500	29.2	112	18.6	192	221	-9	2500	30.3	112	18.6	196	226	11	2500	31.4	112	18.6	200	230
14000	-33	2500	29.2	112	18.6	195	224	-13	2500	30.4	112	18.6	200	230	7	2500	31.5	112	18.6	204	235
16000	-37	2500	29.3	112	18.6	199	229	-17	2500	30.5	112	18.6	204	235	3	2500	31.6	112	18.6	208	239
18000	-41	2500	29.3	112	18.6	202	233	-21	2500	30.6	112	18.6	207	238	-1	2500	31.7	112	18.6	212	244
20000	-44	2500	29.4	112	18.6	206	237	-24	2500	30.6	112	18.6	211	243	-4	2500	31.8	112	18.6	216	249
22000	-48	2500	29.5	112	18.6	211	243	-28	2500	30.8	112	18.6	216	249	-8	2500	32.0	112	18.6	221	254
24000	-53	2500	29.8	112	18.6	215	247	-33	2500	31.1	112	18.6	220	253	-13	2500	32.0	111	18.5	224	258
26000	-57	2500	30.0	112	18.6	219	252	-37	2500	31.3	112	18.6	225	259	-17	2500	32.0	109	18.2	227	261
28000	-61	2500	29.9	110	18.3	222	256	-41	2500	29.9	105	17.5	223	257	-21	2500	29.9	100	16.7	223	257
30000	-64	2500	26.4	94	15.7	210	242	-44	2500	26.4	91	15.1	210	242	-24	2500	26.4	88	14.7	206	237

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE.
2. ACTUAL BRAKE HORSEPOWER FOR FULL THROTTLE CONDITIONS (ABOVE CRITICAL ALTITUDE) MAY BE DETERMINED BY ENTERING THE GRAPH OF FUEL FLOW VS. BRAKE HORSEPOWER AT THE APPROPRIATE FUEL FLOW.
3. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE.

CRUISE POWER SETTINGS

55% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

PRESS ALT.	ISA -36°F (-20°C)							STANDARD DAY (ISA)							ISA +36°F (+20°C)						
	OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN PRESS	FUEL FLOW PER ENGINE		TAS	
FEET	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	-5	2400	26.8	94	15.6	161	185	15	2400	27.6	94	15.6	165	190	35	2400	28.3	94	15.6	168	193
2000	-9	2400	26.8	94	15.6	164	189	11	2400	27.6	94	15.6	167	192	31	2400	28.3	94	15.6	171	197
4000	-13	2400	26.8	94	15.6	167	192	7	2400	27.6	94	15.6	170	196	27	2400	28.3	94	15.6	174	200
6000	-17	2400	26.7	94	15.6	169	195	3	2400	27.6	94	15.6	173	199	23	2400	28.3	94	15.6	177	204
8000	-21	2400	26.7	94	15.6	172	198	-1	2400	27.6	94	15.6	177	204	19	2400	28.3	94	15.6	180	207
10000	-25	2400	26.7	94	15.6	176	203	-5	2400	27.6	94	15.6	180	207	15	2400	28.3	94	15.6	183	211
12000	-29	2400	26.7	94	15.6	179	206	-9	2400	27.6	94	15.6	183	211	11	2400	28.3	94	15.6	187	215
14000	-33	2400	26.7	94	15.6	182	209	-13	2400	27.6	94	15.6	187	215	7	2400	28.3	94	15.6	190	219
16000	-37	2400	26.6	94	15.6	185	213	-17	2400	27.6	94	15.6	190	219	3	2400	28.3	94	15.6	194	223
18000	-41	2400	26.6	94	15.6	189	218	-21	2400	27.6	94	15.6	193	222	-1	2400	28.3	94	15.6	197	227
20000	-44	2400	26.6	94	15.6	192	221	-24	2400	27.6	94	15.6	197	227	-4	2400	28.3	94	15.6	201	231
22000	-48	2400	26.6	94	15.6	195	224	-28	2400	27.6	94	15.6	200	230	-8	2400	28.3	94	15.6	204	235
24000	-53	2400	26.6	94	15.6	199	229	-33	2400	27.6	94	15.6	204	235	-13	2400	28.5	94	15.6	208	239
26000	-57	2400	26.7	94	15.6	203	234	-37	2400	27.8	94	15.6	208	239	-17	2400	28.9	94	15.6	212	244
28000	-61	2400	27.3	94	15.6	207	238	-41	2400	28.6	94	15.6	211	243	-21	2400	29.7	94	15.6	216	249
30000	-64	2400	26.0	88	14.7	201	231	-44	2400	26.0	86	14.4	199	229	-24	2400	26.0	85	14.1	193	222

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE.
2. ACTUAL BRAKE HORSEPOWER FOR FULL THROTTLE CONDITIONS (ABOVE CRITICAL ALTITUDE) MAY BE DETERMINED BY ENTERING THE GRAPH OF FUEL FLOW VS. BRAKE HORSEPOWER AT THE APPROPRIATE FUEL FLOW.
3. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE.

CRUISE POWER SETTINGS

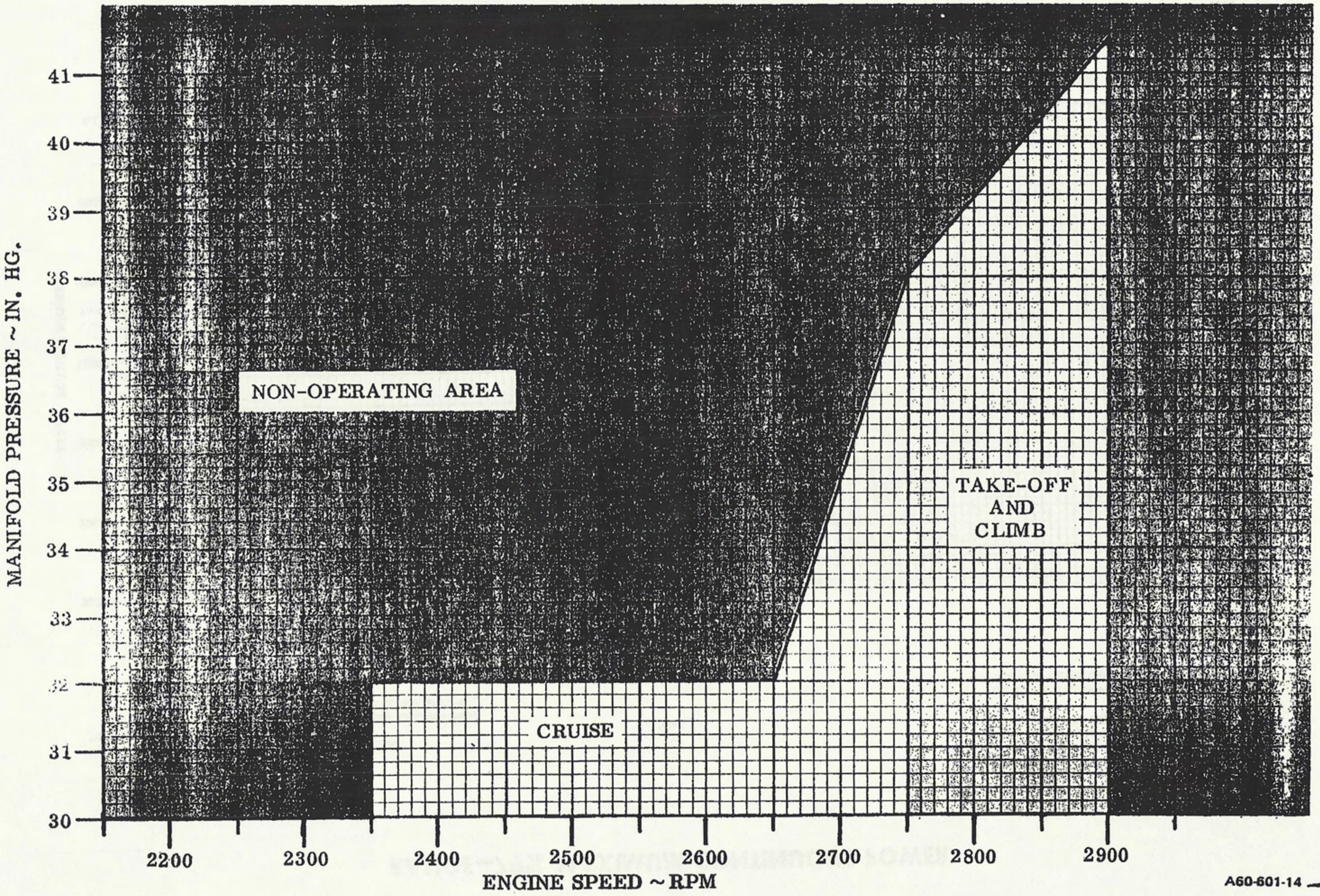
45% MAXIMUM CONTINUOUS POWER

PRESS ALT.	ISA -36°F (-20°C)							STANDARD DAY (ISA)							ISA +36°F (+20°C)							
	OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		OAT	ENGINE SPEED	MAN PRESS	FUEL FLOW PER ENGINE		TAS		
FEET	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°C	RPM	IN HG	PPH	GPH	KTS	MPH	
SL	-5	2400	22.6	83	13.9	148	170	15	2400	23.4	83	13.9	151	174	35	2400	24.0	83	13.9	154	177	
2000	-9	2400	22.6	83	13.9	150	173	11	2400	23.4	83	13.9	154	177	31	2400	24.0	83	13.9	157	181	
4000	-13	2400	22.6	83	13.9	153	176	7	2400	23.4	83	13.9	156	180	27	2400	24.0	83	13.9	159	183	
6000	-17	2400	22.6	83	13.9	155	178	3	2400	23.4	83	13.9	159	183	23	2400	24.0	83	13.9	162	186	
8000	-21	2400	22.6	83	13.9	158	182	-1	2400	23.4	83	13.9	161	185	19	2400	24.0	83	13.9	165	190	
10000	-25	2400	22.6	83	13.9	160	184	-5	2400	23.4	83	13.9	164	189	15	2400	24.0	83	13.9	168	193	
12000	-29	2400	22.6	83	13.9	163	188	-9	2400	23.4	83	13.9	167	192	11	2400	24.0	83	13.9	170	196	
14000	-33	2400	22.6	83	13.9	166	191	-13	2400	23.4	83	13.9	170	196	7	2400	24.0	83	13.9	173	199	
16000	-37	2400	22.6	83	13.9	169	195	-17	2400	23.4	83	13.9	173	199	3	2400	24.0	83	13.9	176	203	
18000	-41	2400	22.6	83	13.9	172	198	-21	2400	23.4	83	13.9	176	203	-1	2400	24.0	83	13.9	178	205	
20000	-44	2400	22.6	83	13.9	175	201	-24	2400	23.4	83	13.9	178	205	-4	2400	24.0	83	13.9	181	208	
22000	-48	2400	22.6	83	13.9	178	205	-28	2400	23.4	83	13.9	180	207	-8	2400	24.0	83	13.9	182	209	
24000	-53	2400	22.5	83	13.9	180	207	-33	2400	23.4	83	13.9	182	209	-13	2400	24.0	83	13.9	183	211	
26000	-57	2400	22.5	83	13.9	181	208	-37	2400	23.4	83	13.9	184	212	-17	2400	24.1	83	13.9	186	214	
28000	-61	2400	22.5	83	13.9	183	211	-41	2400	23.4	83	13.9	186	214	-21	2400	24.4	83	13.9	187	215	
30000	-64	2400	22.5	83	13.9	185	213	-44	2400	23.4	83	13.9	186	214	-24	2400	24.8	83	13.9	185	213	

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE.
2. ACTUAL BRAKE HORSEPOWER FOR FULL THROTTLE CONDITIONS (ABOVE CRITICAL ALTITUDE) MAY BE DETERMINED BY ENTERING THE GRAPH OF FUEL FLOW VS. BRAKE HORSEPOWER AT THE APPROPRIATE FUEL FLOW.

LIMITING MANIFOLD PRESSURE

FOR CONTINUOUS OPERATION



A60-601-14

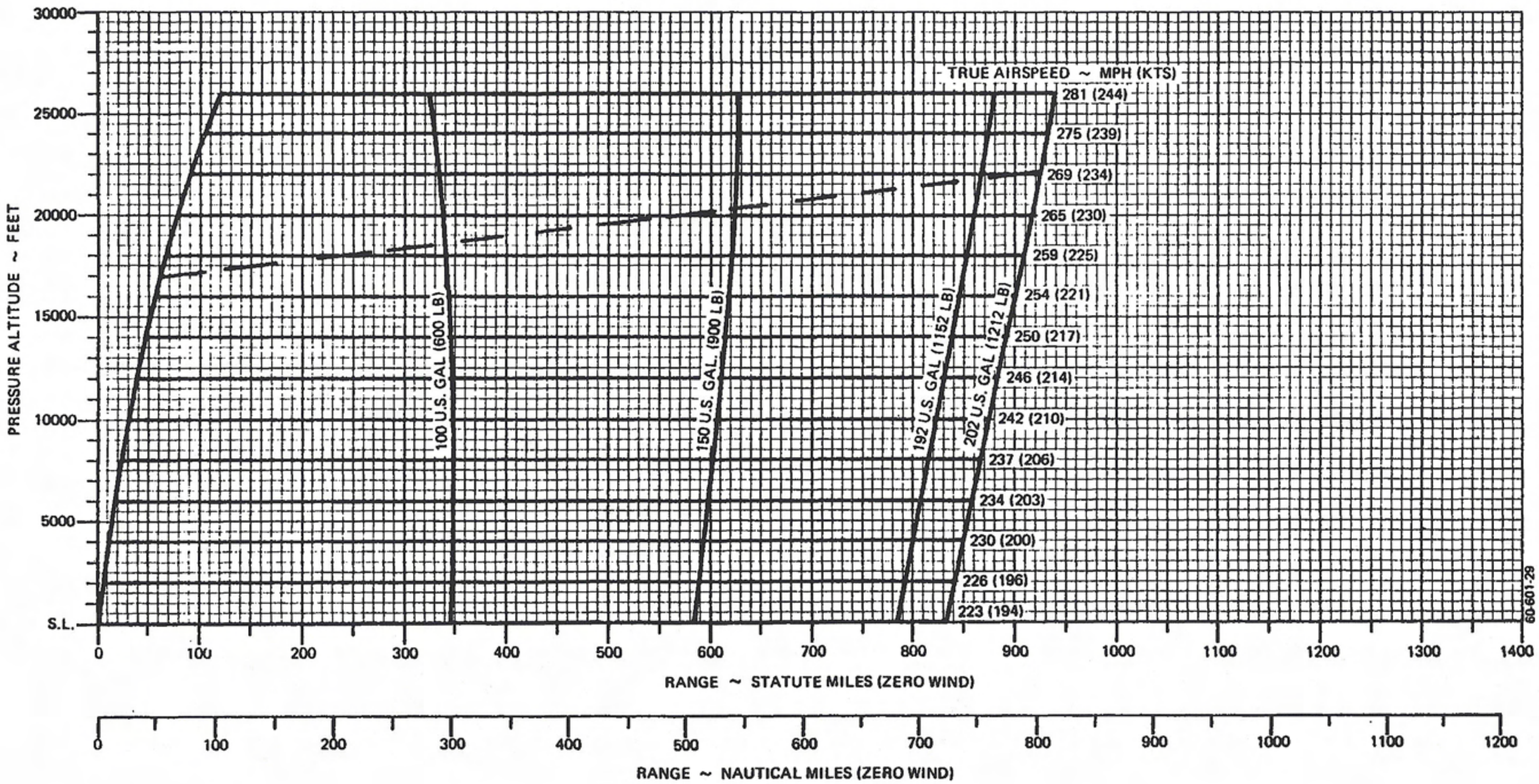
RANGE—79% MAXIMUM CONTINUOUS POWER

ASSOCIATED CONDITIONS:

TEMPERATURE	STANDARD DAY (ISA)
TAKE-OFF WEIGHT	6775 POUNDS
FUEL FLOW	140 LB/HR/ENG (23.3 GAL/HR/ENG)
CLIMB POWER	REFER TO CRUISE CLIMB GRAPH
FUEL DENSITY	6.0LB/GAL

NOTE: RANGE INCLUDES START, TAXI, TAKE-OFF, CLIMB, AND 45 MINUTES RESERVE AT 45% MAXIMUM CONTINUOUS POWER

— — ALTITUDE FOR SINGLE ENGINE RATE-OF-CLIMB OF 50 FT/MIN



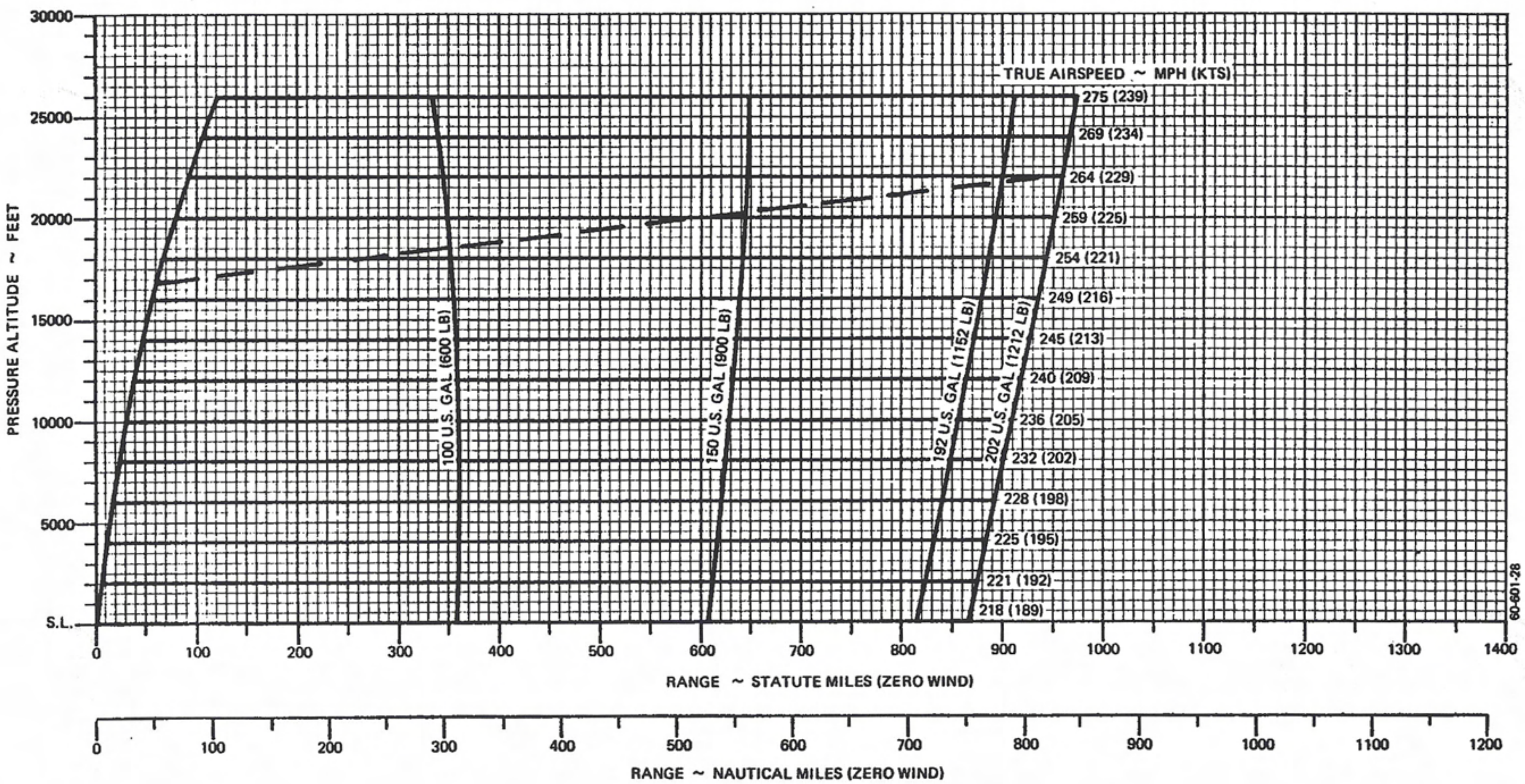
RANGE—75% MAXIMUM CONTINUOUS POWER

ASSOCIATED CONDITIONS:

TEMPERATURE	STANDARD DAY (ISA)
TAKE-OFF WEIGHT	6775 POUNDS
FUEL FLOW	131 LB/HR/ENG (21.9 GAL/HR/ENG)
CLIMB POWER	REFER TO CRUISE CLIMB GRAPH
FUEL DENSITY	6.0LB/GAL

