

01-90DS-1

AIRPLANE FLIGHT MANUAL
MODEL D18S
BEECH AIRCRAFT CORPORATION

Registration No. CF-HXU

Airplane Serial No. _____

Approved by

Charles F. Dypus

Director
Aircraft & Components Service
Feb. 9, 1948

Only those parts listed herein under the title 'Limitations' are mandatory by Civil Aeronautics Administration. All other information is recommended practice and may be considered as such.

Yes

CAA APPROVED OPERATING LIMITATIONS SUPPLEMENT NO. 1

II POWER PLANT OPERATING RESTRICTIONS

PROPELLER

Hartzell Three Bladed Full Feathering

| | |
|------------------|--------------------------------|
| Hub Design | HC-B3Z30-2D |
| Blade Design | 10160-6 or 10160B-6 |
| Setting | Low 17°; High 87°; 30" Station |
| Minimum Diameter | 95 inches |
| Maximum Diameter | 95 inches |

INSTRUMENT MARKINGS (POWER PLANT)

Tachometer (Hartzell Propeller Installation)

| | |
|-----------------|----------------|
| Red Arc | 1600-1800 rpm |
| Green Arc | 1800-2200 rpm |
| Yellow Arc | 2200-2300 rpm. |
| Red Radial Line | 2300 rpm |

Note: For continuous power application above 300 hp use minimum of 2100 rpm.

III OPERATING PROCEDURES

NORMAL PROCEDURE

Starting Engines

Propeller Control

High rpm (Hartzell)

Propeller Feathering Procedure

For aircraft equipped with Hartzell propellers: To feather, pull the prop pitch control through the detent to the full aft position. To unfeather, move the prop pitch control forward of the detent approximately one-third of the travel, then press the unfeathering button in and hold approximately five seconds. If windmilling does not start due to extremely low speeds it may be necessary to engage starter to start windmilling.

IV PERFORMANCE INFORMATION

(With Hartzell propellers installed performance is equal to that shown for Hamilton Standard hydromatic propellers.)

V WEIGHT AND BALANCE INFORMATION

WEIGHT LIMITS

Hartzell Propeller

8750 pounds

January 13, 1959

404-180152

Approved: *Harold H. Herms*
 For Chief, Aircraft Engineering Division

404-180152

HARTZELL PROPELLER COMPANY
SUPPLEMENTARY LOG OF REVISIONS
FOR BEECH D18 S

| Rev. No. | Date of Revision | Page No. Involved | Signature of CAA Representative Approving Revision | Remarks |
|----------|------------------|-------------------|--|---|
| 1 | 10/23/1957 | 4, 9, 10 | <i>J. G. Saure</i> | Hartzell Propeller Installation with Unfeathering System |
| 2 | 12/5/1957 | 10, 11 | J. G. Saure | Alternate Unfeathering procedure (Air-Plang without Unfeather-Plang Kit; added to Page 10; Addition of Page 11. |

40

Yes

LOG OF REVISIONS
D18S

| Revision No. | Page No. | Date | Approved by |
|--------------|----------|------------|--|
| 1 | 1 | 7/12/1948 | <i>J. D. Ludwig</i> for W ^m . H. Weeks |
| 2 | 10 | 11/25/1952 | |
| | 10A | 11/25/1952 | |
| | 10B | 11/25/1952 | |
| | 1A | 11/25/1952 | <i>J. D. Ludwig</i> for W ^m . H. Weeks |

CF-HXL

Yes

RECORD OF REVISION

Revision No. Date Page Numbers Supt.'s Approval

I

Yes

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I AIRPLANE OPERATING LIMITATIONS

WEIGHT AND CENTER OF GRAVITY LIMITATIONS

For the weight and center of gravity limitations, See Section 5.

AIRSPEED LIMITATIONS

| | |
|-------------------------------------|--------------|
| Never Exceed Speed | 257 MPH TIAS |
| Design Cruising Speed | 205 MPH TIAS |
| Maneuvering Speed | 153 MPH TIAS |
| Maximum Landing Gear Extended Speed | 125 MPH TIAS |
| Flaps Extended Speed | 120 MPH TIAS |
| Minimum Controllability | 95 MPH TIAS |

CATEGORY AND MANEUVERS

This is a normal category airplane and is intended for non-aerobatic, non-scheduled passenger, and non-scheduled cargo operation.