NOTE: RANGE INCLUDES START, TAXI, TAKE-OFF, CLIMB, AND 45 MINUTES RESERVE AT 45% MAXIMUM CONTINUOUS POWER

— —ALTITUDE FOR SINGLE ENGINE RATE-OF-CLIMB OF 50 FT/MIN



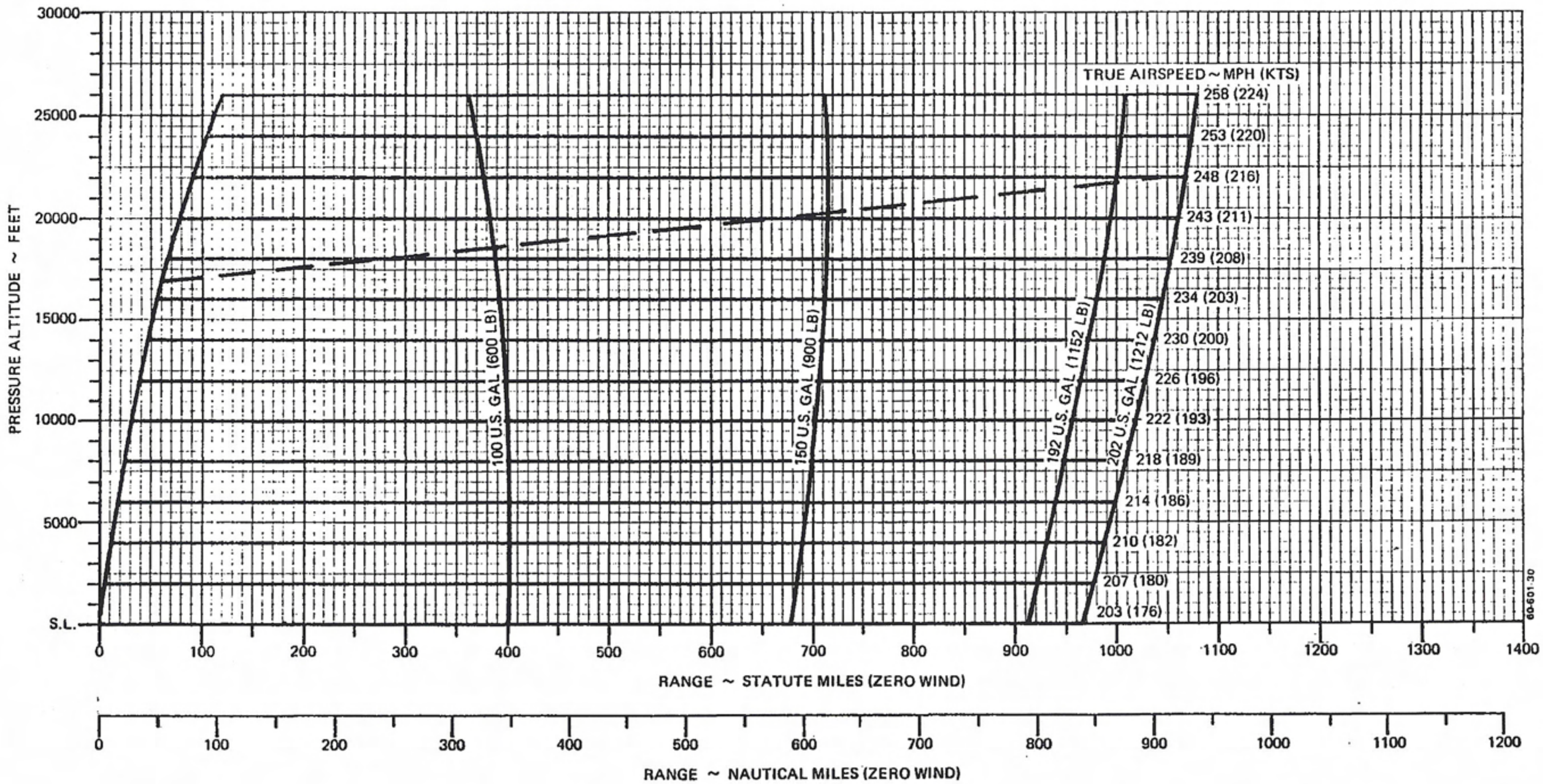
RANGE—65% MAXIMUM CONTINUOUS POWER

ASSOCIATED CONDITIONS:

TEMPERATURE	STANDARD DAY (ISA)
TAKE-OFF WEIGHT	6775 POUNDS
FUEL FLOW	110 LB/HR/ENG (18.3 GAL/HR/ENG)
CLIMB POWER	REFER TO CRUISE CLIMB GRAPH
FUEL DENSITY	6.0 LB/GAL

NOTE: RANGE INCLUDES START, TAXI, TAKE-OFF, CLIMB, AND 45 MINUTES RESERVE AT 45% MAXIMUM CONTINUOUS POWER

— — ALTITUDE FOR SINGLE ENGINE RATE-OF-CLIMB OF 50 FT/MIN



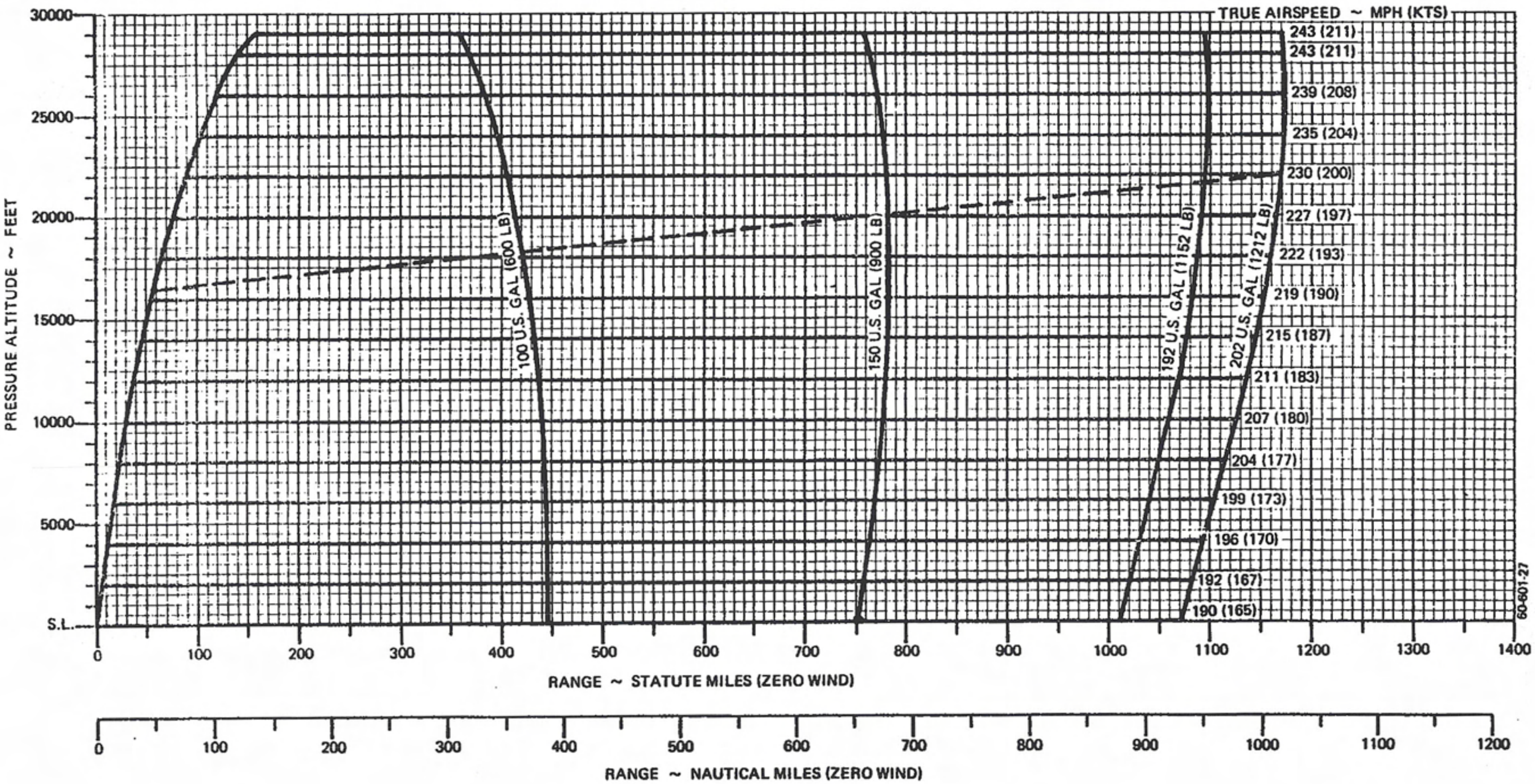
RANGE—55% MAXIMUM CONTINUOUS POWER

ASSOCIATED CONDITIONS:

TEMPERATURE	STANDARD DAY (ISA)
TAKE-OFF WEIGHT	6775 POUNDS
FUEL FLOW	92 LB/HR/ENG (15.3 GAL/HR/ENG)
CLIMB POWER	REFER TO CRUISE CLIMB GRAPH
FUEL DENSITY	6.0 LB/GAL

NOTE: RANGE INCLUDES START, TAXI, TAKE-OFF, CLIMB, AND 45 MINUTES RESERVE AT 45% MAXIMUM CONTINUOUS POWER

— — ALTITUDE FOR SINGLE ENGINE RATE-OF-CLIMB OF 50 FT/MIN



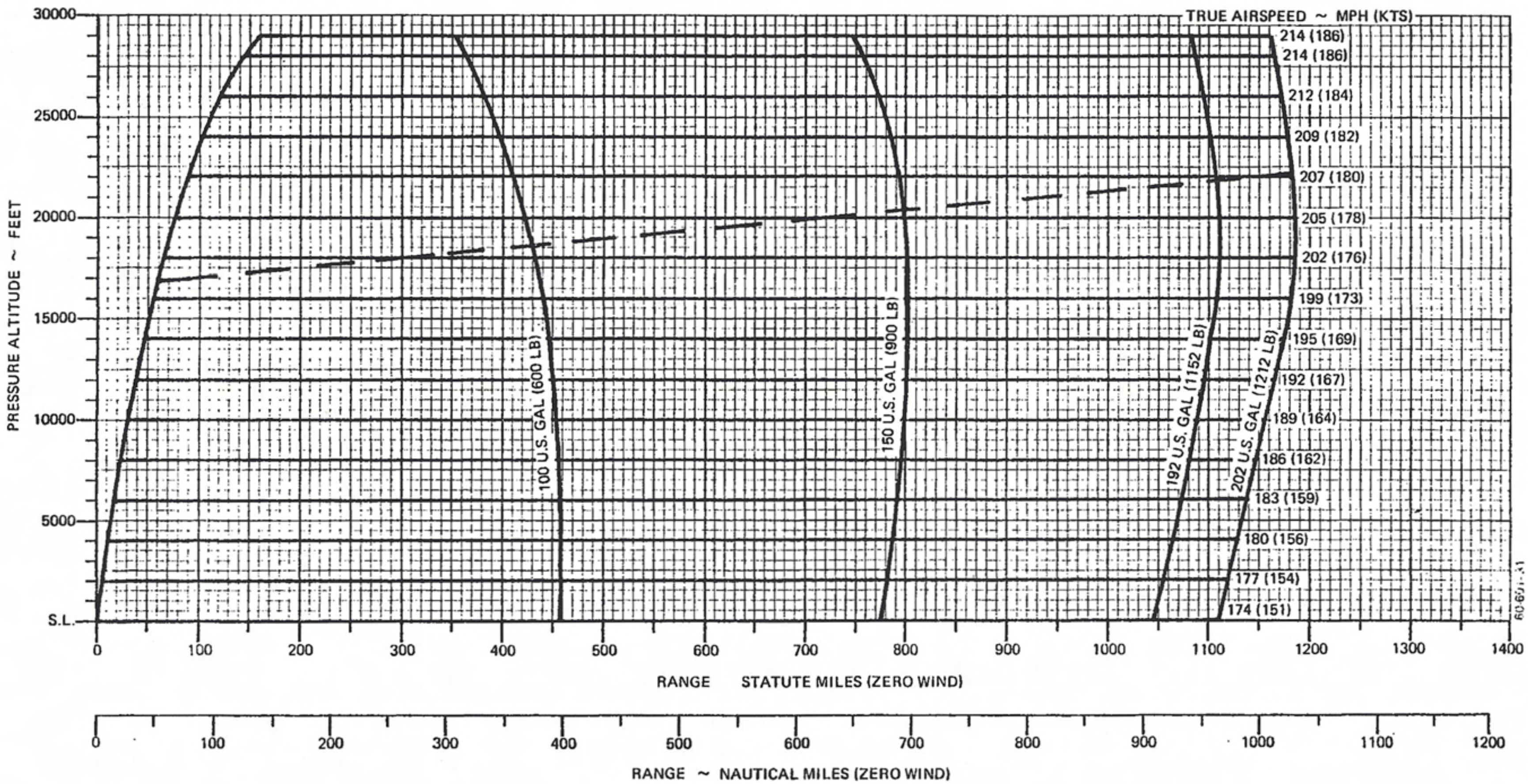
RANGE—45% MAXIMUM CONTINUOUS POWER

ASSOCIATED CONDITIONS:

TEMPERATURE	STANDARD DAY (ISA)
TAKE-OFF WEIGHT	6775 POUNDS
FUEL FLOW	82 LB/HR/ENG (13.7 GAL/HR/ENG)
CLIMB POWER	REFER TO CRUISE CLIMB GRAPH
FUEL DENSITY	6.0 LB/GAL

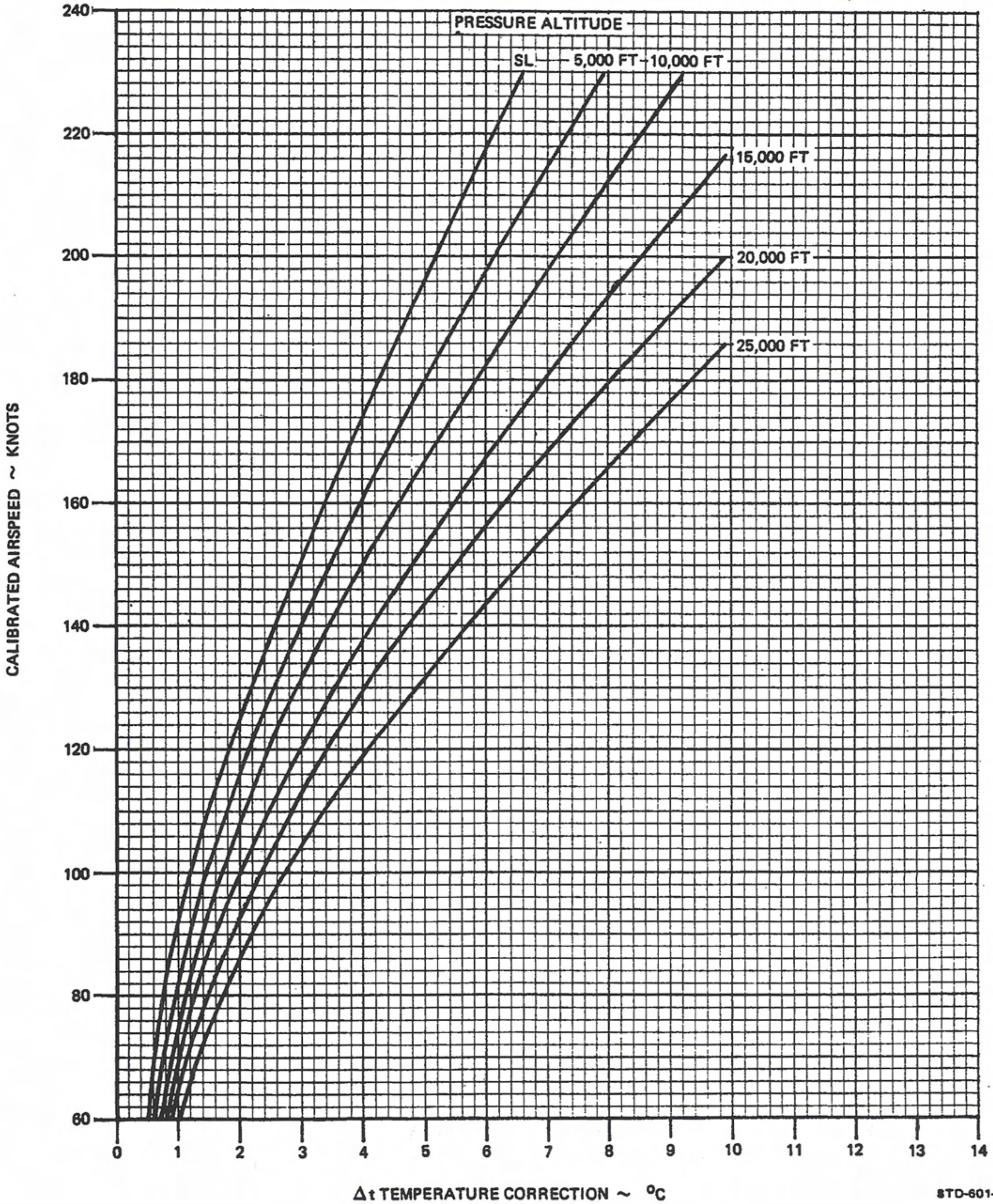
NOTE: RANGE INCLUDES START, TAXI, TAKE-OFF, CLIMB AND 45 MINUTES RESERVE AT 45% MAXIMUM CONTINUOUS POWER

— — ALTITUDE FOR SINGLE ENGINE RATE-OF-CLIMB OF 50 FT/MIN



OUTSIDE AIR TEMPERATURE CORRECTION

SUBTRACT Δt FROM INDICATED OAT TO OBTAIN TRUE OAT
(INDICATED OAT IS RAM AIR TEMPERATURE ASSUMING A RECOVERY FACTOR OF 1.)



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SECTION VIII

WEIGHT AND BALANCE

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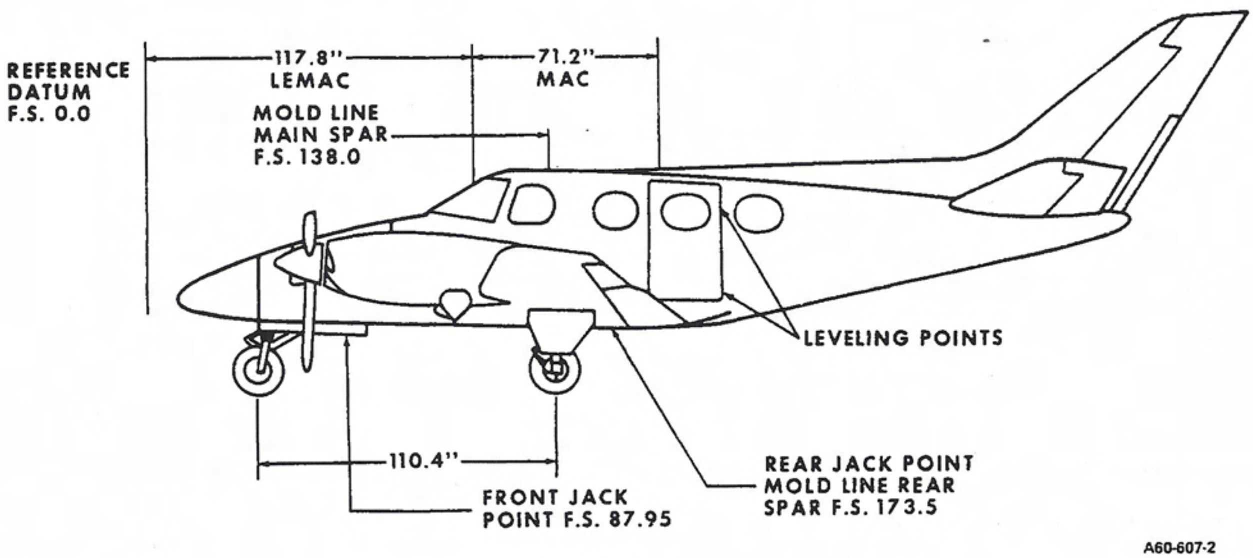
DIMENSIONAL DATA



WEIGHING INSTRUCTIONS

Periodic weighing of the Duke 60 & A60 may be necessary to keep the Basic Empty Weight current. Frequency of weighing is to be determined by the operator. All changes to the airplane affecting weight and balance are the responsibility of the aircraft operator.

1. Aircraft may be weighed on wheels or jack points. Jack point locations are on the forward fuselage station 87.95 and on the wing center section rear spar fuselage station 173.5. Wheel reaction locations must be measured as described in Paragraph 6, below.
2. Fuel should be drained preparatory to weighing. Tanks are drained from the regular drain ports with the airplane in static ground attitude. When tanks are drained, 11 pounds of undrainable fuel remains in the aircraft at an arm of 135 inches. The remainder of the unusable fuel to be added to a drained system is 79 pounds at fuselage station 131.2, for the 192 gal. system. The remainder of the unusable fuel to be added to a drained system is 19 pounds at fuselage station 133.4 for the 202 gal. system. When the aircraft is weighed with full fuel, the fuel specific weight (pounds/gallon) should be determined by using a hydrometer. Full usable fuel of 192 gallons has a center gravity at fuselage station 139.5. Full usable fuel of 202 gallons has a center of gravity at fuselage station 139.0.
3. Engine oil must be at the full level in each tank. Total engine oil aboard when tanks are full is 49 pounds at an arm of 88.0 inches.
4. Installed equipment is checked against the aircraft equipment list or superseding forms. All equipment must be in its proper place during weighing.
5. Aircraft is placed on scales in a level attitude. Leveling screws are located on the fuselage entrance door frame. Leveling is accomplished with a plumb bob. Jack pad leveling may require the nose gear shock to be secured in the static position to prevent its extension. Wheel weighings can be leveled by varying the amounts of air in shocks and tires.
6. Measurement of the reaction locations for a wheel weighing is made using the nose jacking point for a reference. Using a steel measuring tape, measurements are taken from the reference (a plumb bob hung from the center of the nose jacking point) to the axle center line of the nose gear and then from the nose gear axle center line to the main wheel axle center line. The main wheel axle center line is best located by stretching a string across from one main wheel to the other. All measurements are to be taken in a plane level with the floor and parallel to the fuselage center line. The locations of the wheel reactions will be approximately at an arm of 152 inches for main wheels and 42 inches for the nose wheel.
7. The Basic Empty Weight and Moment/100 are determined from the scale readings. Items weighed which are not part of the empty airplanes are subtracted, e.g., usable fuel. Unusable fuel and engine oil are added if not already in the airplane.
8. Weighing should always be performed in an enclosed area which is free of air currents. The scales used should be properly calibrated and certified.

Beechcraft DUKE 60 & A60

AIRCRAFT BASIC EMPTY WEIGHT AND BALANCE

DATE:

SERIAL NO:

REGISTRATION NO:

PREPARED BY:

STRUT POSITION -	NOSE	MAIN
EXTENDED	40.3	151.0
COMPRESSED	41.9	152.0

JACK POINT LOCATION	
FORWARD	87.95
AFT	173.5

REACTION WHEEL - JACK POINTS	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT MAIN					
RIGHT MAIN					
SUB TOTAL				173.5	
NOSE				87.95	
TOTAL (AS WEIGHED)					

SPACE BELOW PROVIDED FOR ADDITIONS AND SUBTRACTIONS TO AS WEIGHED CONDITION

EMPTY WEIGHT			
ENGINE OIL UNUSABLE FUEL	49	88	4312
BASIC EMPTY WEIGHT			

WEIGHT AND BALANCE LOADING FORM

SERIAL NO:	REGISTRATION NO:	DATE:

PAYLOAD COMPUTATIONS			
ITEM		WEIGHT	MOM/100
PASSENGERS (OR CARGO)			
NO.	LOCATION (ROW, F.S., ETC)		
BAGGAGE			
CABINET CONTENTS			
TOTAL PAYLOAD			

ITEM	WEIGHT	MOM/100
BASIC EMPTY WEIGHT CREW (NO.) CREW'S BAGGAGE EXTRA EQUIPMENT		
OPERATING WEIGHT		
TAKE-OFF FUEL		
AIRPLANE WT.-TOTAL		
PAYLOAD - TOTAL		
TAKEOFF CONDITION		
LESS FUEL		
LANDING CONDITION		

LOADING INSTRUCTIONS

It is the responsibility of the airplane operator to insure that the airplane is properly loaded. At the time of delivery, Beech Aircraft Corporation provides the necessary weight and balance data for the operator to compute individual loadings. All subsequent changes in weight and balance are the responsibility of the airplane owner and/or operator.

The Basic Empty Weight and Moment of the Airplane at the time of delivery is shown on the Aircraft Empty Weight and Balance Form. Useful load items which may be loaded into the Airplane are shown on the Useful Load Weights and Moments Tables. The Minimum and Maximum Moments approved by the FAA are shown on the Gross Weight Moment Limits Graph. These Moments correspond to the forward and aft Center of Gravity flight limits for a particular weight. All Moments are divided by 100 to simplify computations.

COMPUTING PROCEDURE

1. Record the Basic Empty Weight and Moment from the Aircraft Empty Weight and Balance Form (or from the latest superseding form). The moment must be divided by 100 to correspond to Useful Load Moments.
2. Record the weight and corresponding moment of each item to be carried.
3. Total the weight column and moment column. The total weight must not exceed the maximum allowable gross weight and the total moment must be within the minimum and maximum moments shown on the Gross Weight Moment Limits Table.
4. Determine the weight and corresponding moment of fuel to be burned by subtracting the amount on board on landing from the amount on board at take-off.
5. Subtract the weight and moment of fuel to be burned from the take-off weight and moment. The landing weight must not exceed the maximum amount shown in the limitations section, page 1-3. The landing moment must be within the minimum and maximum moments shown on Gross Weight Moment Limits Graph for that weight. If the total moment is less than the minimum moment allowed, useful load items must be shifted aft or forward load items reduced. If the total moment is greater than the maximum moment allowed, useful load items must be shifted forward or aft load items reduced. If the quantity or location of load items is changed, the calculations must be revised and the moments rechecked.

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS					
		STANDARD SEATING		CLUB SEATING	
WEIGHT	PILOT OR COPILOT	CENTER SEATS	5TH & 6TH SEATS	CENTER SEATS AFT FACING	5TH & 6TH SEATS
	ARM 141	ARM 173	ARM 205	ARM 178	ARM 218
	MOMENT/100				
100	141	173	205	178	218
110	155	190	226	196	240
120	169	208	246	214	262
130	183	225	267	231	283
140	197	242	287	249	305
150	212	260	308	267	327
160	226	277	328	285	349
170	240	294	349	303	371
180	254	311	369	320	392
190	268	329	390	338	414
200	282	346	410	356	436

BAGGAGE				
		STANDARD SEATING AFT CABIN		CLUB SEATING AFT CABIN
WEIGHT	NOSE COMPT	FLOOR	SHELF	FLOOR
	ARM 75	ARM 230	ARM 230	ARM 236
	MOMENT/100			
20	15	46	46	47
40	30	92	92	94
60	45	138	138	142
70	53	161	161	165
80	60	184	184	
100	75	230	230	
120	90	276	276	
135	101	311	311	
140	105	322		
160	120	368		
180	135	414		
200	150	460		
220	165	506		
240	180	552		
260	195	598		
280	210	644		
300	225	690		
315	236	725		
320	240			
340	255			
360	270			
380	285			
400	300			
420	315			
440	330			
460	345			
480	360			
500	375			

FUEL			
		192 GAL.	202 GAL.
GALLONS	WEIGHT	MOM/100	
10	60	80	78
20	120	161	158
30	180	243	239
40	240	325	321
50	300	407	403
60	360	490	485
70	420	574	568
80	480	657	652
90	540	741	735
100	600	825	819
110	660	910	903
120	720	995	987
130	780	1080	1072
140	840	1165	1157
150	900	1250	1243
160	960	1336	1328
170	1020	1421	1413
180	1080	1506	1499
190	1140	1591	1584
192	1152	1607	- - -
200	1200		1668
204	1224		1685

OIL		
GALLONS	WEIGHT	MOMENT/100
6.5	49	43

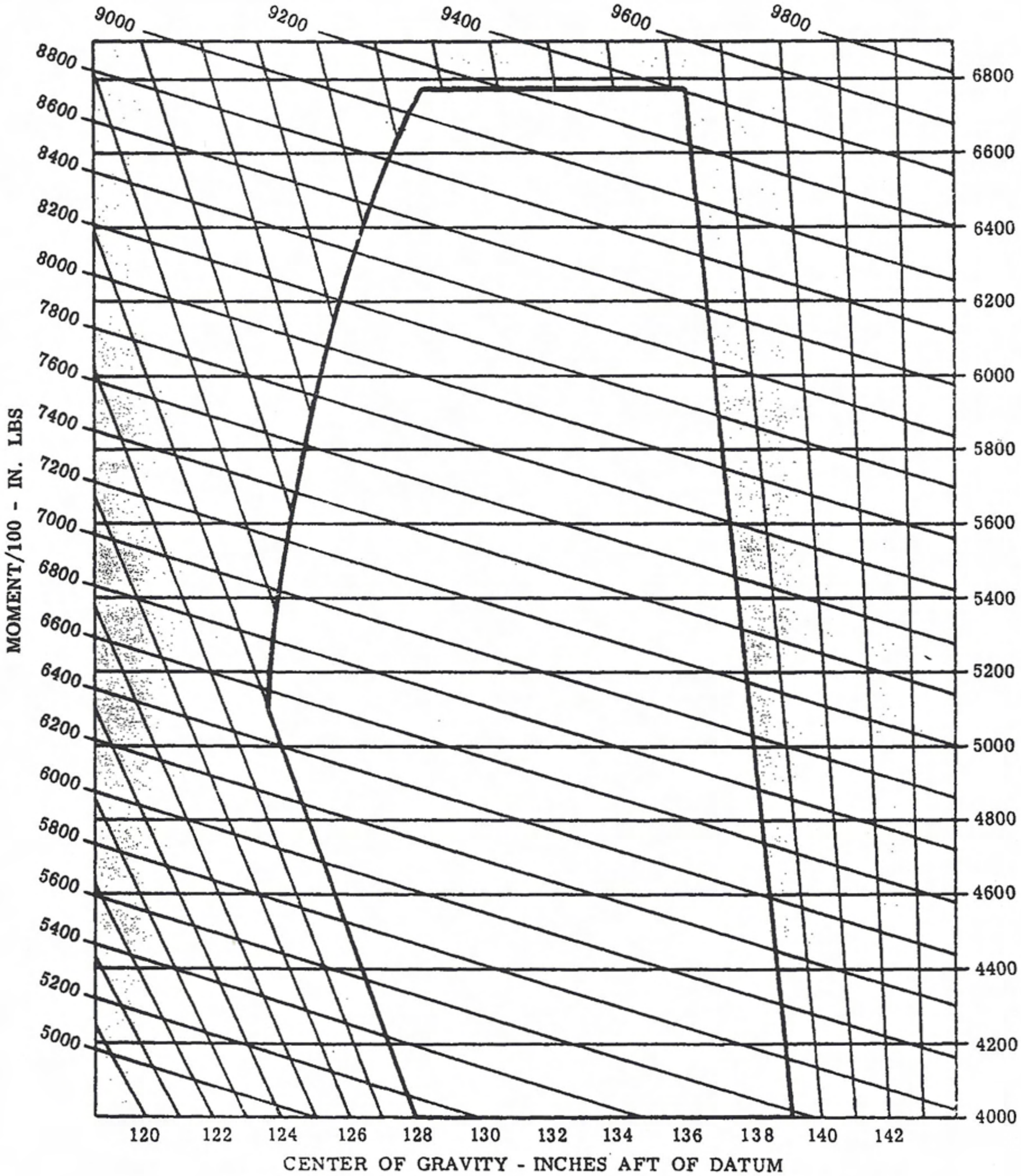
NOTE

Oil weight and moment is included in airplane basic empty weight.

Beechcraft.

DUKE 60 & A60

GROSS WEIGHT MOMENT LIMITS



ENVELOPE BASED ON THE FOLLOWING WEIGHT AND CENTER OF GRAVITY LIMIT DATA (LANDING GEAR DOWN)

WEIGHT CONDITION	FORWARD C.G. LIMIT	AFT C.G. LIMIT
6775 LB. MAXIMUM TAKE-OFF	134.6	139.2
6775 LB. LANDING	134.6	139.2
6600 LB. LANDING	133.9	139.2
6450 LB. LANDING	133.3	139.2
5100 LB. OR LESS	128.0	139.2

NOTE: SEE LIMITATIONS SECTION FOR LANDING WEIGHT RESTRICTIONS.

A60-601-325

Beechcraft®

EQUIPMENT LIST

AIRCRAFT SERIAL NO.

DATE

REGISTRATION NO.

I.D.	DESCRIPTION	WEIGHT	ARM

SECTION IX

SYSTEMS

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TABLE OF CONTENTS (Continued)

AIRFRAME

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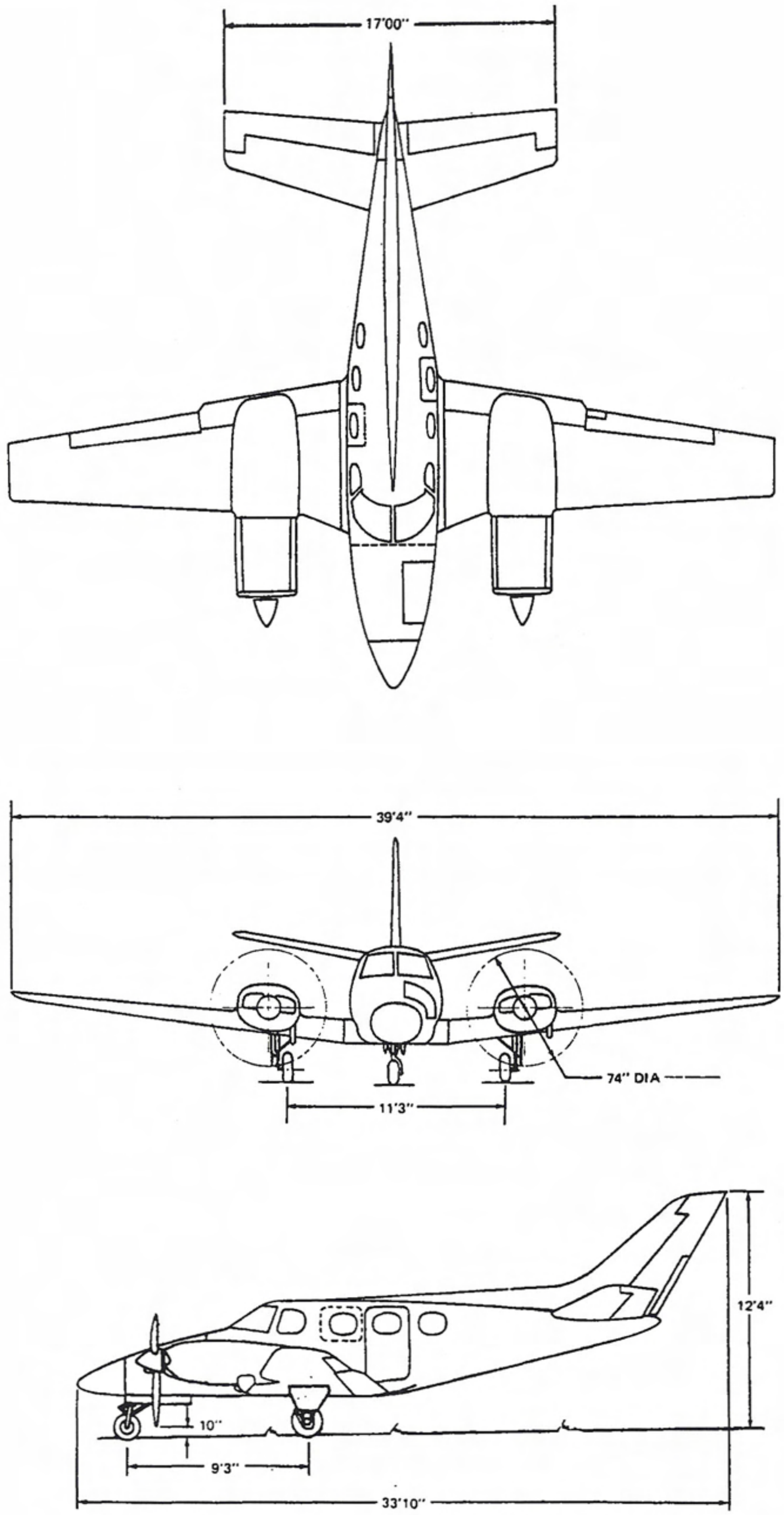

A60-607-1

THREE VIEW

GENERAL SPECIFICATIONS

WEIGHTS

Maximum take-off and landing	6775 lbs
Useful load (Standard Equipment)	2675 lbs
Maximum ramp weight	6819 lbs

WING AREA AND LOADING

Wing Area	212.9 sq ft
Wing Loading at 6775 lbs	31.8 lbs/sq ft
Power Loading at 6775 lbs	8.91 lbs/hp

DIMENSIONS

Wing Span	39 ft 4 in.
Length	33 ft 10 in.
Height to top of fin	12 ft 4 in.

CABIN DIMENSIONS

Length	142 in.
Height	52 in.
Width	50 in.
Entrance Door	47-1/2 in. x 26-1/2 in.

FUEL

100/130 (Green) Aviation Gasoline. If not available 115/145 (Purple) Aviation Gasoline.

With baffled fuel cells in both wings	202 gals usable
With unbaffled fuel cells in one or both wings	192 gals usable

OIL

Oil capacity per engine	13 qts

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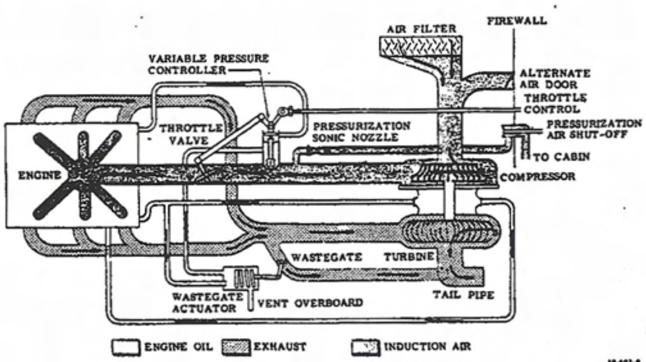
PROPULSION SYSTEM

ENGINES

The BEECHCRAFT Duke is equipped with Lycoming TIO-541-E1A4 and/or TIO-541-E1C4 engines. They are rated at 380 horsepower at 2900 rpm and 41.5 in. Hg , and are turbocharged for high performance at altitudes to 30,000 feet. The engines drive three-bladed, 74 in. diameter, constant speed, full feathering, hydraulically controlled propellers.

TURBOCHARGER

The turbocharger consists of two separate components; a compressor and a turbine connected by a common shaft.



The compressor supplies pressurized air to the engines for high altitude operation, and to the cabin for pressurization. The compressor and its housing are located between the ambient air intake and the induction air manifold. The turbine and its housing are part of the exhaust system and utilize the flow of exhaust gases to drive the compressor.

WASTE GATE AND EXHAUST BYPASS

The waste gate actuator, operated by engine oil pressure, activates a waste gate valve located in the exhaust bypass. Oil pressure closes the waste gate and all the exhaust gas is routed into the turbine side of the turbocharger, giving maximum compression to induction air. When the actuator opens the waste gate a minimum of exhaust gas drives the turbocharger. The balance of the exhaust is dumped directly overboard. Thus, the waste gate position regulates the supercharger air available to the engine.

The following steps illustrate the operation of the system:

1. Induction air is taken in through the air filter and ducted to the compressor.
2. The induction air is then compressed and ducted to the engine.
3. A portion of the compressed air is bled off for cabin pressurization.
4. As the waste gate opens, some of the exhaust gases are routed around the turbine, through the exhaust bypass and overboard.
5. When the waste gate is closed, all of the exhaust gases pass through and drive the turbine, which, in turn, drives the compressor.
6. The exhaust gases are dumped overboard.

VARIABLE ABSOLUTE PRESSURE CONTROLLER

The control center of the turbocharger system is the variable absolute pressure controller. This device simplifies turbocharging to one control - the throttle. Once the pilot has set the desired manifold pressure, virtually no throttle adjustment is required with changes in altitude. The controller senses manifold pressure requirements for various altitudes and regulates the oil pressure to adjust the waste gate. Thus, the turbocharger maintains only the manifold pressure called for by the throttle setting (except for operation above the "critical altitude" or that altitude where the waste gate reaches the fully closed position. For example, at 2900 rpm, the critical altitude is that altitude above which 41.5 in. Hg manifold pressure cannot be obtained at full throttle.

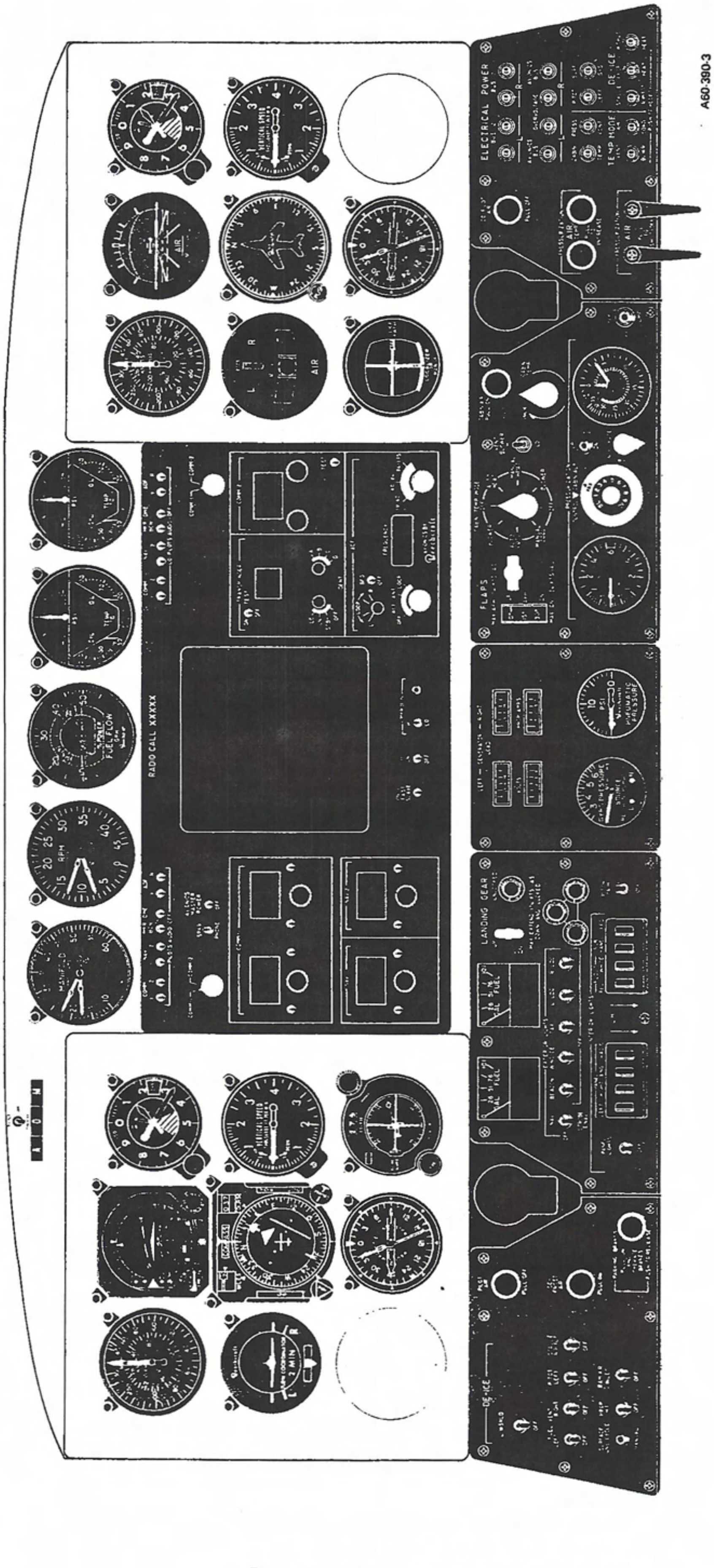
OPERATIONAL CHARACTERISTICS

Aside from the absence of manifold pressure variation with altitude, there is little difference between the turbocharged and the unturbocharged engine when operated below the critical altitude.

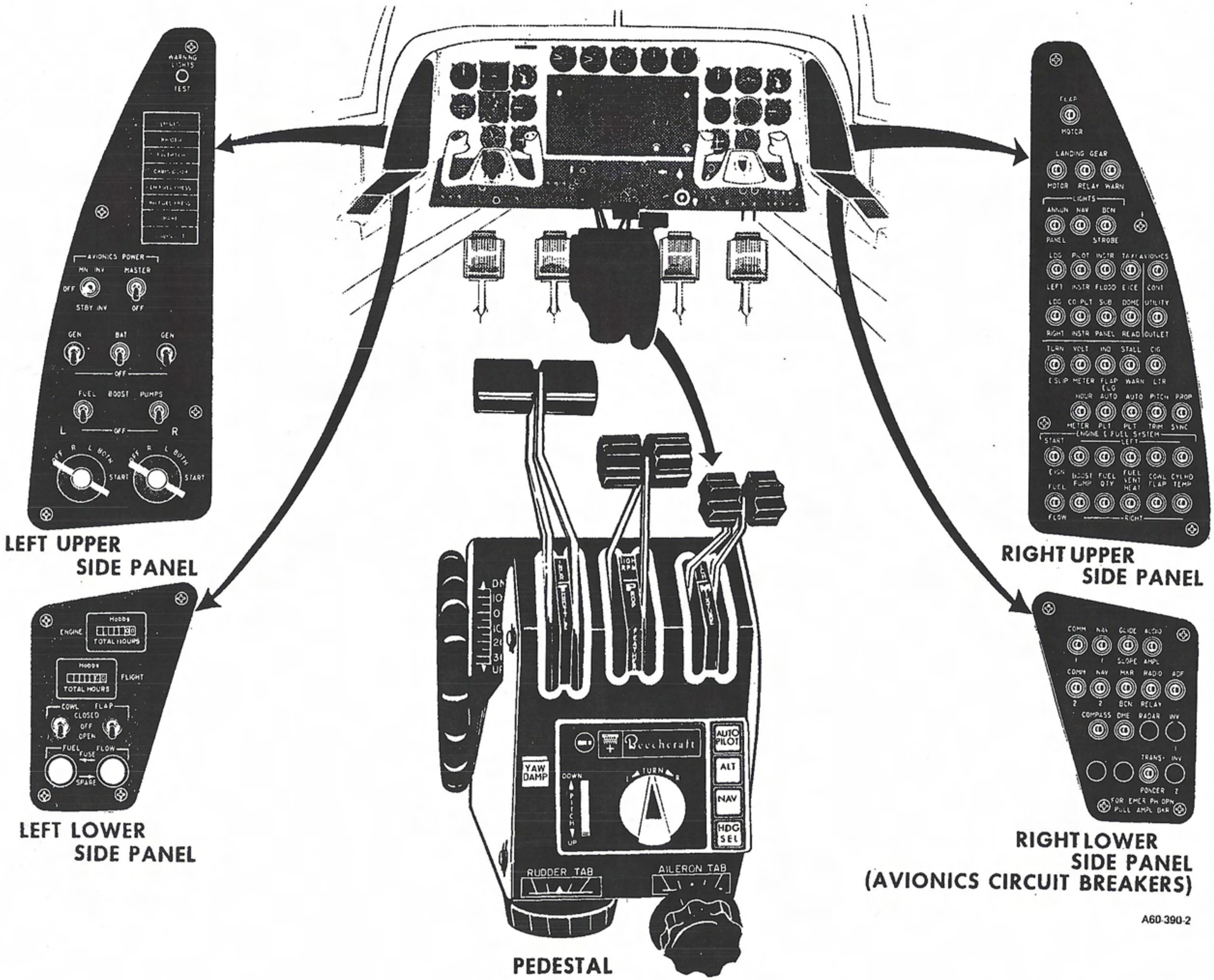
Above critical altitude, certain operational characteristics must be understood to fully realize the advantages and capabilities of this turbocharger engine combination. These are as follows:

RPM EFFECT ON MANIFOLD PRESSURE

Above the critical altitude, any change in rpm will result in a change in manifold pressure. A decrease in rpm will produce an increase in manifold pressure.