Flight Load Factors

The airplane is designed to withstand the following flight load factors at the maximum design weight of 9000 pounds given in terms of accelerations:

| | Maximum Positive | Maximum Negative |
|-----------|------------------|------------------|
| Maneuvers | + 3.363 | - 1.345 |
| Gusts | + 3.300 | - 1.000 |

And, the following flight load factors at the minimum design weight of 6487 lbs.:

| | | |
|-----------|---------|---------|
| Maneuvers | + 3.363 | - 1.345 |
| Gusts | + 3.611 | - 1.610 |

FLAP POSITION

| | |
|----------|-----|
| Take-Off | 0° |
| Enroute | 0° |
| Landing | 45° |

OPERATING PLACARDS (except Power Plant)

No acrobatic maneuvers, including spins, approved.
All intentional acrobatic maneuvers prohibited.

This airplane must be operated in compliance with the Operating Limitations specified in C.A.A. Approved Airplane Operating Limitations.

'LAVATORY DOOR'

'This room not to be occupied during take-off and landing.'

Center of Gravity Limitations (Landing Gear Extended)

✓ 109.8" (18.9% MAC)
to ✓ 117.7" (27.1% MAC)

INSTRUMENT MARKING (except Power Plant)

Airspeed Indicator

The following information is given to enable the owner to mark and understand the markings on the airspeed indicator:

Red Line
Yellow Arc
Green Arc
White Arc

257 MPH TIAS
205 to 257 MPH TIAS
85 to 205 MPH TIAS
78 to 120 MPH TIAS

The never-exceed speed is the maximum safe airspeed for airplane operation and is marked on the airspeed indicator by a radial red line. A yellow arc extends from the never-exceed speed to the design cruising speed, and a green arc extends the cruising speed to the approximate stalling speed with the wing flaps retracted (minimum speed at which flight is possible). The lower limit of the white arc is the approximate stalling speed with the power off and the flaps extended. The upper limit of the white arc is the highest speed at which it is advisable to operate the airplane with the flaps extended without incurrence of structural damage to the flaps.

Elevator Tab Indicator

Green (normal flight)

0 to 1°

De-Icer Pressure Indicator

Red Line
Green Arc
Red Line

9 lbs.
9 to 7 lbs.
7 lbs.

II POWER PLANT OPERATING LIMITATIONS

ENGINE DESIGNATION, POWER & RPM LIMITS

Engine Make Pratt & Whitney Wasp Jr.
Engine Model R985 - SB-3, AN14B, SB-2, AN4, B5

Take Off Power

Sea Level
 450 BHP - 36.5 in Hg. at
 2300 RPM - Limit one minute

Meto Power

Sea Level
 5000 ft.
 400 BHP - 34.5 in Hg. at 2200 RPM
 400 BHP - 33.5 in Hg. at 2200 RPM

TEMPERATURE LIMITS

Oil Temperature

Minimum Allowable 40° C 104° F
 Maximum Allowable 93.3° C 200° F

Cylinder Temperature

Minimum for Take-Off 106.2° C 225° F
 Maximum Allowable ~~284.4° C~~ 500° F
 260

Carburetor Mixture Thermometer

Icing Danger Region -10° to 3° C 14° - 37° F

PRESSURE LIMITS

Fuel Pressure

Minimum 3 PSI
 Maximum 5 PSI

Manifold Pressure

Normal Operating 18 in. Hg.
 Maximum Allowable 36.5 in. Hg.

De-Icer Pressure

Minimum Operating 7 PSI
 Maximum Operating 9 PSI

Yes 3

D-18S Beech Aircraft
Aircraft Spec. A-765.