TYPICAL INSTRUMENT PANEL


LEFT UPPER SIDE PANEL
LEFT LOWER SIDE PANEL
PEDESTAL
RIGHT UPPER SIDE PANEL
RIGHT LOWER SIDE PANEL (AVIONICS CIRCUIT BREAKERS)
YAW DAMP
Beechcraft
AUTO PILOT
ALT
NAV
HDG SEL
RUDDER TAB
AILERON TAB
A60-390-2

FUEL FLOW EFFECT ON MANIFOLD PRESSURE

Above the critical altitude, with rpm and manifold pressure established for cruise, leaning will cause a slight increase in manifold pressure. When the mixture reaches the recommended fuel flow, a slight reduction in manifold pressure may be necessary.

AIRSPEED EFFECT ON MANIFOLD PRESSURE

Above the critical altitude, an increase in airspeed will result in a corresponding increase in manifold pressure. This is true because the increase in ram air pressure from an increase in airspeed is magnified by the compressor resulting in an increase in manifold pressure. The increase in manifold pressure creates a higher mass flow through the engine, causing higher turbine speeds and thus increasing manifold pressure. This characteristic may be used to best advantage by allowing the aircraft to accelerate to cruise speed after leveling off and prior to reducing power.

ENGINE RESPONSE AT HIGH ALTITUDE

Large, sudden power reductions at altitude with rich mixtures can cause loss of engine power. These power reductions or increases should be made slowly with necessary mixture adjustments in a series of two or three steps.

CAUTION

The engine manufacturer limits the manifold pressure to 41.5 in. Hg. To avoid exceeding this limitation, the last 1-1/2 inches of throttle travel should be applied slowly while monitoring manifold pressure. In cold weather a momentary manifold pressure overshoot of up to 2 in. Hg will have no detrimental effect on the engine.

POWER PLANT CONTROLS

THROTTLE, PROPELLER AND MIXTURE

The throttle, propeller and mixture control levers are arranged in a conventional manner along the top of the pedestal. Throttle levers are on the left, propeller levers in the center, and mixture levers on the right. An adjustable friction wheel on the upper right side of the console may be turned clockwise to increase friction of the levers to prevent creeping.

INDUCTION AIR

Induction air is available from two sources, filtered ram air or automatic alternate air. Filtered ram air enters from a flush inlet air scoop on the right side of each cowl. Should the filter become obstructed, a spring-loaded door on the firewall will open automatically and the induction system will operate on alternate air taken from a louvered opening on the right side of the nacelle. Above critical altitude, on alternate air, a drop of approximately 8 to 10 in. Hg of manifold pressure will be noted. Below critical altitude, no change of manifold pressure will be indicated. If the manifold pressure drops, it may be regained by advancing the throttles. The mixture should be readjusted after resetting the power.

COWL FLAP

The cowl flap of each engine is controlled by separate switches on the lower left side panel. Each switch has three positions, placarded: CLOSED - OFF - OPEN. The switch allows the cowl flap to be stopped in any position so that the cylinder head temperature can be regulated.

CONTROL LOCK

If it is necessary to park the airplane outside for extended periods, install the control locks and tie down the airplane. Installing control locks may be done as follows:

1. Insert the spring end of the rudder control locking pin into the hole at the top of the pilot's left rudder pedal arm.
2. Neutralize the pedals with the locking pin spring compressed and insert the opposite end of the locking pin into the right pedal arm. The rudder pedals locking pin is placarded RUDDER PEDALS LOCKED.
3. Position the throttle control lock, placarded THROTTLE CONTROLS STOP, forward of the throttle levers in the closed position and secure it to the console with the Dzus fastener.
4. The aileron control locking device, placarded AILERON AND ELEVATOR CONTROLS LOCKED, is installed by inserting the pin through a hole in a flange protruding from the subpanel, and through a matching hole in the lower side of the control column tube.

To lessen the possibility of taxi or take-off with the control locks installed, remove the locking components in the following order: rudder, aileron/elevator and throttle.

ENGINE INSTRUMENTATION

Most of the engine instruments are located in the upper center of the instrument panel above the avionics controls. The standard grouping is the dual manifold pressure, dual tachometer, a dual fuel flow indicator, and a left and right multiple readout indicator for oil pressure, oil temperature, and cylinder head temperature. The left and right loadmeter with the volt meter and propeller ammeter directly below are located in the center subpanel. The fuel quantity indicators are located on the pilot's subpanel and the turbine inlet temperature, TIT, indicator is located on the right floating panel.

ENGINE LUBRICATION

The engines are equipped with a wet sump, pressure type oil system. Each engine sump has a capacity of 13 quarts. The oil system may be checked through access doors in the engine cowling. A calibrated dip stick attached to the filler cap indicates the oil level. Due to the canted position of the engines, the dip sticks are calibrated for either right or left engines and are not interchangeable.

The oil grades listed in the Approved Oil are general recommendations only, and will vary with individual circumstances. The determining factor for choosing the correct grade of oil is the oil inlet temperature observed during flight; however, inlet temperatures consistently near the maximum allowable indicate a heavier oil is needed. Lycoming recommends use of the lighest weight oil that will give adequate cooling.

NOTE

The turbocharged engines are to be operated with ashless dispersant oil conforming to MIL-L-22851 or a Lycoming approved synthetic oil.

PROPELLERS

The engines are equipped with 74 inch Hartzell, three-blade, full feathering, constant speed, air dome propellers. Centrifugal force from the propeller counterweights, assisted by air pressure in the propeller dome, moves the blades to high pitch. Engine oil under governor-boosted pressure moves the blades to low pitch. Propeller dome air pressure settings are listed in the Servicing Section.

The propellers should be cycled occasionally during high altitude flight and during cold weather operation. This will help maintain warm oil in the propeller hubs so that the oil will not congeal.

PROPELLER SYNCHRONIZER

The propeller synchronizer automatically matches the left "slave" propeller rpm to that of the right "master" propeller. To prevent the left propeller from losing excessive rpm if the right propeller is feathered while the synchronizer is on, the synchronizer operation is limited to approximately ± 30 rpm from the manual governor setting. Normal governor operation is unchanged but the synchronizer will continuously monitor propeller rpm and reset the governor as required.

A magnetic pickup mounted in each propeller governor transmits electric pulses to a transistorized control box installed behind the pedestal. The control box converts any pulse rate differences into correction commands, which are transmitted to a stepping type actuator motor mounted on the left engine compressor mounting bracket. The motor then trims the left propeller governor through a flexible shaft and trimmer assembly to exactly match the right propeller rpm. The trimmer, installed between the governor control arm and the control cable, screws in or out to adjust the governor while leaving the control lever setting constant.

A toggle switch installed on the pedestal turns the system on. With the switch off, the actuator automatically runs to the center of its range of travel before stopping to assure that when next turned on, the control will function normally.

To operate the system, synchronize the propellers in the normal manner and turn the synchronizer on. The left propeller rpm will automatically be adjusted to correspond with the right. To change rpm, adjust both propeller controls at the same time. This will keep the left governor setting within the limiting range of the right propeller. If the synchronizer is on but is unable to adjust the left propeller rpm to match the right, the actuator has reached the end of its travel. Turn the synchronizer switch off (allowing the actuator to run to the center of its range and the left propeller to be governed by the propeller lever), synchronize the propellers manually, and turn the synchronizer switch on.

PROPELLER SYNCHROSCOPE

A propeller synchroscope, located in the tachometer case, operates to give an indication of synchronization of propellers. If the right propeller is operating at a higher rpm than the left, the face of the synchroscope, a black and white cross pattern, spins in a clockwise rotation. Left or counterclockwise, rotation indicates a higher rpm of the left propeller. This instrument aids the pilot in obtaining complete manual synchronization of the propellers.

ENGINE ICE PROTECTION

Engine ice protection consist of electrothermal fuel vent heaters controlled by a switch on the left side panel, and an automatic alternate air inducation system.

The possibility of induction system icing is reduced by the non-icing characteristics of fuel injection engines and the Duke's automatic alternate air source. The only possible ice accumulation is impact ice at the ram air scoop and filter.

Should the ram air scoop of filter become clogged with ice, a spring-loaded door on the firewall will open automatically, and the induction system will operate on alternate air. When operating on alternate air above the critical altitude, approximately 8 to 10 inches of manifold pressure will be lost.

ANNUNCIATOR SYSTEM

The annunciator warning lights system consists of several single channel circuits which are divided into fault warning and indicating channels. When a fault warning signal is sent to an annunciator circuit, it is used to illuminate its respective readout in the annunciator panel, located in the upper left side panel. Illumination of an annunciator light indicates a fault in its respective system. A dimming circuit for the annunciator lights is connected to the navigation light switch. Should an annunciator light illuminate with the NAV light switch in the ON position, the diming circuit prevents a distracting glare. All warning lights in the annunciator panel can be tested for illumination by pressing the WARNING LIGHTS TEST switch on the annunciator panel above the warning lights.

FUEL SYSTEM

The fuel system is a simple ON-OFF-CROSSFEED arrangement.

FUEL CELLS

The fuel system installation consists of an inboard main fuel cell and an outboard cell in the leading edge, a nacelle tank, and a wing panel fuel cell in each wing. All of the fuel cells in each wing are interconnected in order to make all of the usable fuel in each wing available to its engine when the fuel selector valve is turned ON. The interconnecting fuel cells are serviced through a single filler on each wing.

FUEL QUANTITY INDICATORS

Fuel quantity is measured by float type transmitter units which transmit the common level indication to a single indicator for each respective wing.

FUEL FLOW INDICATOR

The dual fuel flow indicator on the instrument panel is calibrated in pounds per hour, the green arc indicating fuel flow for normal operating limits.

In the cruise power range the green sectors cover power settings of 55%, 65%, 75% and take-off. The lower edge of each sector is the cruise-lean setting and the upper edge is the best-power setting for that particular power range.

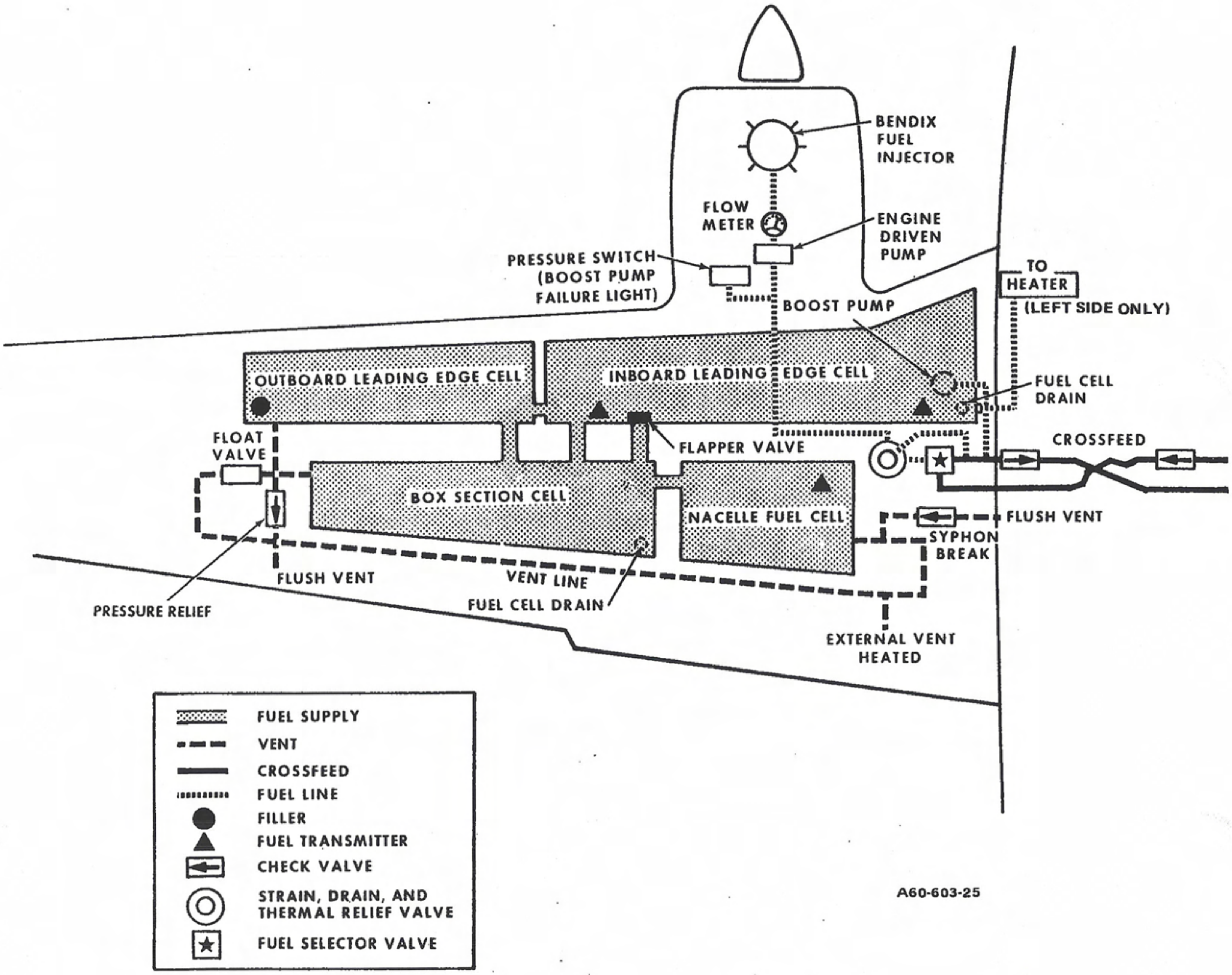
FUEL CROSSFEED

The separate identical fuel supplies for each engine are interconnected by crossfeed lines. During normal operation, each engine uses its own fuel pumps to draw fuel from its respective fuel tank arrangement. However, on crossfeed operations, the entire usable fuel supply of both wings can be consumed by either engine. The procedure for using the crossfeed system is described in the Normal Procedures Section.

The fuel crossfeed system cannot be employed to transfer fuel from one wing to another during flight.

ANNUNCIATOR PANEL

NOMENCLATURE	*COLOR*	*PROBABLE CAUSE FOR ILLUMINATION*
L.H. GEN	RED	Left generator failure
R.H. GEN	RED	Right generator failure
INVERTER	RED	Loss of Avionics AC Power
CABIN DOOR	RED	Cabin door not fully secure
L.H. FUEL PRESS	RED	Left Fuel Boost Pump failure
R.H. FUEL PRESS	RED	Right Fuel Boost Pump failure
SPARE	RED	
CABIN ALT	YELLOW	Cabin is above 10,000 ft.



FUEL SYSTEM SCHEMATIC

FUEL BOOST PUMPS

Submerged, tank-mounted fuel boost pumps are provided for each engine and are located in the inboard leading edge tanks. They are controlled by separate ON-OFF toggle switches located on the pilot's subpanel and should be used for starting, take-off, landing, and any other time fuel-flow fluctuations are noted. The fuel boost pumps provide for near maximum engine performance should the engine-driven pump fail. Fuel boost pump failure is indicated by illumination of a FUEL PRESS light on the panel.

FUEL MANAGEMENT

The fuel selector panel, located between the front seats, contains the fuel selector valve for each engine and a schematic diagram of fuel flow. During normal operation, fuel is consumed from the tanks as indicated by the fuel selector valves. Fuel may be used as desired during flight.

FUEL REQUIRED FOR FLIGHT

Flight planning and fuel loading is facilitated by the use of fuel quantity indicators that have been coordinated with the fuel supply. It is the pilot's responsibility to ascertain that the fuel quantity indicators are functioning and maintaining a reasonable degree of accuracy, and be certain of ample fuel for a flight. Take-off is prohibited if the fuel quantity indicators do not indicate above the yellow arc. An inaccurate gage could give an erroneous indication of fuel quantity, therefore, a minimum of 25 gallons of fuel is required in each wing system before take-off. If you as the pilot are not sure that at least twenty-five gallons are in each tank, add necessary fuel so that the amount of fuel will not be less than twenty-five gallons per tank at take-off. Plan for an ample margin of fuel for any flight.

ELECTRICAL SYSTEM

The direct current, 28-volt, electrical power circuit is energized by a 13 ampere-hour nickel-cadmium battery mounted in the top center of the left nacelle. The aircraft is equipped with two 125 ampere generators mounted on the lower left side of the engine and are belt driven. An air duct from the upper portion of the nacelle directs a supply of ram air to the generator for cooling. If a generator failure indication appears on the annunciator panel, turn the affected generator switch OFF then ON. If the condition persists turn the affected generator off and reduce electrical power consumption as necessary.

A.C. POWER

Since the major portion of the airplane instrumentation functions on DC power, the AC power requirements are confined to only the fuel flow indicator, windshield heat, and some avionics. The inverter for the fuel flow indicator is a small unit designed to supply power only to this instrument. An inverter is installed for the operation of the left windshield heat and is activated by a switch on the pilot's subpanel marked L. WSHLD - OFF. This inverter is also used as a standby for the avionics inverter.

Avioncis power is obtained by two switches mounted on the upper switch panel. One is marked MASTER - OFF and activates power to the avionics equipment. For that equipment requiring AC, current, a three position switch marked MN INV - OFF - STBY INV must be placed in the MN INV position. Should a failure occur in the main inverter, the switch can be placed in the STBY INV position. This opens a relay to direct the current from the windshield heat inverter to the avionics provided the L. WSHLD switch is on. Because the STBY INV switch position is designed only to direct the current flow, no power can be supplied to the avionics with the L. WSHLD switch in the OFF position. Power for the operation of both systems cannot be supplied by this inverter at the same time.

CAUTION

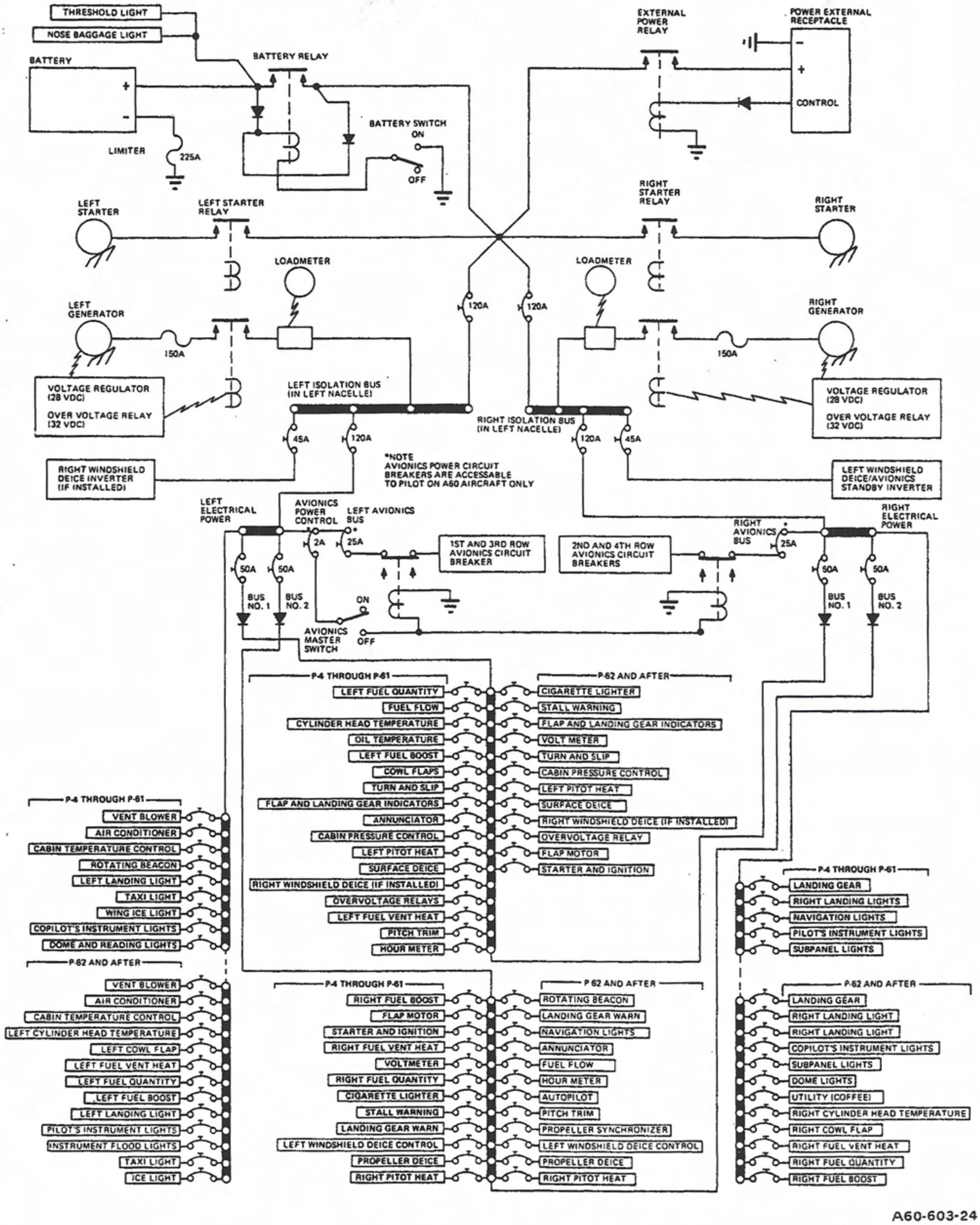
Ground use of windshield heat is limited to 10 minutes.

LOADMETERS

Two loadmeters on the subpanel above the console indicate the bus loads of their respective generators. A full needle deflection on a reading of 1.0 on the instrument is an indication of 100% normal amperage output of the generator. A voltmeter, located just below the loadmeters, is provided to monitor voltage increase or decrease from a common bus.

AUDIO AMPLIFIER

In the event of a malfunction in the audio amplifier system, audio capabilities may be restored by pulling the audio amplifier circuit breaker located on the lower right side panel. All avionics audio is then simultaneously feed to the headphones. Each avionic unit must be adjusted separately for the desired audio volume level.



TYPICAL POWER DISTRIBUTION SCHEMATIC

EXTERNAL POWER

The external power receptacle is located in the outboard side of the left nacelle and accepts a standard AN type plug. The power unit should be capable of delivering at least 300 amperes for starting. Before connecting an external power unit, turn the electrical systems and avionics off to avoid damage due to electrical surges. If the unit does not have a standard AN type plug, check the polarity (negative ground) and connect the positive lead from the external power unit to the center and aft posts of the aircraft receptacle. The negative lead connects to the front post. When external power is connected, the battery switch should be turned on.

NOTE

If polarity is reversed, the reverse polarity protection relay will not close, thus preventing current from flowing.

AIRFRAME

CABIN APPOINTMENTS

SEATING

To adjust the seats forward or aft, pull up the release bar below the left corner of the seat and slide the seat to the desired position. The seat backs of the copilot's seat and the third and fourth seats may be moved from the vertical to the reclined position by actuating a release lever on the inboard side of the seat. The back of the pilot's seat and the optional 5th and 6th seats may be placed in four positions by using the same release lever.

For more cabin area, the 5th and 6th seats may be stored by folding the backs forward and sliding the seats aft on the tracks until they are against the aft bulkhead. Ashtrays and cigarette lighters are located in the outboard armrest consoles that are built into both cabin sidewalls.

CABIN DOOR

The Duke is equipped with a fail safe cabin door latching mechanism. When the door latch bolts are in position, a spring-loaded secondary locking device maintains a safety locked condition. In addition, a pressure lock prevents inadvertent movement of either the secondary system or the door handle itself when pressurized. When the door is closed, the outside cabin door handle is spring loaded to fit into a recess in the door to create a flat, aerodynamically clean surface. The door may be locked with a key.

To open the door from the outside, press inward on the forward end of the handle to raise the aft end enough to grasp it. On serials P-123, P-127 and after push the safety release button and lift the handle from its recess and turn it counterclockwise until the door opens. The door will swing out and forward over the center wing section. The door may be closed from the outside by rotating the handle clockwise. The three door latching bolts activate three switches mounted on the bulkhead behind the fuselage door frame. A fourth switch mounted on the door (serials P-4 through P-122 and P-124 through P-126) is activated by the door handle latch mechanism. A cabin door warning light on the annunciator panel illuminates when the cabin door is not secure. All door switches must be activated to turn off the annunciator light.

To close the door from the inside, pull the door shut firmly with the handle in the forward position. Rotate the door handle aft in a counterclockwise manner until the safety lock bolt handle moves aft or the safety lock button pops outward. When the door handle has been rotated completely aft, (serials P-4 through P-126 except P-123) the safety lock bolt handle will snap forward to its original position.

At this point, the door is securely locked and cannot be open except by moving the safety lock bolt full aft; or on serials P-123, P-127 and after, pressing the safety lock button in. If there is residual pressure remaining in the cabin, the red "T" handle, located forward of the cabin door handle, must be pulled to override the pressure locking mechanism before the safety lock bolt or safety lock button will move. Once the safety lock bolt has been pulled aft, or the safety lock button pressed in, the door handle may be rotated forward to open the door.

EMERGENCY EXIT

The emergency exit door is a pressure sealed plug type door that opens into the cabin. It is located on the right side at the forward cabin window. The release is in a covered recess behind the window curtain. To open the door, lift the cover, release the catch and pull the handle down fully. There is no provision made for opening the door from outside the airplane.

CABIN SHELF RACK AND BAGGAGE AREA

Immediately ahead of the aft cabin bulkhead on serials P-4 through P-126 except P-123, is a combination baggage area and shelf rack. If more space is needed for bulky items, the shelf rack, hinged in the middle may be folded back flat against the aft bulkhead. A webbing may be attached to two chrome lugs overhead, two on the side walls, and two on the floor, to secure the baggage during flight. The backs of both optional rear seats fold forward for accessibility to the storage area. The shelf is placarded for a maximum weight of 135 pounds. The shelf and floor combined are placarded for a total of 315 pounds.

NOSE BAGGAGE COMPARTMENT

The forward baggage compartment is easily accessible through a large door on the left side of the nose. The door, hinged at the top, swings upward, clear of the loading area. This compartment affords accessibility to some of the aircraft avionics as well as storage space for the larger, heavier items, but loading within this area will fall within the limitations according to the WEIGHT AND BALANCE SECTION. The nose baggage compartment incorporates the full width of the fuselage as usable space.

FLIGHT CONTROLS

CONTROLS AND SURFACES

The Duke is equipped with conventional dual controls. Primary flight surfaces are operated through push-pull rods and conventional cable systems, terminating at bell cranks.

Control of the rudder and nose wheel steering is provided by rudder pedals. To adjust the rudder pedals, press the spring-loaded lever on the side of each pedal and move the pedal to its forward or aft position. The adjustment lever can also be used to place the right set of rudder pedals against the floor when not in use.

ELEVATOR TRIM TAB

An elevator trim tab control wheel on the left side of the console, operates in the conventional manner. An indicator placarded DN and UP, is calibrated in 10° increments. Nose-down trimming of the aircraft from 0° to 10° may be effected by rotating the top of the wheel forward. Nose-up trimming, from 0° to 30°, requires the top of the wheel to be moved aft. Make necessary compensations for loading conditions before take-off.

RUDDER TRIM TAB

A wheel, placarded RUDDER TAB, positioned horizontally on the lower aft side of the console, trims the aircraft with the rudder tab. Vertical reference marks to the left and right of the center mark indicate the amount of rudder tab being used. To move the nose of the aircraft to the right, move the protruding edge of the wheel to the right.

AILERON TRIM TAB

To the right of the rudder trim wheel is the aileron trim tab control. It is a vertically mounted knob that may be turned clockwise to lower the right wing and counterclockwise to lower the left wing. The indicator above the knob, placarded AILERON TAB, is identical to that used on the rudder tab installation.

ELECTRICAL ELEVATOR TRIM

A switch on the control wheel actuates the electric elevator trim control. The switch is moved forward for nose down, aft for nose up. When released, the switch centers in the OFF position. When the system is not being electrically actuated, the manual trim control wheel may be used. An ON-OFF switch is located on the left subpanel.

WING FLAPS

The wing flaps are controlled by a three-position switch located to the right of the control console on the subpanel. The flaps have three positions, 0° (full up), 15° (approach), and 30° (full down), with no intermediate positions. To move the flaps from 0° to 15°, move the switch to the middle detent position. From 15° to 30°, the switch must be pulled out of the detent and moved downward to the last position.

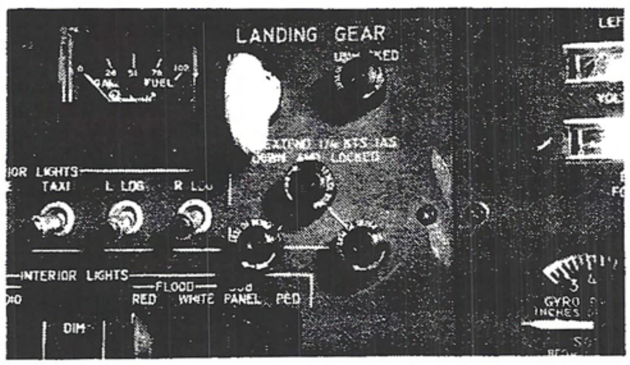
LANDING GEAR SYSTEM

CONTROL SWITCH

A two-position switch on the subpanel to the left of the console controls the landing gear. The switch is operated by moving it upward to retract and downward to extend the gear. From one position to the other, the switch handle must be lifted across a center detent.

POSITION INDICATORS

Landing gear position lights are located on the subpanel adjacent to the control switch. To the right of the switch is a single red light placarded UNLOCKED. This light indicates that the gear is in transit, neither full up or full down. Below the switch are three green lights arranged in a triangle. Each light represents a landing gear, and, when illuminated, indicates that the gear is locked in the extended position. These are placarded DOWN AND LOCKED.



Position Indicator

SAFETY SWITCH

A safety switch incorporated in the left main gear strut prevents inadvertent retraction of the landing gear. When the strut is compressed, the control circuit is open and the gear cannot retract. However, maneuvering over rough ground may allow the gear strut to extend momentarily, closing the circuit long enough to begin retraction. NEVER RELY ON THE SAFETY SWITCH TO KEEP THE GEAR DOWN DURING GROUND MANEUVERING. CHECK TO SEE THAT THE LANDING GEAR SWITCH IS DOWN.

WARNING HORN

A gear-up warning horn is located behind the panel. Any time either or both throttles are retarded to approximately 12 in. Hg, the horn will sound intermittently if the landing gear is in the retracted position. During single-engine operation, the horn can be silenced by advancing the throttle of the inoperative engine until the throttle warning horn switch opens the circuit.

MANUAL EXTENSION

The landing gear can be manually extended, but not retracted, by operating a handcrank on the rear of the pilot's seat. This procedure is described in FAA APPROVED EMERGENCY PROCEDURES Section.

BRAKES

A toe brake is incorporated in each rudder pedal. Either set of pedals will actuate the brakes. The parking brake system, operated from the pilot's controls only, utilizes a parking brake valve to allow buildup of pressure in the landing gear cylinders. To operate, pull out the parking brake knob, placarded PARKING BRAKES, on the subpanel below the pilot's control column and pump the toe pedals. Apply pressure to the pedals then push the control in to release the brakes. This will allow the pressure in the brake system to gradually bleed back into the reservoir.

NOSE GEAR STEERING

Nose gear steering allows a 15° angle of turn by movement of the rudder pedals. Friction of the nose wheel against the ground while the aircraft is standing still inhibits turning movement. Proper turning may be accomplished smoothly by allowing the aircraft to roll while depressing the appropriate rudder. Sharper turns require light brake pedal on the depressed rudder.

LANDING GEAR SAFETY SYSTEM

The landing gear safety system is designed to prevent "gear-up" landings and premature or inadvertent operation of the landing gear mechanism. The system is to be used as a safety backup device only; normal usage of the landing gear position switch is mandatory.

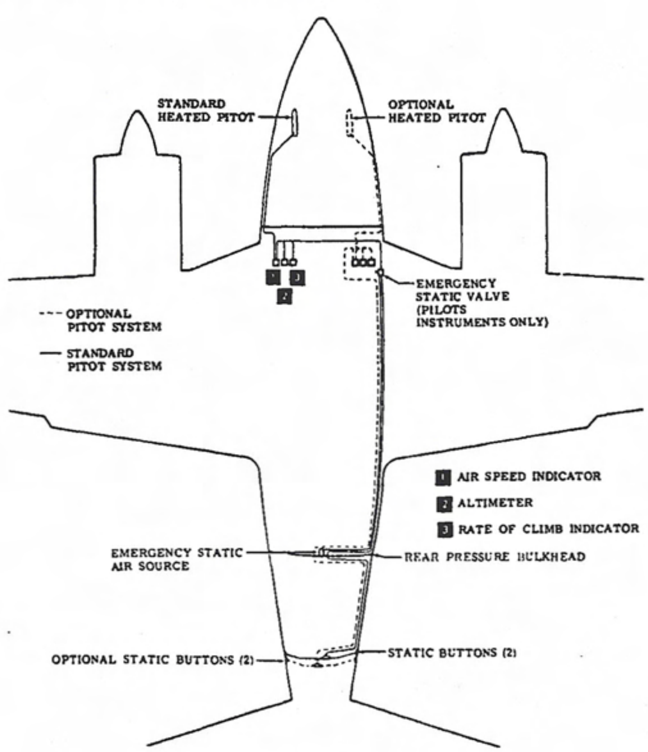
With the landing gear safety system ON-OFF-TEST switch in the ON position, the landing gear will be automatically extended when: (1) the airspeed is below approximately 120 mph/104 kts and (2) both engines are operating at a throttle position corresponding to approximately 17 inches or less of manifold pressure.

With the landing gear safety system ON-OFF-TEST switch in the ON position, the landing gear will not retract unless: (1) the landing gear position switch is in the UP position (2) the airspeed is above approximately 70 mph/61 kts and (3) one engine is operating at a throttle position corresponding to approximately 19 inches or more of manifold pressure.

NOTE

> If landing gear retraction is desired before the indicated airspeed reaches approximately 70 mph/61 kts, the landing gear safety system must be deactivated by placing the ON-OFF-TEST switch in the OFF position, preferably before placing the landing gear position switch in the UP position.

PITOT - STATIC SYSTEM



HEATED PITOT

A standard pitot tube for the pilot's flight instruments is located immediately to the right of the nose gear doors. The optional pitot tube for the copilot's instruments is located to the left of the nose gear doors. Left and right pitot heat switches, supplying heat to the left and right pitot masts respectively, are located on the pilot's left subpanel.

STATIC AIR

Static buttons mounted on the aft fuselage sides furnish static air for the flight instruments. An emergency static air valve is located in the right sidewall adjacent to the copilot's seat. Open the valve by turning it counterclockwise. Emergency static air is taken from the tail section just aft of the pressure bulkhead. Airspeed Calibrations and Altimeter Corrections are provided in the FAA PERFORMANCE Section.

STATIC DRAIN

The pitot system needs no drain because of the location of the components. Static air plumbing is drained by removing the side panel, placarded STATIC AIR LINE DRAIN, on the lower right cockpit wall forward of the copilot's seat and opening the valves provided.

FLIGHT INSTRUMENTS

The flight instruments are arranged on the floating instrument panel in a standard "T" grouping. Complete pilot and copilot flight instrumentation is standard, including one electric and one vacuum directional indicator, horizon, and turn and slip indicator. Dual navigation systems are available.

INSTRUMENT PRESSURE SYSTEM

Pressure for the pressure-operated flight instruments is supplied by two engine-driven, dry, pressure pumps, interconnected to form a single system. If either pump fails, check valves automatically close. The remaining pump will continue to operate the gyro instruments. With both engines operating at a minimum of 2200 rpm, the pressure gage on the instrument panel should indicate between 3.5 and 5.5 in. Hg. A pressure pump failure is indicated by the protrusion of a red button on the pressure gage placarded "L" or "R", adjacent to each button indicating which pump has failed.

Aircraft with serials P-186 and after may be equipped with dual regulators installed in the instrument pressure system. A regulator is located in each pressure line ahead of the pilot's and co-pilot's instruments to facilitate a check of the pressure to either of the instrument systems. A two-position switch, placarded PILOT - COPILOT, located adjacent to the Gyro Pressure gage on the center subpanel, gives a constant reading of the pressure of the instrument system selected with the switch. An abnormal reading is an indication of probable malfunction of one regulator. Select the other regulator and check the system pressure. If it is normal, operate with the instrument system that is functioning from that regulator.

STALL WARNING INDICATOR

The stall warning system consists of a stall warning horn mounted forward of instrument panel, a lift transducer on the leading edge of the left wing, a lift transducer vane heater element, a face plate heater element, a landing gear switch, a circuit breaker, and a switch located on the pilot's subpanel marked STALL & R PITOT.

When aerodynamic pressure on the lift transducer vane indicates that a stall is imminent, the transistor switch is actuated to complete the circuit to the stall warning horn. The lift transducer senses the angle of attack and is triggered by reverse air flow.

CAUTION

The heater element protects the lift transducer from ice, however, a buildup of ice on the wing may disrupt the airflow and prevent the system from accurately indicating an incipient stall.

LIGHTING

INTERIOR LIGHTING

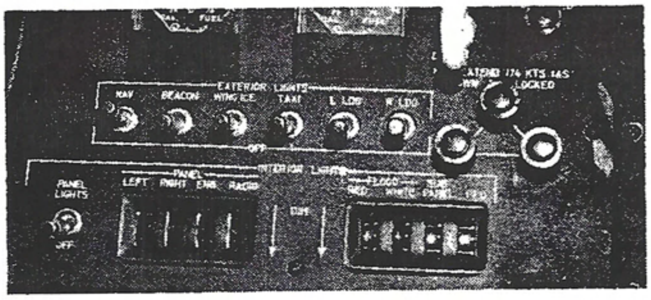
The cockpit dome light is operated by a push button switch, adjacent to the light. The switches for the individual reading lights above the rear seats are located adjacent to the lights. All other interior lights are controlled from the interior light switch group on the pilot's right subpanel. A master PANEL LIGHTS switch activates the group and the individual lights are regulated by thumb wheel switches.

A courtesy light to the left of the cabin door illuminates the doorway and will be turned off by closing the door. If the door is to remain open for extended periods, the light may be turned off with a pushbutton switch inside the cabin just forward of the light.

A baggage compartment light and light switch are located just inside at the top of the nose compartment door for illumination of baggage and avionics space. The courtesy light and the baggage compartment light receive power directly from the battery.

EXTERIOR LIGHTING

The switches for the navigation lights, landing lights and rotating beacon, which are standard equipment, plus the switches for the nose taxi light and wing ice lights, are



Light Switches

grouped on the left subpanel. The landing lights in the leading edge of each wing tip are operated by separate switches. For longer battery and lamp service life, use the landing lights only when necessary. Avoid prolonged operation during ground maneuvering to prevent overheating.

ENVIRONMENTAL SYSTEM

An environmental control section on the right subpanel provides for automatic or manual control of the system. This section, just to the right of the flap control lever contains all the major controls of the environmental function; the mode selector switch for selecting manual or automatic heating or cooling, a vent blower control switch, and a cabin temperature level control. Directly below these controls are the pressurization controls. To the right of the copilot's control column, are the pressurization Air Temp controls and pressurization Air Shut-Off controls.

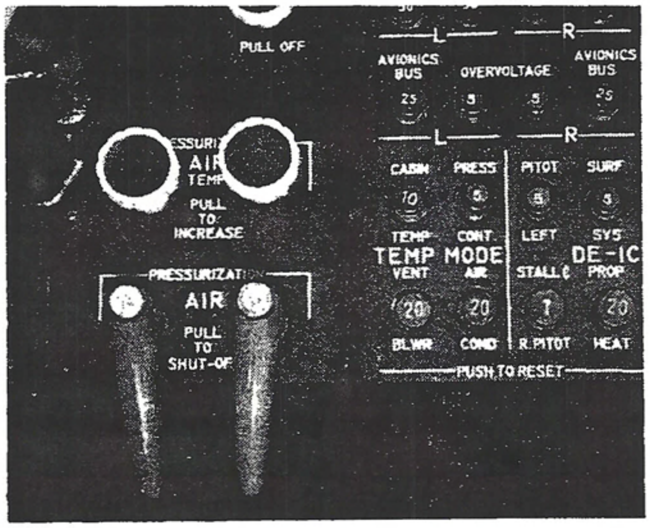
PRESSURIZATION

DESCRIPTION

Pressurized air for the cabin is taken from the turbocharger compressor of each engine and reduced to a usable flow by a restrictor in the line called a sonic nozzle. The air then passes through a firewall shutoff valve, through an intercooler and into the cabin beneath the pilot and copilot floorboards. The intercooler reduces the heat acquired by the air during pressurization with a flow of ram air from a scoop at the leading edge of each wing root. After entering the pressure vessel, the air is drawn into the conditioning plenums where it is either heated or cooled, according to the selected mode, and distributed evenly throughout the cabin. Located on the aft cabin bulkhead are two valves; the isobaric control valve and the safety/dump valve. The pressurization controller on the right subpanel pneumatically regulates the isobaric control valve to maintain the selected cabin altitude. The safety/dump valve is connected to the pressure dump switch, and to the landing gear safety switch. If either of these switches is closed, the safety/dump valve will open to atmosphere and the cabin will depressurize.

CONTROLS

The pressurization system components consists of a cabin climb indicator, the cabin altitude controller, a PRESS-TO-TEST switch, a PRESSURE-DUMP switch and the cabin differential pressure gage. Pressurization from the

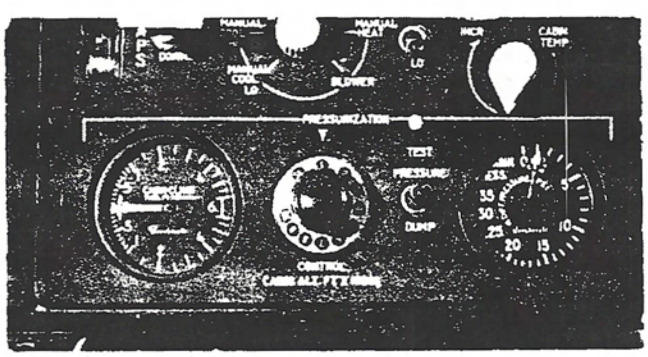


Pressurization Controls

engines may be shut off by pulling the pressurization air controls (red "L" - shaped handles) located outboard of the copilot's control wheel and is placarded PRESSURIZATION AIR - PULL TO SHUT OFF. This closes the firewall shutoff valve and dumps the pressurized air into the engine compartment.

CABIN ALTITUDE CONTROLLER (MANUAL)

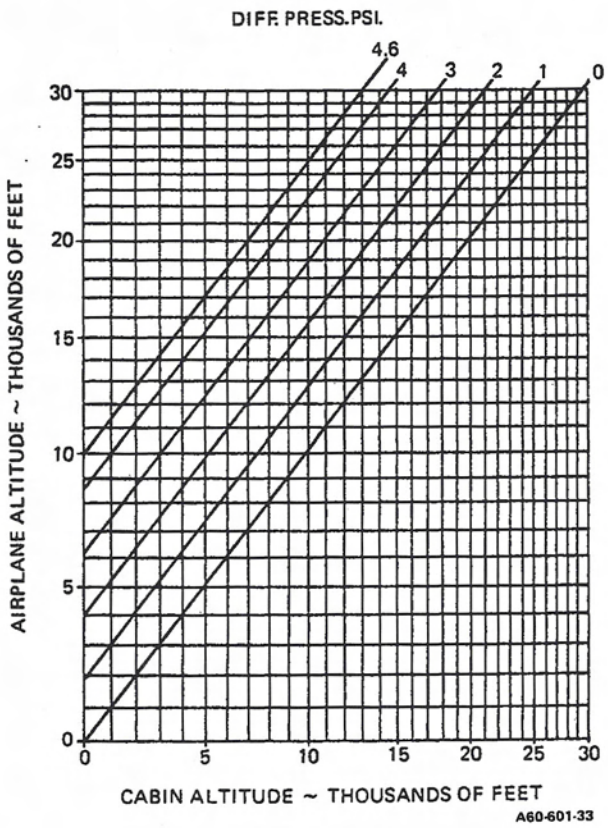
The cabin altitude controller is located on the right subpanel between the cabin climb indicator and the cabin differential pressure gage. The cabin altitude is maintained with the control anywhere from zero pressure to the maximum differential pressure of 4.6 psi.