Oil Pressure

Minimum Idling
Maximum Allowable

50 PSI
90 PSI

FUEL OCTANE RATING

87

PROPELLER

Hartzell, Three Bladed, Feathering Propeller

Hub Design

HC-93Z30-~~ZE~~
10/60-B6
10152-5 $\frac{1}{2}$

Blade Design

Pitch Settings (30" Station)

| | | |
|-----------|-----------|------------------------|
| Low | - - - - - | 18° |
| High | - - - - - | NO STOP WHEN OPERATING |
| Feathered | - - - - - | 88° |

Minimum Diameter

95 $\frac{1}{2}$ inches

Maximum Diameter

95 $\frac{1}{2}$ inches

INSTRUMENT MARKINGS (Power Plant)

Oil Temperature

| | |
|--------------------------------|-------------------------|
| Red Line (Minimum Allowable) | 40°C (104°F) |
| Yellow Arc (Minimum Operating) | 40° to 60°C (104-140°F) |
| Green Arc (Normal Operating) | 60° to 75°C (140-167°F) |
| Yellow Arc (Maximum Operating) | 75° to 93°C (167-200°F) |
| Red Line (Maximum allowable) | 93° (200°F) |

Cylinder Temperature

| | |
|---------------------------------|----------------------------|
| Red Line (Minimum for Take-off) | 106°C (225°F) |
| Yellow Arc (Minimum Operating) | 106° to 150°C (225°-302°F) |

Cylinder Temperature (Continued)

| | | |
|--------------------------------|----------------|----------------|
| Green Arc (Normal Operating) | 150° to 232° C | 302° to 450° F |
| Yellow Arc (Maximum Operating) | 232° to 287° C | 450° to 550° F |
| Red Line (Maximum Allowable) | 287° C | 550° F |

Oil Pressure

| | |
|--------------------------------|--------------|
| Red Line (Minimum Idling) | 50 PSI |
| Yellow Arc (Minimum Operating) | 50 to 70 PSI |
| Green Arc (Normal Operating) | 70 to 90 PSI |
| Red Line (Maximum Allowable) | 90 PSI |

Fuel Pressure

| | |
|------------------------------|-----------|
| Red Line (Minimum Operating) | 3 PSI |
| Green Arc (Normal Operating) | 3-5 PSI |
| Red Line (Maximum Operating) | 10/65 PSI |

Carburetor Mixture Thermometer

| | | |
|------------|--------------|--------------|
| Yellow Arc | -10° to 3° C | 14° to 37° F |
|------------|--------------|--------------|

Fuel Mixture

| | |
|--|------|
| Red Line (Minimum permissible) at 70% Power, | .076 |
|--|------|

Manifold Pressure

| | |
|--------------------------------|---------------------|
| Green Arc (Normal Operating) | 18 to 34.5 in Hg. |
| Yellow Arc (Maximum Operating) | 34.5 to 36.5 in Hg. |
| Red Line (Maximum Take-Off) | 36.5 in. Hg. |

Tachometer

| | |
|---|--|
| Green Arc (Normal Operating) | 1800 to 2200 RPM |
| Yellow Arc (Maximum Operating) | 2200 to 2300 RPM |
| Red Line (Maximum Allowable) | 1600-1800 2300 RPM <i>Hartzell Propellers</i> |

Normal Procedure

Starting Engines

- Parking Brakes On
- Wing Flaps Up
- Cowl Flaps Open
- Fuel Selector Valve Front Tanks
- Mixture Control Full Rich
- Oil By-Pass Winter, Up
- Oil Shutter Summer, Down
- Propeller Control Winter, Down
- Throttle Control Summer, Up
- Master Ignition Switch High Pitch (Counterweight)
- Battery and Generator Switches Low Pitch (Hydromatic)
- Engine Selector 1/4 Open
- On On
- On Engine to be Started

Operate wobble pump to obtain 3 to 5 lbs. fuel pressure. Select and prime desired engine, then operate the starter solenoid switch and the ignition booster switch. After two or three revolutions of the propeller turn ignition switch on 'Both'.

If oil pressure does not register in 10 to 30 seconds, shut off engine and investigate.

Engine Warm Up and Ground Check

Warm up engine at 800 to 1200 RPM.

- Mixture Controls Full Rich
- Propeller Controls Low Pitch
- Cowl Flaps Open

Check temperature and pressure limits. Oil temperature must be 40°C, 104°F before opening the throttles above 1200 RPM.

Set throttle for 30 in. Hg. and operate propeller through its range at least once. Check magnetos at 30 in. Hg. - Normal drop 50 to 75 RPM; Maximum drop 100 RPM. Do not exceed 232°C, 450°F cylinder head temperature.