Altitude Selector

The controller is rotated until the desired cabin altitude for flight is at the 12 o'clock position under the index mark. Any selected cabin altitude will be maintained during the flight provided the cabin pressure is at or below the maximum differential pressure. If the cabin reaches the maximum differential of 4.6 psi and the aircraft is still climbing, the cabin altitude will climb with the aircraft.

The following graph is provided to allow the pilot to determine the relationship between cruise altitude, cabin altitude and differential pressure. The zero differential pressure line indicates that the cruise altitude and the cabin altitude are identical (unpressurized). The 4.6 psi line indicates the maximum differential pressure obtainable in the cabin. To determine the lowest cabin altitude which can be maintained for a given cruise altitude: enter the graph at the desired cruise altitude and read right to the 4.6 psi differential pressure line. Then read down the graph to the altitude which can be maintained in the cabin.



If a cabin altitude change is required in flight it can be accomplished with a minimum of abrupt cabin pressure change by turning the selector dial very slowly and monitoring the rate of change on the cabin pressure indicator. A time lapse of approximately two minutes for each thousand-foot increment change on the dial will effect a comfortable change of pressure. Rapid cabin pressure changes will be experienced if the altitude selector is moved quickly before reaching the maximum differential pressure of 4.6 psi.

CABIN ALTITUDE CONTROLLER (MOTORIZED)

The motorized controller is similar to the standard controller except in the method of changing cabin altitude up or down. The unit is best described as an adjustable isobaric controller incorporating a variable speed drive motor with automatic shut off. The additional controls for the unit are the Red Altitude Selector Ring, the Motor Rate Rheostat and the Directional Toggle Switch. The inner cabin altitude selector is normally operated with the directional toggle switch. The control can be moved to override the motor drive but under normal operation all movement should be made with the toggle switch. The inner scale shows the cabin altitude when read at the index mark (12 o'clock position). The outer scale under the window shows the selected aircraft altitude. The inner scale adjacent to the window shows what the cabin altitude will be when maximum differential pressure (4.6 psi) is reached.

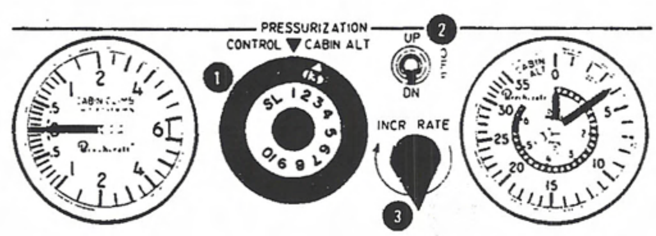
To ready the unit for operation, place the rate rheostat knob in the midrange and insure that the directional toggle switch is in the off position. Manually set the cabin altitude controller (inner scale) to approximately 1000 feet above the take-off field elevation. (The red altitude selector ring will turn with the inner scale when this adjustment is made). Now set the window on the red altitude selector ring to 1000 feet above the planned aircraft cruise altitude. This will avoid reaching maximum differential pressure in the cabin prior to achieving cruise altitude.

After take-off and during the climb when the cabin rate of climb has returned to zero, move the directional toggle switch to the up position. This gradually climbs the cabin to the altitude which is opposite the altitude in the window on the red selector ring. The controller should be driven at a rate to arrive at the cabin altitude shortly before the aircraft arrives at the cruise altitude. This can be accomplished by increasing or decreasing the rate rheostat knob. A few seconds lag time must be allowed for the pressurization controls to respond and stabilize before

1 Red Altitude Selector Ring

2 Directional Toggle Switch.

3 Drive Motor Rate Rheostat.



Motorized Cabin Altitude Controller

reading the cabin altitude rate of climb indicator. The controller will automatically turn off when the window in the red selector ring reaches the 12 O'Clock position. However, the directional switch should be placed in the OFF position.

NOTE

> In the event the Directional Toggle Switch is positioned improperly, the controller will drive to the end of the scale and damage to the slip clutch may result.

For normal descent turn the red selector ring until the window is opposite the altitude which is 1000 feet above the landing altitude. After departing the original altitude, place the directional toggle switch in the down position. In the event that a rapid descent rate is required, set the rate rheostat for an increased rate of descent so as to maintain a higher aircraft altitude than cabin altitude throughout the descent.

If the cruise altitude selected is less than 11,000 feet or corresponding cabin altitude (below the window) is less than the take-off field elevation, then the controller need not be moved. However, if the landing altitude is less than the take-off field elevation then the controller can be driven down to the selected cruise altitude.

AIR CONDITIONING SYSTEM

DESCRIPTION

A 45,000 BTU combustion heater and a 14,000 BTU, refrigerative air cooler work through a cabin temperature control system to maintain cabin comfort. The air conditioning mode is selected on the TEMP MODE selector on the right subpanel. Fresh air is taken into the system at the nose ram air vent opening for unpressurized flight, and from the pressurization air inlets beneath the cockpit floor for pressurized flight. From either source, the air is collected in a plenum ahead of the cockpit, heated or cooled according to the selected mode, and forced through ducts for distribution throughout the cabin. Air is ducted to individual overhead outlets above the seats. These outlets can be swiveled in any direction and the volume of air may be regulated by rotating the fitting.

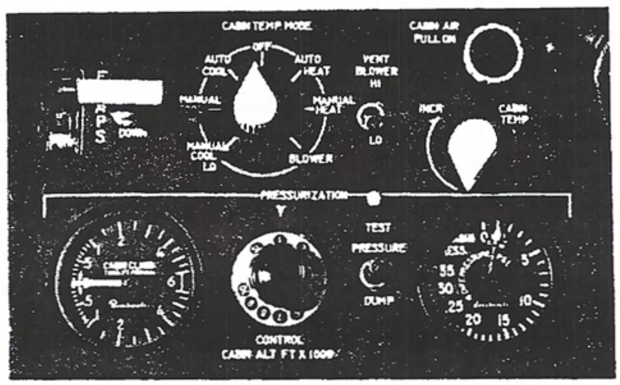
Conditioned air (or ventilation air) is ducted into an armrest console along each wall of the cabin. Small holes in the console direct the air out into the cabin.

Other air outlets are: defroster outlets above the glare shield, individual pilot and copilot air outlets, and on the Duke 60 only a vent air distribution bypass outlet that dumps directly from the plenum into the forward portion of the cockpit for accelerated cooling on the ground.

Exchanging the cabin air is accomplished by exhausting a controlled amount of air through the isobaric control valve on the aft pressure bulkhead.

VENT BLOWER

Velocity of the air from the cabin air outlets may be controlled by the VENT BLOWER switch, located on the right subpanel. Either the HI or LO position may be selected.



Vent Control

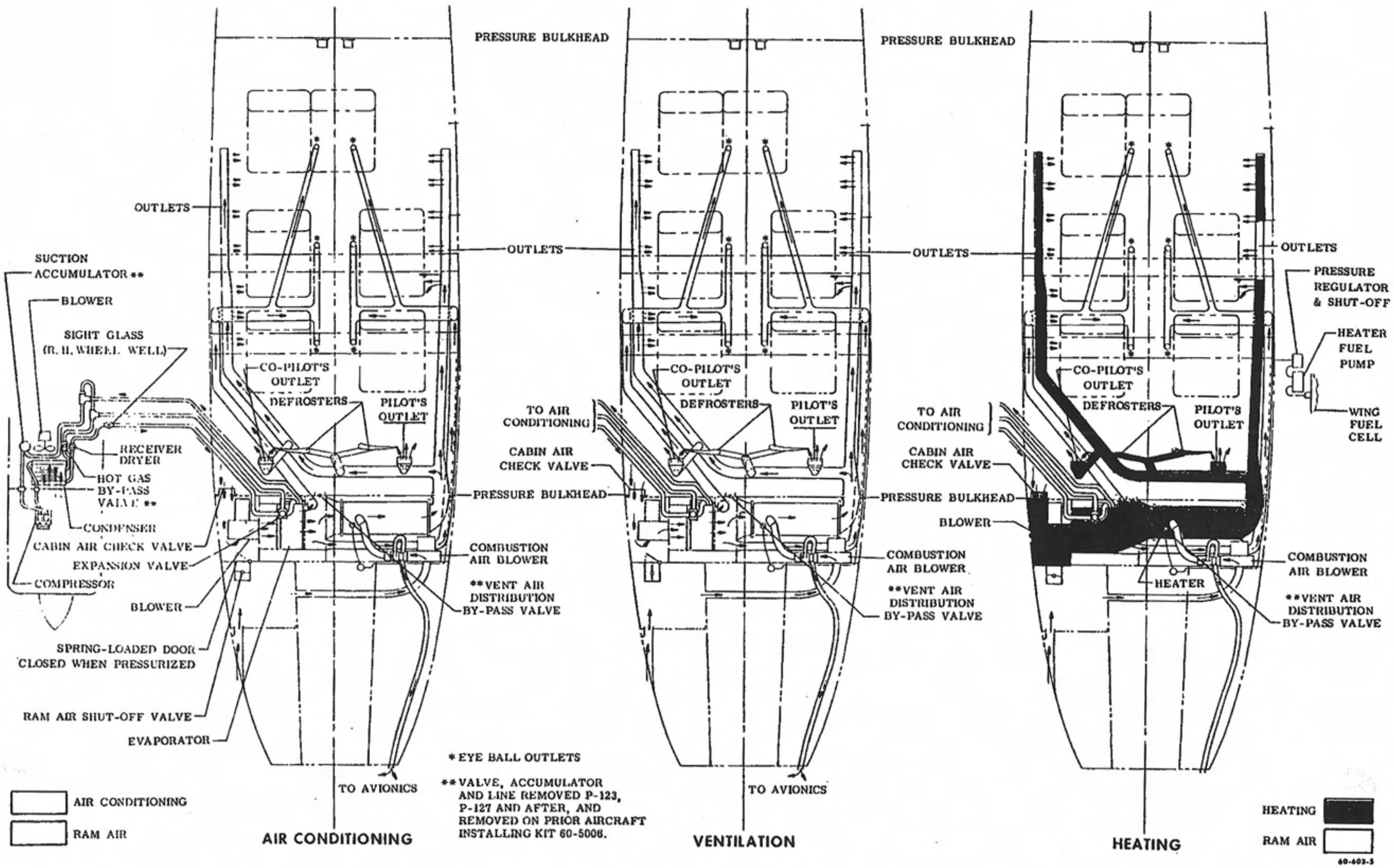
HEATING MODE

PRESSURIZED OPERATION

Heating may be accomplished in either the manual or automatic position. For manual heating, select MANUAL HEAT using the CABIN TEMP MODE selector on the right subpanel. The heater will then operate continuously. For faster heating at the pilot and copilot positions, place the vent controls (placarded PILOT AIR - PULL OFF and COPILOT AIR - PULL OFF) in the "on" position by pushing them in. For maximum windshield defrosting (in addition to the electrically heated windshield) the individual vents for the pilot and copilot may be turned off and the heater blower placed in the HI position to provide a greater flow of warm air through the defroster ducts.

Automatic heating is achieved in the same manner as manual heating except the selector is set on AUTO HEAT and the CABIN TEMP knob is adjusted for a comfortable temperature. A temperature controller located on the forward side of the pedestal between the pilot's and copilot's rudder pedals, makes possible the regulation of the cabin temperature by monitoring temperature variations at the temperature sensing units. These sensing units are located: (1) In the ram air inlet, (2) forward of the two pressure control valves on the rear pressure bulkhead, and (3) in the heater outlet duct.

ENVIRONMENTAL SCHEMATIC



Ambient air, from the ram air inlets at the leading edges of the wing roots, normally passes over the intercoolers to cool the turbocharged air from the engines before it enters the cabin. If normal heating is insufficient, an even greater heating capacity may be attained by turning off the intercoolers. This is done by pulling out the controls on the right subpanel, placarded PRESSURIZATION AIR TEMP - PULL TO INCREASE.

COOLING MODE

For the cooling mode, the Duke is equipped with a refrigerant-type cooling system. The compressor is located in the right nacelle just aft of the engine, and the evaporator just ahead of the forward pressure bulkhead adjacent to the heater unit. The air is circulated through the same ductwork as for heating. Cold air coming through the evaporator enters the duct system, goes to the armrest console outlets, to the individual overhead outlets and (on serials P-4 through P-126 except P-123) is also available through the distribution bypass valve for faster cooling of the area around the pilot and copilot seats.

When the selector is placed in the AUTO COOL position, the temperature is automatically controlled through the thermostat. The temperature sensing units monitor the cabin temperature variations, as in the heating mode. Regulate the temperature with the CABIN TEMP adjustment knob. Automatic cooling may be over-ridden by placing the selector in MANUAL COOL - HI or MANUAL COOL - LO (serials P-4 through P-126 except P-123) or MANUAL COOL (serials P-123, P-127 and after). In either of these positions the system will continue to cool regardless of the cabin temperature.

While operating in the heating mode, the intercoolers may be turned off to allow warm, pressurized air to enter the vessel, but the opposite is true for the cooling mode; the intercoolers may be turned on by pushing in the intercooler controls so the incoming air will be as cool as possible before reaching the evaporator.

For cabin ventilation, a portion of the air is automatically exhausted through the isobaric control valve on the aft pressure bulkhead, just as in the heating mode.

VENTILATION MODE

With the aircraft unpressurized, open the ram air vent inlet (CABIN AIR) and move the mode selector to BLOWER. Choose HI or LO as desired on the vent blower switch. In this mode the isobaric and safety dump valves are open (with the pressurization switch in DUMP position), to exhaust the cabin air. If the ambient air is cool and no vent blower is desired, move the temperature mode selector to OFF.

OXYGEN SYSTEM

WARNING

Proper safety measures must be employed while using oxygen, or a serious fire hazard will be created. NO SMOKING PERMITTED.

DESCRIPTION

Oxygen masks provided with the oxygen system are of the Scott 283 continuous-flow type. They are easily adjusted to fit the average person comfortably with a minimum leakage of oxygen, and are considered adequate for continuous use up to 30,000 feet.

The oxygen cylinder is located under the nose baggage compartment or in the aft fuselage. An oxygen console on the pilot's sidewall regulates flow to the six cabin wall outlets. When use of the oxygen is discontinued, it is absolutely necessary that the system be turned off by closing the control valve on the console. An oxygen pressure gage on the console indicates the supply of oxygen available. 1850 psi is normal pressure for a full supply in the bottle. The pressure gage does not indicate whether the system is on or off.

ICE PROTECTION

EQUIPMENT

For standard ice protection equipment, the Duke has heated pitot, stall warning and fuel vents. Optional icing equipment includes: Pneumatically operated surface deice boots, and electrically heated propellers, windshield and ventilation ram air inlet scoop. In addition, an alternate static air source backs up the fuselage mounted static air source buttons.

SURFACE DEICE SYSTEM

Deice boots on the wing and empennage leading edges are inflated by the two engine-driven pressure pumps. A venturi, operated from the pressure pumps, supplies vacuum for boot hold down at all times except during the inflation mode. Through an electric timer, solenoid-operated control valves cause all the boots to be inflated simultaneously. The timer is controlled by a three-position switch: SURFACE ONE CYCLE, and MANUAL with off position centered. This switch is located on the left subpanel. ONE CYCLE and MANUAL switch positions are momentary. A gage is provided to indicate system pressure. Momentary engagement of the ONE CYCLE position will cause the boots to inflate for five to eight seconds, then deflate to the vacuum hold-down condition. The MANUAL position will inflate the boots only as long as the switch is held in engagement; when the switch is released, the boots deflate. Leave the deicing system off until 1/2 to 1 inch of ice is accumulated. During inflation, the deice system pressure gage should register approximately 15 to 18 psi. Sufficient pressure for proper operation of the system is available with one engine inoperative.

When the surface deice system is operated with the cabin pressure switch in the "dump" position, cabin pressure oscillations will occur. This is caused by a momentary loss of vacuum to the outflow valve while the boots are pressurizing. This vacuum loss allows the outflow valve to close and create a small residual cabin pressure. After a small increase, this pressure is then dumped by the safety valve.

The cabin pressurization shut off controls should be pulled during this mode to divert cabin pressurizing air overboard and prevent excessive cabin pressure oscillations. Cabin ventilation may be obtained by pulling out the cabin air control. In this mode pressure oscillations will be small.

For night operation, a wing ice light is provided on the outboard side of the left nacelle. The switch, placarded WING ICE, is on the left subpanel.

PROPELLER ELECTROTHERMAL DEICE

Electrothermal deice boots, cemented to the propeller blades, remove ice from the propellers. Each boot, consisting of one outboard and one inboard heating element, receives its electrical power through a deice timer. The timer directs current to the propeller boots alternately, in a 30-second cycle. The PROP HT switch is located on the left subpanel. The propeller deice ammeter (prop amp) will indicate 14 to 18 amperes with minor fluctuations about every 30 seconds during normal operation. For deviations from the normal indications, and the procedures to be followed, see the Surface Deice Supplement in the FAA FLIGHT MANUAL SUPPLEMENTS Section.

WINDSHIELD ANTI-ICE

The pilot's electrically-heated windshield is controlled by a switch, placarded WSHLD HT, located on the left subpanel. Windshield heat, designed for continuous use, should be applied prior to, or upon first encountering, icing conditions. This system is also beneficial as an aid in preventing frost and fogging due to rapid descents from higher altitudes into warm, moist air.

Operation of the windshield heat will cause the standby compass to become erratic; therefore, windshield heat should be turned off for a period of 15 seconds to allow a stable reading of the standby compass.

CAUTION

Ground use of windshield heat is limited to 10 minutes.

ADDITIONAL ICE PROTECTION

The right pitot heat element (and the left pitot heat element if installed) is turned on by moving the respective PITOT HEAT switch to the ON position. Stall warning heat is installed in conjunction with right pitot heat, and is controlled by the STALL & R. PITOT HEAT switch. Fuel vent heat is controlled by two switches, placarded FUEL VENT - LEFT - RIGHT. The ram air inlet electrothermal lip boot is activated by a separate switch, placarded RAM AIR INLET-OFF.

SECTION X

SERVICING

TABLE OF CONTENTS

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INTRODUCTION TO SERVICING

The purpose of this section is to help you keep your BEECHCRAFT Duke in top condition between visits to your BEECHCRAFT Parts and Service Outlet. This information will aid you in determining when the airplane should be taken to a shop for periodic servicing or preventive maintenance. It will also guide you should you choose, or be obliged by circumstances, to do some minor servicing yourself. These procedures are in no sense a substitute for the services performed at your BEECHCRAFT Parts and Service Outlet.

If you should desire information concerning your Duke, it is important that you include the airplane model designation, serial number, and date of manufacture in your correspondence. This information appears on the model designation placard attached to the left wing stub root rib adjacent to the inboard end of the flap. The placard is not visible unless the flaps are lowered.

GROUND HANDLING

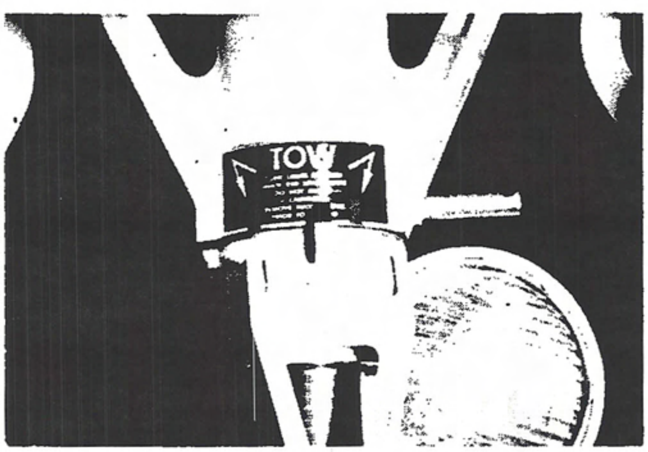
The three-view drawing shows the minimum hangar clearance for the airplane of standard configuration. Allowances have not been made for any special radio antennas. When this equipment is installed on the aircraft, the dimensions should be noted on the drawing for quick reference.

TOWING BY HAND

The Duke can be moved easily on a smooth, level surface with the hand tow bar. Attach the tow bar to the tow lugs on the nose gear lower torque knee. Someone should be present at the controls of the aircraft to operate the toe brakes if there is any danger of rolling down a slope. Do not apply excessive side pressure against the tow bar while turning sharply. The leverage of the bar could damage the steering mechanism.

CAUTION

Do not exert force on propellers, control surfaces or horizontal stabilizer.



Tow Limits

When the aircraft has been moved to the desired position, chock the main gears fore and aft to prevent rolling. If outside, tie down the airplane and install the control locks.

TOWING WITH A TUG

For maneuvering the airplane on rough ground or slopes, it is advisable to use a tug for greater security. Again, an assistant should remain at the controls to operate the brakes when necessary.

CAUTION

While turning the aircraft with a tug, exercise care to prevent exceeding the turn limits placarded on the nose gear. The Duke's low fuselage results in the nose sitting very close to the ground and, normally, a tug operator is unable to see the limit marks. If the aircraft is being maneuvered sharply, an assistant should monitor the turning of the nose gear.

TIE-DOWN

Tie the airplane down when it is not being used. Tie-down may be performed as follows:

1. Install the control locks.
2. Chock the main wheels, fore and aft.
3. Using chain or nylon line of sufficient strength, secure the airplane at the tie-down lugs; one under each wing and one under the aft fuselage. Tie-down lines should have no slack, but you should avoid raising the nose by pulling the aft line too tight. A high nose will produce lift by increasing the angle of attack of the wings.

SERVICING

BATTERY

The 13 ampere-hour, 24 volt nickel-cadmium battery is accessible through a door on the top of the left nacelle. The nickel cadmium battery is highly valued because it has the potential for years of reliable service; however, careful maintenance is required to obtain this service. Nickel-cadmium batteries are significantly different from lead acid batteries. When service is required for your nickel cadmium battery, it is recommended it be serviced at a qualified Nickel-Cadmium Battery Service Facility.

EXTERNAL POWER

When using external power, it is very important that the following precautions be observed.

1. The airplane has a negative ground system. Exercise care to avoid reversed polarity. Be sure to connect the positive lead of the auxiliary power unit to the positive terminal of the airplane's external power receptacle and the negative lead to the negative terminal of the external power receptacle. A positive voltage must also be applied to the small guide pin.
2. To prevent arcing, make certain no power is being supplied when the connection is made.
3. Make certain that the battery switch is ON, all avoinics and electrical switches OFF, and a battery is in the system before connecting an external power unit. This protects the electronic voltage regulators and associated electrical equipment from voltage transients (power fluctuations).

RECHARGING BATTERY USING AUXILIARY POWER

1. Battery switch - ON.
2. Connect an auxiliary power unit to the airplane's external power receptacle as described in the NORMAL PROCEDURES section.

If the battery relay will not close, the battery must be removed from the aircraft for recharging. Check the battery relay control circuit for a malfunction.

CHECKING ELECTRICAL EQUIPMENT

Connect an auxiliary power unit as outlined in NORMAL PROCEDURES. Ensure that the current is stabilized prior to making any electrical equipment or avionics check.

NOTE

> If the external power unit has poor voltage regulation or produces voltage transients the equipment connected to the unit may be damaged.

MAGNETOS

Magnetos ordinarily require only occasional adjustment, lubrication and breaker point replacement. This work should be performed by your BEECHCRAFT Parts and Service Outlet.

WARNING

> To be safe, treat the magnetos as hot whenever a switch lead is disconnected at any point; there is not an internal automatic grounding device. The magnetos can be grounded by replacing the switch lead at the noise filter capacitor with a wire which is grounded to the engine case. Otherwise, all spark plug leads should be disconnected or the cable outlet plate on the rear of the magneto should be removed.

PROPELLERS

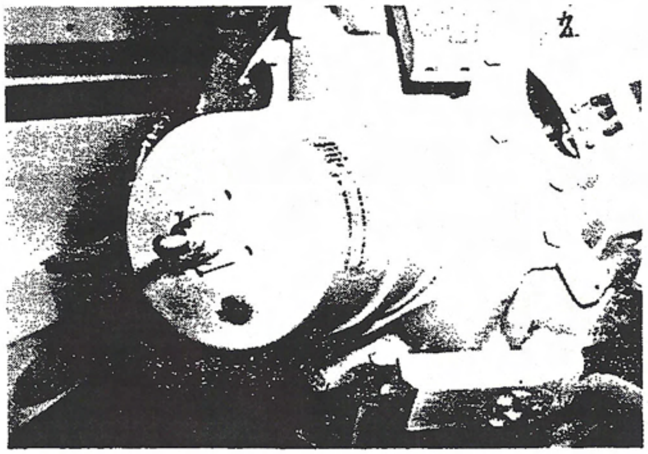
Propeller operation, servicing and maintenance instructions are contained in the propeller owner's manual furnished with your airplane.

WARNING

> When servicing a propeller, always make certain the ignition switch is off and that the engine has cooled completely. STAND IN THE CLEAR WHEN MOVING A PROPELLER. THERE IS ALWAYS SOME DANGER OF A CYLINDER FIRING WHEN A PROPELLER IS MOVED.

PROPELLER DOME AIR PRESSURE SETTING

The propeller spinner dome air pressure should be checked for sufficient pressure each 100 hours as follows:



Propeller Dome

1. Remove the cap on the propeller spinner.
2. Connect a dry air or nitrogen supply line to the air valve and fill to 80 psi. This should be done at 70°F.

NOTE

Increase 2 psi for every 10 degrees of temperature increase. Decrease 2 psi for every 10 degrees of temperature decrease.

PROPELLER BLADE BEARING LUBRICATION

1. Remove the propeller spinner.
2. Remove the safety wire and covers from the four grease zerks.
3. Lubricate by placing the grease gun fitting on one zerk of each blade and filling until the grease is visible from the zerk opening on the opposite side of the blade. The zerk on the opposite side must be removed.
4. Clean the excess grease from the propeller, reinstall the grease zerk covers and safety.
5. Reinstall the spinner.

INDUCTION AIR FILTERS

The induction air filters should be cleaned every 50 hours of operation and replaced every 500 hours. In extremely dusty conditions the filter should be inspected frequently for cleaning if needed.

To remove and clean the filters:

1. Open the access door on the right side of each nacelle.
2. Slide out the filters.
3. Clean the filter per manufacturer's instructions printed on the edge of the filter, and replace.

LANDING GEAR

MAIN WHEEL JACKING

Individual main wheels may be jacked by placing a floor jack under the jacking point located under each axle.

SHOCK STRUTS

The shock struts are filled with compressed air and hydraulic fluid. The same procedure is used for servicing both the main and nose gear shock struts. To service a strut, proceed as follows:

1. Remove the air valve cap and depress the valve core to release the air pressure.

WARNING

Do not unscrew the air valve assembly until the air pressure has been released or it may be blown off with considerable force, causing injury to personnel or property damage.

2. Remove the air valve assembly.
3. Compress the strut and fill through the air valve assembly hole with hydraulic fluid until the fluid overflows (approximately one pint).
4. Cycle the strut from full extension to compressed and refill. Repeat until no more fluid can be added to the strut in the compressed position.

NOTE

Cycling of the shock strut is necessary to expel any trapped air within the strut housing.

5. Install the air valve assembly.
6. With the aircraft resting on the ground and the fuel cells full, inflate the nose gear strut until 4-1/16 to 4-5/16 inches of the piston are exposed and inflate the main gear until 3 inches of the piston are exposed. Rock the aircraft gently to prevent possible binding of the piston in the barrel while inflating.

NOTE

It is recommended that the nose strut inflation dimension and the tire inflation pressure be carefully adhered to. Properly inflated tires and struts reduce the possibility of ground damage occurring to the propellers. Exercise caution when taxiing over rough surfaces.

7. The shock strut piston must be clean. Remove foreign material by wiping the strut with a cloth containing hydraulic fluid.

CAUTION

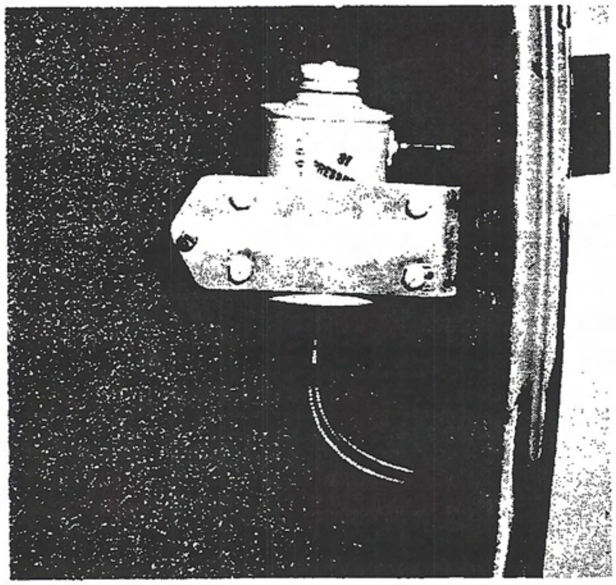
If a compressed air bottle containing air under extremely high pressure is used, exercise care to avoid over-inflation of the strut.

WARNING

NEVER FILL SHOCK STRUTS WITH OXYGEN.

BRAKES

The brake fluid reservoir, accessible through the forward baggage compartment door, is hinged on the aft frame of the door. Loosening the screw securing the reservoir to the



Brake Fluid Reservoir

aircraft structure allows the reservoir to swing out for easy servicing. Fill the reservoir with hydraulic fluid to the full mark on the dipstick. Maintain the fluid level between the "add" and "full" marks.

CAUTION

Do not overfill.

A brake wear indicator pin is attached to the pressure plate on each brake. The pin moves with the pressure plate as the brakes are applied. When the brakes are applied and the indicator pin is flush with its bushing, the lining has reached its wear limit.

PARKING BRAKE

The brakes are set for parking by pulling out the parking brake control and depressing the pilot's brake pedals to pressurize the system. Do not attempt to lock the parking brake by applying force to the parking brake handle; it controls a valve only and cannot apply pressure to the brake master cylinders.

CAUTION

Do not set the parking brake control when the brakes are hot from severe use or during low temperatures when an accumulation of moisture may cause the brakes to freeze.

TIRES

The main wheel tires are 6.50 x 8, 8 ply tubeless or tube type, rim-inflated or 19.5 x 6.75-8, 10 ply rated, tube, rim-inflated type. The nose wheel tire is a 15 x 6.00 x 6, 4 ply, tube type. A maximum outside diameter of 15 inches on the nose wheel tire is required to ensure proper clearance of the nose wheel shock absorber assembly. Inflate the nose wheel tire to 47 to 50 psi, and the main wheel tires to 69 to 75 psi on the 8 ply tire and 76 to 82 psi on the 10 ply rated tire. If necessary to comply with runway landing restrictions, main gear tire inflation pressure may be reduced to 65 psi. Maintaining recommended tire inflation will help to avoid damage from landing shock and contact with sharp stones and ruts, and will minimize tread wear. When inflating tires, inspect them visually for cracks, breaks or evidence of internal damage.

NOTE

Beech Aircraft Corporation cannot recommend the use of recapped tires. Recapped tires have a tendency to swell as a result of the increased temperature generated during takeoff. Increased tire size can jeopardize proper function of the landing gear retract system, with the possibility of damage to the landing gear doors and retract mechanism.

FUEL SYSTEM

The fuel system consists of an inboard and outboard leading edge fuel cell, a box section fuel cell and a nacelle fuel cell. The fuel cells in each wing are interconnected and filled through one flush-type filler cap, located in the outboard leading edge fuel cell.

When filling the aircraft fuel cells, always observe the following:

1. Service the fuel cells with 100/130 (Green) octane fuel or, if not available, use 115/145 (Purple) octane fuel.

2. Make certain the aircraft is statically grounded to the servicing unit.

3. Do not fill fuel cells near open flame or within 100 feet of any open, energized electrical equipment capable of producing sparks.

4. Do not insert the fuel nozzle more than 3 inches into the filler neck; to do so may cause damage to the rubber fuel cell.

Most fuel injection system malfunctions can be attributed to contaminated fuel. Inspecting and cleaning the fuel strainers should be considered to be of the utmost importance as a regular part of preventive maintenance.

Normally the fuel strainers should be inspected and cleaned every 100 hours. However, the strainers should be inspected and cleaned at more frequent intervals depending on service conditions, fuel handling equipment, and operation in localities where there is excessive sand or dust.

Open each of snap-type fuel drains daily to allow condensed moisture to drain from the system.

NOTE

If the cells are to remain unfilled for 10 days or more, apply a thin coating of light engine oil to the inside surface of the cell to prevent deterioration and cracking.

OIL SYSTEM

The engines are equipped with a wet sump, pressure type oil system. Each engine sump has a capacity of 13 quarts. The oil system may be checked through access doors in the engine cowling. A calibrated dip stick attached to the filler cap indicates the oil level. Due to the canted position of the engines, the dip sticks are calibrated for either right or left engines and are not interchangeable.

The oil should be changed every 100 hours under normal operating conditions and the oil filter changed every 50 hours. Lycoming specifies that only ashless dispersant oil be used in the engines. The oil drain is accessible through the cowl flap opening. The engines should be warmed to operating temperature to assure complete draining of the oil. Moisture that may have condensed and settled in the oil sump should be drained occasionally by opening the oil drain plug and allowing a small amount of oil to escape. This is particularly important in winter, when the moisture will collect rapidly and may freeze.

The oil grades listed in the Approved Oil Grades Chart are general recommendations only, and will vary with individual circumstances. Lycoming Service Instruction 1014E specifies only ashless dispersant multi-grade lubricants are to be used in the Dukes TIO-541 series engines. At operating temperatures above 60°F (15°C), multi-grade lubricants equivalent to SAE 50 or SAE 60 should be used. At temperatures below 30°F (-1°C), multi-grade lubricants equivalent to SAE 40 are recommended.

OXYGEN SYSTEM

To service the oxygen system, remove the protective cap from the filler valve located in the nose baggage compartment (or in the aft fuselage).

WARNING

Keep fires, cigarettes and sparks away when outlets are in use. Open and close all oxygen valves slowly. Make certain the oxygen shutoff valve is in the closed position. Inspect the filler connection for cleanliness before attaching it to the filler valve. Keep tools, hands and components clean, as fire or explosion may occur when pure oxygen under pressure comes in contact with organic material such as grease or oil.

Attach a hose from an oxygen recharging cart to the filler valve. To prevent overheating, fill the oxygen system slowly by adjusting the recharging rate with the pressure regulating valve on the cart. The oxygen cylinder should be filled to a pressure of 1800 ± 50 psi at a temperature of 70°F. This pressure may be increased an additional 3.5 psi for each degree of increase in temperature. Similarly, for each degree of drop in temperature, reduce the pressure by 3.5 psi. When the oxygen system is properly charged, disconnect the filler hose from the filler valve and replace the protective cap.

OXYGEN CYLINDER RETESTING

Oxygen cylinders used in the airplane are of two types. Light weight cylinders, stamped "3HT" on the plate on the side, must be hydrostatically tested every three years and the test date stamped on the cylinder. This bottle has a service life of 4,380 pressurizations or fifteen years, whichever occurs first, and then must be discarded. Regular weight cylinders, stamped "3A", or "3AA", must be hydrostatically tested every five years and stamped with the retest date. Service life on these cylinders is not limited.

MINOR MAINTENANCE

CLEANING

CLEANING DEICE BOOTS

Keep the boots free of engine oil with a solution of neutral soap and water. Avoid scuffing the surface of the boot to protect the special conductive surface.

CAUTION

Deice boots may be damaged by dragging gasoline hoses over them or resting ladders or platforms against them. Protect these surfaces while working around them.

INTERIOR

The seats, rugs, upholstery panels, and headlining should be vacuum-cleaned regularly. Commercial foam-type cleaners or shampoos can be used to clean rugs, fabrics, and upholstery; the instructions on the containers should be followed carefully.

ENGINES

Clean the engines with kerosene, solvent, or any standard engine cleaning solvent. Spray or brush the fluid over the engine, then wash it off with water and allow to dry.

CLEANING AND CARE OF AIRCRAFT FINISH

Do not apply wax or polish for a period of 90 days after delivery to allow the paint to cure. Waxes and polish seal the paint from the air and prevent curing. For uncured painted surfaces, wash only with cold or lukewarm (never hot) water and a mild nondetergent soap. Any rubbing of the painted surface should be done gently and held to a minimum to avoid scratching the paint film.

After the paint cures, wash the airplane with a mild soap and water. Flush loose dirt away first with clear water. Harsh, abrasive, or alkaline soap or detergents which could cause corrosion or make scratches should never be used. Use soft cleaning cloths or chamois to prevent scratches when cleaning and polishing. Any good grade automobile wax may be used to preserve painted surfaces. To remove stubborn oil and grease, use a soft cloth dampened with naphtha. However, after cleaning with naphtha, the surface should be rewaxed, and polished.

CLEANING PLASTIC WINDOWS

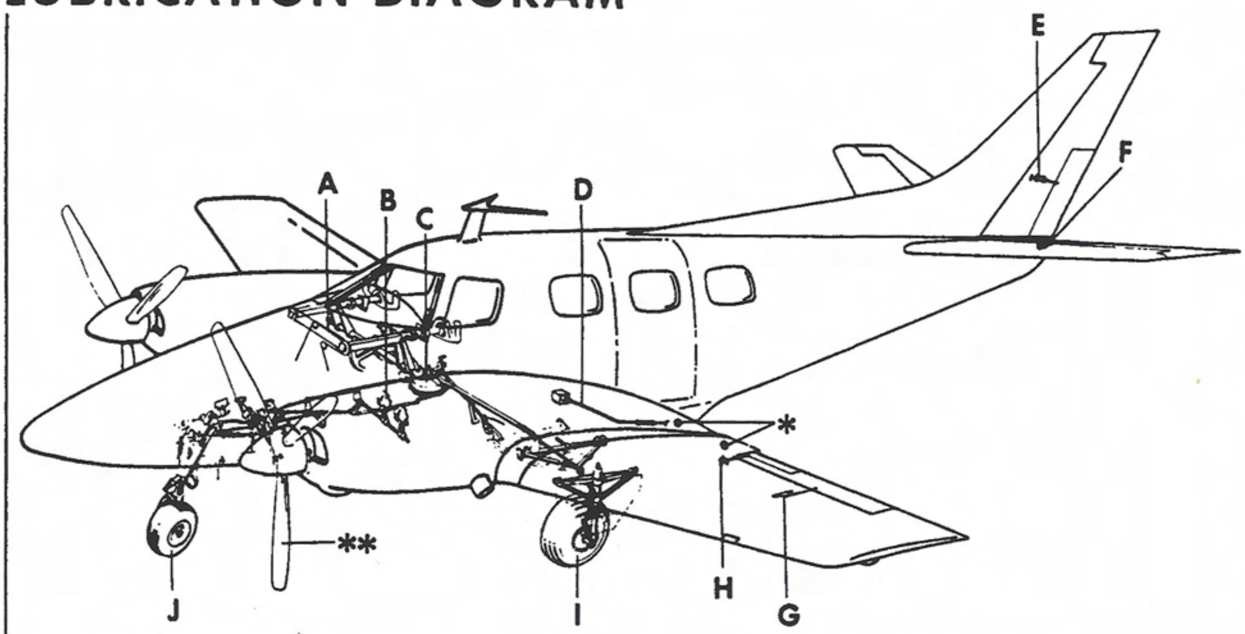
If a commercial cleaning compound for cleaning acrylic plastic windows is used, follow the instructions on the container. If a commercial cleaner is not available, clean as follows:

Cleaning of the acrylic plastic windows should never be attempted when dry. Flush the window with water or a mild soap solution and rub lightly with a grit-free soft cloth, chamois or sponge. Stubborn grease or oil deposits are readily removed with aliphatic naphtha or hexane. Rinse with clear water.

CAUTION

Do not use thinner or aromatic abrasive cleaners to clean the windows since the surface of the plastic may be damaged. Also, aliphatic naphtha and similar solvents are highly flammable, and extreme care must be taken when using them.

LUBRICATION DIAGRAM



NOTE

Apply MIL-G-7711 lubricating grease at all point of friction, in the cabin door, except where Oilite bearings are installed. The time interval for lubrication is as required.

* Flaps track rollers (pre-lubed sealed bearings). Pressure lubricate at 1000 hours inspection using MIL-G-23827 lubricating grease.

Precaution should be taken when using MIL-G-23827 and MIL-G-7711, since these greases contain chemicals harmful to painted surfaces.

** Hartzell DG grease is recommended for use in lubricating the blade bearings in the Hartzell Propeller. This grease will insure against a possible freeze up of the pitch change mechanism when prolonged flights are made at altitudes where the ambient temperature is below -20°C.

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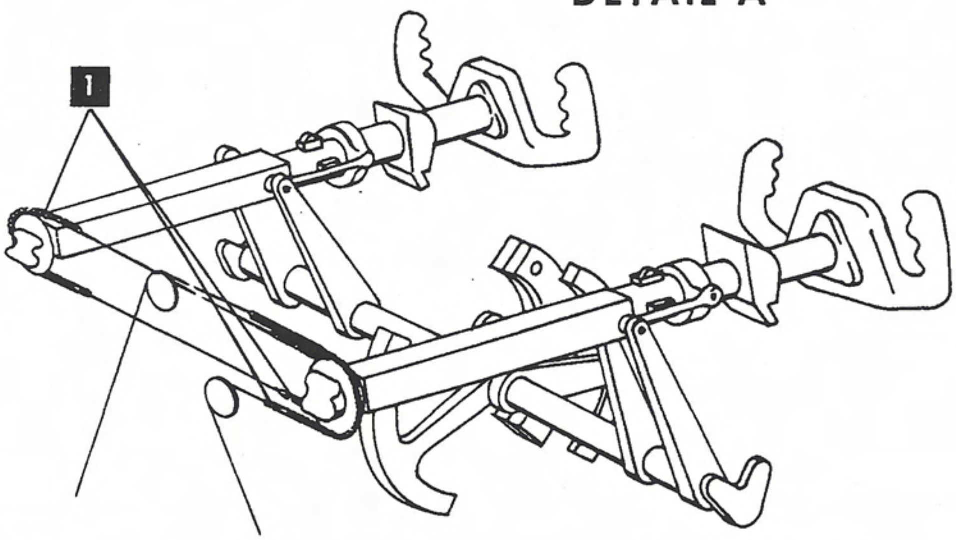
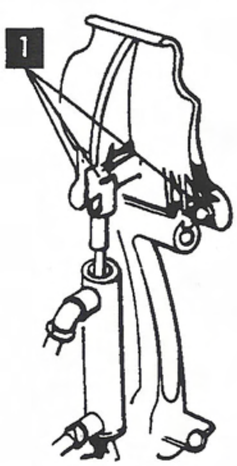
LUBRICATION POINTS

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	CONTROL COLUMN	DETAIL A		
1	Control column chain	SAE-20		100 hrs.

DETAIL A



DETAIL B



INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	RUDDER PEDALS	DETAIL B		
1	Pedals linkage	SAE-20		100 hrs.

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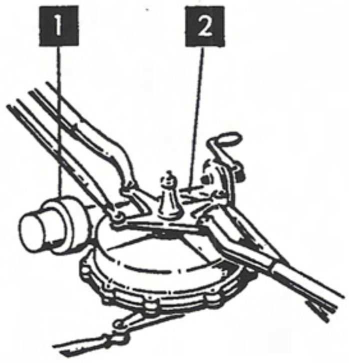
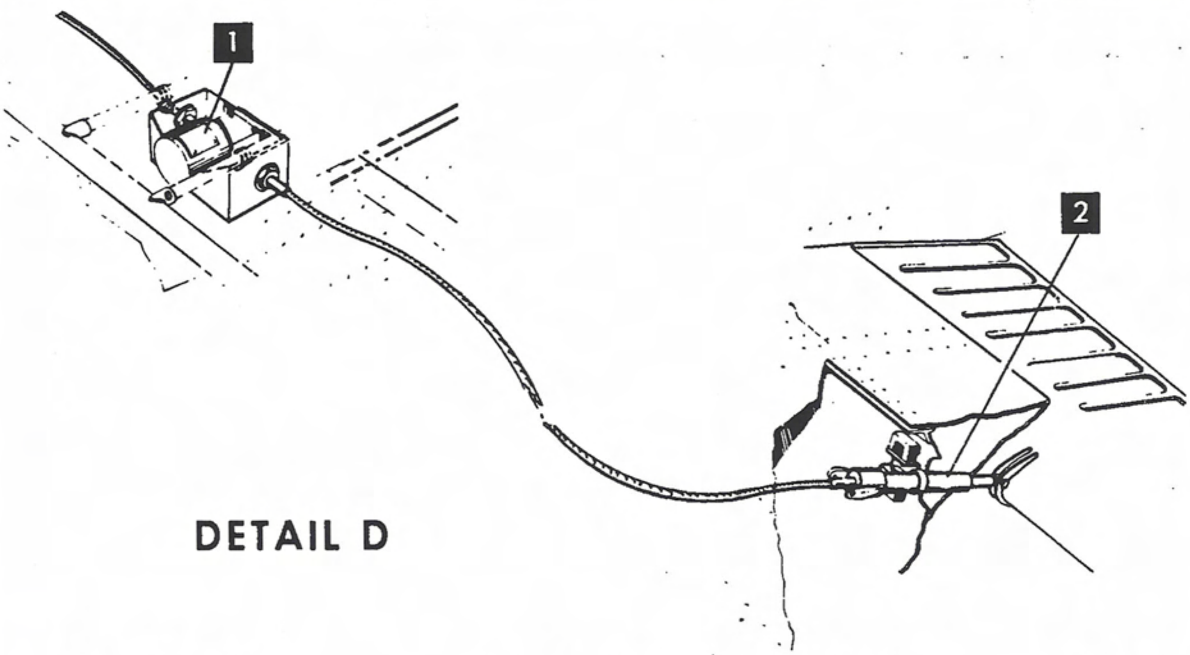
LUBRICATION POINTS

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	LANDING GEAR ACTUATOR	DETAIL C		
1	Landing gear motor gear box	MIL-G-7711		300 hrs.
2	Landing gear actuator gear box	Mobile Compound GG		300 hrs.

DETAIL C





DETAIL D

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	FLAP ACTUATOR	DETAIL D		
1	Flap motor gear box	MIL-G-23827		300 hrs.
2	Flap actuator	MIL-G-6086 Grade M		300 hrs.

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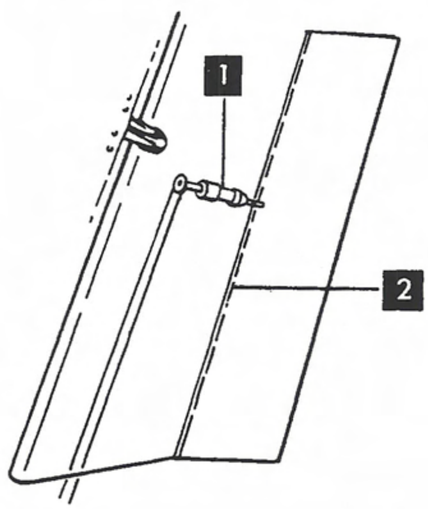
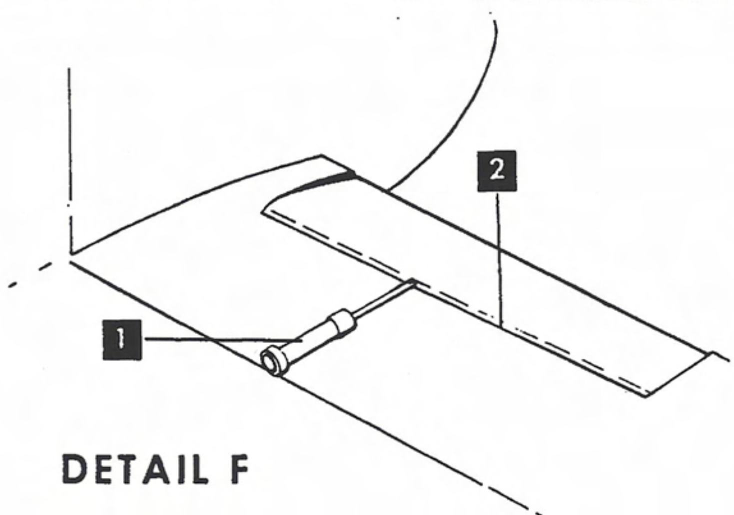
LUBRICATION POINTS

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	RUDDER TRIM	DETAIL E		
1	Rudder trim tab actuator	Aero Shell F		AR
2	†Rudder trim tab hinge	MIL-G-6711		100 hrs.

DETAIL E





DETAIL F

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	ELEVATOR TRIM	DETAIL F		
1	Elevator trim tab actuator	Aero Shell F		AR
2	†Elevator trim tab hinge	MIL-G-6711		100 hrs.

†Mix MIL-G-6711 with Naptha and apply with a brush.

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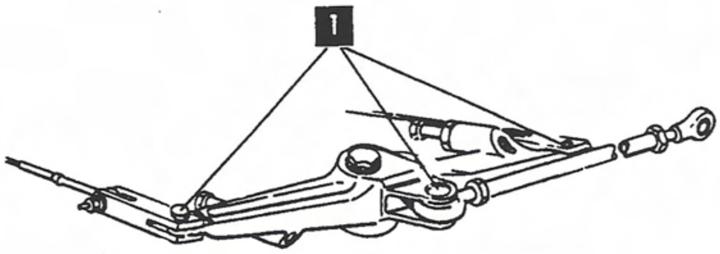
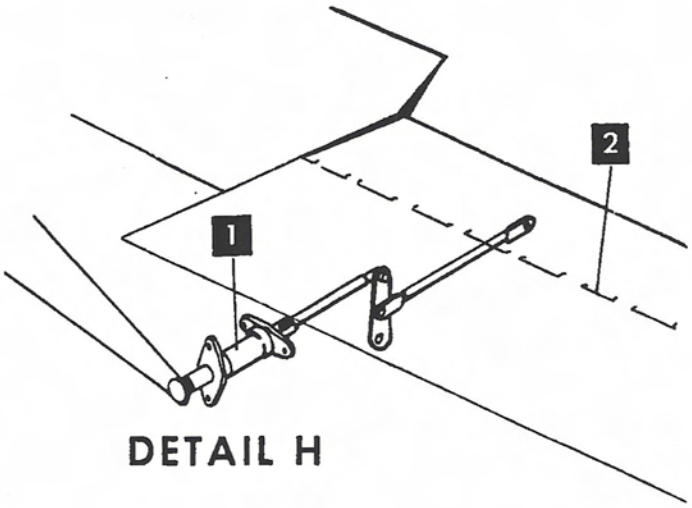
LUBRICATION POINTS

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	AILERON BELL CRANK	DETAIL G		
1	Aileron bell crank	SAE-20		100 hrs.

DETAIL G





DETAIL H

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	AILERON TRIM TAB	DETAIL H		
1	Aileron trim tab actuator	Aero Shell F		AR
2	†Aileron trim tab hinge	MIL-G-6711		100 hrs.

†Mix MIL-G-6711 with naptha and apply with a brush

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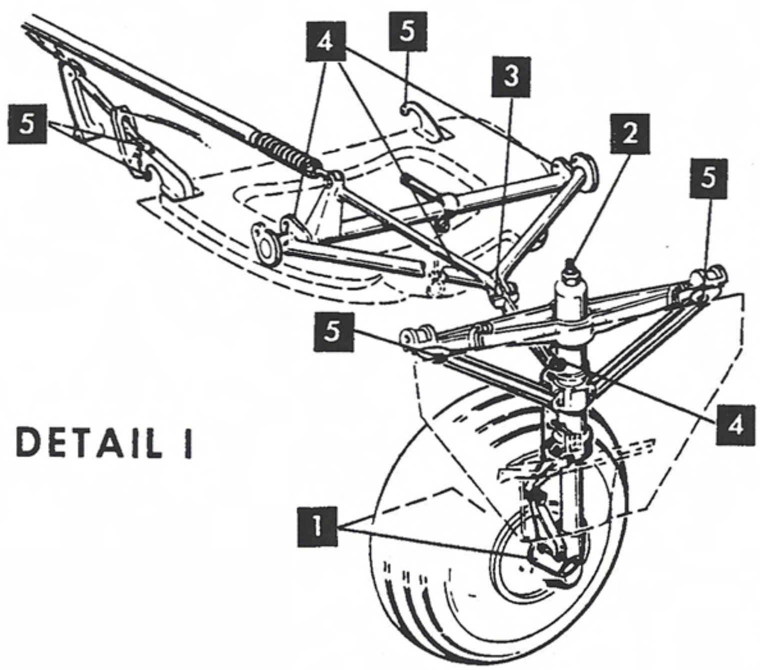
LUBRICATION POINTS

INDEX	LOCATION	LUBRICATION	APPLICATION	INTERVAL
	MAIN LANDING GEAR	DETAIL I		
1	Main wheel bearings	MIL-G-3545		100 hrs.
2	Main shock struts	MIL-H-5606		100 hrs.
3	Uplock rollers	SAE-20		50 hrs.



DETAIL I

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
4	Main retract fittings	MIL-G-7711		100 hrs.
5	Main gear door hinges	SAE-20		100 hrs.

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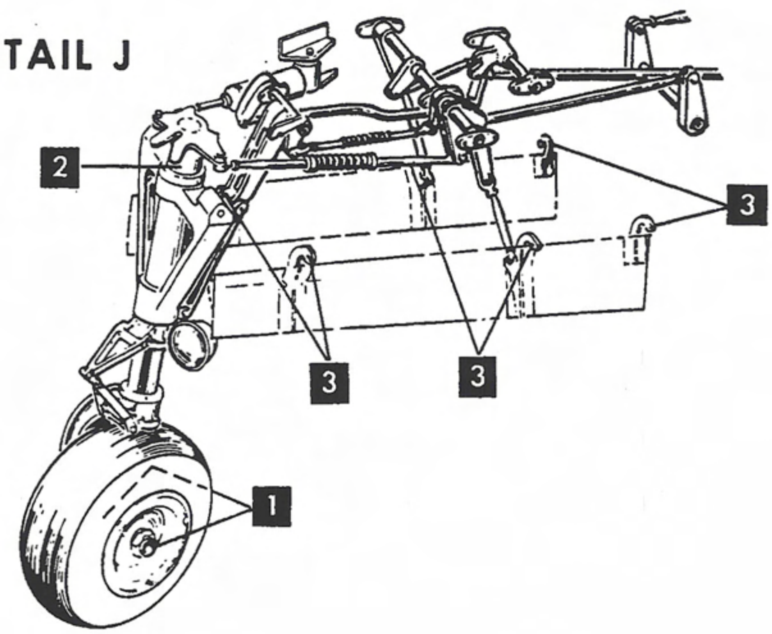
LUBRICATION POINTS

INDEX	LOCATION	LUBRICANT	APPLICATION	INTERVAL
	NOSE LANDING GEAR	DETAIL J		
1	Nose wheel bearings (2)	MIL-G-3545		100 hrs.
2	Nose shock strut (1)	MIL-H-5606		100 hrs.
3	Nose gear door hinges (6)	SAE-20		100 hrs.

DETAIL J



A60-604-13

RECOMMENDED SERVICING SCHEDULE

INTERVAL	ITEM	LOCATION (Letters refer to Lubrication Diagram)	SERVICE AND MATERIAL (Numbers Refer to Item in Consumable Materials)
Preflight	Drain Fuel Sump	Lower wing surface	
	Drain Fuel Strainer	Lower wing surface	
	Drain Fuel Tank	Lower wing surface	
	Drain Heater Fuel	Aft bulkhead of nose wheel well	
	Check Engine Oil Level	Access door on upper cowling	(2)
50 hrs.	Replace Engine Oil Filter	Right side of engine	
	Clean Induction Air Filter	Right rear side of engine	Clean per instructions on filter
	Lubricate Uplock Rollers	Each main landing gear (I)	SAE-20
100 hrs.	Change Engine Oil	Accessible through cowl flap opening	(2)
	Clean Engine Oil Screen	Engine oil sump	Clean with solvent and blow dry with air pressure at oil change.
	Check Battery Electrolyte	Access plate on rear of left nacelle	See Shop Manual
	Check Propeller Air Dome	Access cap on propeller spinner	Dry air or nitrogen
	Check Propeller Accumulator	Lower rear of engine	Dry air or nitrogen
	Clean Pressure System Inlet Air Filter	Forward side of aft engine baffle	Wash with soap and water, rinse and dry
	Clean Servo Fuel Filter	Fuel injection	Clean with solvent and blow dry with air pressure (9)
	Clean Cabin Altitude Control Filter	Right subpanel	Clean with solvent and blow dry with air pressure (9)
	Clean Static Air Button	Aft fuselage skin	Clean with solvent and wipe dry with clean rag (9)
	Clean Heater Fuel Pump Screen	Left wing stub	Clean with solvent and blow dry with air pressure (9)

RECOMMENDED SERVICING SCHEDULE (Continued)

INTERVAL	ITEM	LOCATION (Letters refer to Lubrication Diagram)	SERVICE AND MATERIAL (Numbers Refer to Item in Consumable Materials)
100 hrs.	Drain Static Air Line	On upholstery panel below copilot's subpanel	
	Service Main and Nose Landing Gear Struts	Top of each strut	Compressed air and (7)
	Lub Control Column Chain (A)	In cockpit	Lubricate with SAE-20
	Lub Rudder pedals (B)	In cockpit	Lubricate with SAE-20
	Lub Elevator Trim Tab Hinge (F)	On elevator	Lubricate with MIL-G-6711 (6)
	Lub Rudder Trim Tab Hinge (E)	On rudder	MIL-G-6711 (6)
	Lub Aileron Trim Tab Hinge (H)	On aileron	MIL-G-6711 (6)
	Lub Aileron Bell Crank (G)	Under cockpit floorboards	SAE-20
	Lub Main Wheel Bearings (I)	Main landing gear	MIL-G-81322 (5)
	Lub Main Shock Struts (I)	Main landing gear	MIL-H-5606 (7)
	Lub Main Retract Fittings (I)	Main landing gear	MIL-G-7711 (3)
	Lub Main Gear Door Hinges (I)	Main landing gear wheel well	SAE-20
	Lub Nose Wheel Bearings (J)	Nose landing gear	MIL-G-81322 (5)
	Lub Nose Shock Strut (J)	Nose landing gear	MIL-H-5606 (7)
	Lub Nose Gear Door Hinges (J)	Nose landing gear wheel well	SAE-20
	Lub Turbocharger Wastegate butterfly valve	Exhaust manifold forward at turbocharger	MOUSE MILK or KANO KROIL

RECOMMENDED SERVICING SCHEDULE (Continued)

INTERVAL	ITEM	LOCATION (Letters refer to Lubrication Diagram)	SERVICE AND MATERIAL (Numbers Refer to Item in Consumable Materials)
300 hrs.	Lub Landing Gear Motor Gear Box (C)	Under floorboards of cockpit	MIL-G-7711 (3)
	Lub Landing Gear Actuator gear box (C)	Under floorboards of cockpit	Mobile Compound GG
	Lub Flap Actuator (D)	Under floorboards of cabin	MIL-G-6086 Grade M (17)
	Lub Flap Motor Gear Box (D)	Under floorboards of cabin	MIL-G-23827 (4)
500 hrs.	Replace Pressure System Inline Air Filter	Right rear side of nacelle	
	Replace Induction Air Filter	Right rear side of nacelle	
As Required	Lub Rudder Trim Tab Actuator (E)	On rudder	Aero Shell F
	Lub Elevator Trim Tab Actuator (F)	On elevator	Aero Shell F
	Lub Aileron Trim Tab Actuator (H)	On aileron	Aero Shell F
	Brake Fluid Reservoir	Forward baggage compartment	MIL-H-5606, hydraulic fluid (7)
	Oxygen Cylinder	Forward baggage compartment	MIL-O-27210, aviators breathing (13) oxygen
	Air Conditioner Compressor Oil Level	See Shop Manual	Suniso No. 5 or Texaco Capella (18) E, 500 Viscosity oil
	Air Conditioner Refrigerant	See Shop Manual	Refrigerant No. 12 (19)

CONSUMABLE MATERIALS

The vendor products appearing in this table have been selected at random to help field personnel determine products conforming to the military specifications in this publication. The brand names are listed for ready reference and are not specifically recommended by Beech Aircraft Corporation. Any product which conforms to the referenced specification may be used.

ITEM	MATERIAL	SPECIFICATIONS	VENDOR PRODUCTS
1.	Fuel, Engine	100/130 (Green) Octane, if not available, use 115/145 (Purple)	
2.	Oil, Engine	MIL-L-22851	Ashless Dispersant Only
3.	Lubricating Grease (General Purpose)	MIL-G-7711	Regal AFB 2, Texaco Inc., 135 East 42nd Street, New York, 17, N.Y.
			Aeroshell Grease No. 6, Shell Oil Co., 50 West 50th Street, New York 20, N.Y.
			22442, International Lubricants Co., New Orleans, La.
4.	Lubricating Grease (Aircraft and Instruments, Low and High Temperature)	MIL-G-23827	Supermil Grease No. A72832, American Oil Co., 910 South Michigan Avenue, Chicago, Ill.
			Royco 27A, Royal Lubricants Co., River Road, Hanover, N.J.
			Aeroshell Grease 7, Shell Oil Co., 50 West 50th. St. New York 20, N.Y.
5.	Lubricating Grease (High Temp.)	MIL-G-81322	Mobil Grease 28, Mobil Oil Corp. Shoreham Bldg. Washington D.C. 20005
			Aeroshell Grease 5, Shell Oil Co., 50 West 50th St., New York 20, N.Y.
6.	Graphite, Lubricating	MIL-G-6711 or "Petrochem Chain Life"	GP-38 National Carbon Co. New York, N.Y.
			Ashland Chemical Co., P.O. Box 2260 Santa Fe Springs, California 90670
7.	Hydraulic Fluid	MIL-H-5606	Brayco 756D, Bray Oil Co., 3344 Medford Street, Los Angeles 63, California
			PED 3565, Standard Oil Co., of California, 225 Bush Street, San Francisco 20, California

CONSUMABLE MATERIALS (Continued)

ITEM	MATERIAL	SPECIFICATIONS	VENDOR PRODUCTS
8.	Anti-Ice Fluid	TT-I-735	Sherwood & Co., Wichita, Kansas
9.	Solvent	PD680	
10.	Soap Solution, Oxygen System, Leak-Testing	MIL-L-25567	
11.	Lubricant, Molybdenum Disulfide	MIL-M-7866	Molykote Z, Wilco Inc. Wichita, Kansas Molykote Z, Standard Oil of Kentucky Molykote Z, Hasker Seals Glendale, California Molykote Z, Alpha Molykote Corp. Stanford, Conn. Moly-Paul Number 4, K.S. Paul Products Ltd. London, England
12.	Oxygen Thread Compound Anti-Seige and Sealing, Oxygen Systems	MIL-T-5542	No. 15, Rector Well Equipment Co., Houston, Texas Dag 217, Acheson Colloies Co., Port Huron, Michigan Key Abso-Lute, Type B, Key Co., East St. Louis, Illinois
13.	Aviator's Breathing Oxygen	MIL-O-27210	
14.	Naphtha	TT-N-95	
15.	Methyl Ethyl Ketone	MIL-M-13999	
16.	Thread Locking Compound		Stud Loc, Loctite Corp. Newington, Conn.
17.	Lubricating Oil, Gear	MIL-L-10324A or MIL-L-6086 Grade M	Trojan Gear Oil 6086M Cities Service Oil Co., New York, New York Aeroshell Fluid 5M, Shell Oil Co., 50 West 50th Street, New York, N.Y. L-1195, Sinclair Refining Co., 600 Fifth Avenue, New York, N.Y.

CONSUMABLE MATERIALS (Continued)

ITEM	MATERIAL	SPECIFICATIONS	VENDOR PRODUCTS
18.	Oil (Air Conditioner Compressor)	Suniso No. 5	Virginia Chemical & Smelting Co., West Norfolk, Virginia
		Texaco Capella E (500 viscosity)	Texaco Inc., 135 East 42nd St., New York, N.Y.
19.	Air Conditioning Refrigerant	Dichlorodifluoro-methane Racon 12	Racon Inc. Wichita, Kansas
		Genetron 12	Allied Chemical Speciality Chemicals Division Morristown, New Jersey
		Freon 12	DuPont Inc. Freon Products Division, Wilmington Delaware 19898

NOTES

1. If 100/130 (Green) octane fuel is not available, 115/145 (Purple) octane fuel may be used as an alternate. Never use a lower octane fuel.
2. Mix item 10 with naphtha and apply with a brush.
3. Precautions should be taken when using MIL-G-23827 and MIL-G-7711, since these greases contain chemicals harmful to painted surfaces.
4. Flap track rollers (pre-lubed sealed bearings). Pressure lubricate at 1000 hour inspection using MIL-G-23827 lubricating grease.

APPROVED ENGINE OILS

(ASHLESS DISPERSANT OILS)

COMPANY	BRAND IDENTIFICATION
Delta Petroleum Company Incorporated	Global Concentrate A
Enjay Chemical Company	Paranox 160 and 165
Mobil Oil Corporation	RT-451, RM-178E, RM-180E
Shell Oil Company	Shell Concentrate A Code 60068 Aeroshell W120 Aeroshell W80
Texaco Incorporated	TX-6309 Aircraft Engine Oil Premium AD120 Aircraft Engine Oil Premium AD80
American Oil and Supply Company	PQ Aviation Lubricant 753
Chevron Oil Company	Chevron Aero Oil Grade 120
Humble Oil and Refining Company	Esso Aviation Oil E-120 Enco Aviation Oil E-120 Esso Aviation Oil A-100 Enco Aviation Oil A-100 Esso Aviation Oil E-80 Enco Aviation Oil E-80
Standard Oil Company of California	Chevron Aero Oil Grade 120

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LAMP REPLACEMENT GUIDE

LOCATION	PART NUMBER
Annunciator Panel Lights	327
Edge Lights	D158-100-5T1
Post Lights	327
Compass Light	327
Instrument Flood Lights (Red)	1846R
Instrument Flood Lights (White)	1846
Map Light	1495
Landing Gear Position Lights	327
Reading Lights	1495
Threshold Light	313
Nose Baggage Compartment Light	303
Navigation Lights (Wing)	1524
Navigation Light (Tail)	1683
Rotating Beacon (Upper And Lower)	A7079B24
Ice Light	A7796A24
Landing Lights	4596
Taxi Light (Nose Landing Gear)	4587