Take-Off

- Propeller Controls Low Pitch
- Mixture Controls Full Rich
- Carburetor Heat Cold
- Oil Shutter Regulate to maintain oil temperature within limits.
- Oil By-Pass Closed
- *Fuel Selector Valves Front Tanks
- Tail Wheel Locked

* See Fuel System Fig. 1

Take-Off (Continued)

Cowl Flaps
Wing Flaps
Throttle
Brakes

Open
Up
Open
Off

Do not exceed 36.5 in. Hg. at 2300 RPM (Sea Level Operation).

Airplane should become airborne between 84 and 90 MPH.

Retract landing gear as soon as steady flight is established; obtain 105 MPH TIAS quickly.

Cowl Flaps

Open as required to cool

Climb

Cowl Flaps

Open as required to cool, using desired power in accordance with engine operating manual. Do not exceed 34.5 in Hg. at 2200 RPM.

Check Pressure and Temperature Limits.

Mixture
Best Climb Speed

Full Rich
120 MPH TIAS

Cruise

Cruise with power as desired in accordance with engine operating manual.

Do not exceed 30 in. Hg. at 2000 RPM.

Cowl Flaps
Mixture

Closed
Lean (not below .07 fuel-air ratio)

Glide

Use cruise RPM.

Mixture Control
Cowl Flaps

Full Rich
Closed

Approach and Landing

Fuel Selector Valves
Mixture Controls
Cowl Flaps
Gear, Down Maximum Speed
Flaps, Down Maximum Speed

*Front Tank
Full Rich
Open
120 MPH TIAS
120 MPH TIAS

Propeller Controls

Low Pitch

Use small amount of power on approach. Approach speed is approximately 105 MPH TIAS. Contact speed is approximately 80 MPH TIAS.

Taxiing

Wing Flaps
Cowl Flaps
Tail Wheel

Up
Open
Unlocked

Stopping Engines

Mixture Controls
Throttle Controls
All Switches and Valves

Idle Cut-Off
Open slowly as engine stops
Off after engine stops.

FUEL SYSTEM

Take-Off and Landing

All take-offs and landings should be made from the front tanks unless the remaining fuel is insufficient for further safe operation.

Suction Cross-Feed

Off

Normal Flight Operation

Use fuel from tanks in the following sequence:

Nose Tank (If Installed)
Rear Wing Tanks
Front Wing Tanks

Suction Cross-Feed

Off

When switching from one fuel tank to another, the fuel pressure should be observed. If the pressure drops below 3 lbs. operate the wobble pump to maintain proper fuel pressure.

* See Fuel System Fig. 1.

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Aircraft Spec. A-765.

OIL SYSTEM

Oil By-Pass

Warm Weather Starting
Cold Weather Starting

Cold (pushed in)
Hot (pulled out)

Oil Shutter Control

Regulate to maintain the proper
oil temperature.

NOTE: The oil shutter controls should be closed (down position)
when oil by-pass controls are on hot (pulled out).

ELECTRICAL SYSTEM

Ignition Master Switch
Battery Master Switch
Generator Switches

On
On
On

LANDING GEAR OPERATION

When the landing gear switch is operated to the 'Up' or 'Down'
position, the signal lights indicate:

Green Light On
No Light Showing
Red Light Showing

Landing Gear Down
Intermediate Position
Landing Gear Up

When the warning horn is sounding with the throttles closed,
the landing gear is in the intermediate or retracted position.

WING FLAP OPERATION

Actuate the wing flap switch to the 'Up' or 'Down' position.
The position of the flaps is shown on the flap position in-
dicator located on the instrument panel.

ONE ENGINE INOPERATIVE

Engine Control Setting

Throttle Controls Open
Propeller Controls Low Pitch
Mixture Controls Full Rich

When inoperative engine is definitely determined:

Propeller, Inoperative Engine Decrease RPM
Feather Hartzell Propeller (See Propeller Feathering Procedure)
Propeller, Operative Engine 2200
Throttle, Operative Engine 34.5 in Hg.
Throttle, Inoperative Engine Closed
Mixture, Operative Engine Best Power-.085
Mixture, Inoperative Engine Idle Cut-Off
Flaps, Operative Engine Open
Maximum Cylinder Head Temperatures 550° F

Fuel System Control for Single Engine Operation

| | |
|-----------------------------------|---------------|
| Tank Selector, Operative Engine | Fulllest Tank |
| Tank Selector, Inoperative Engine | Off |
| Suction Cross Feed | Off |

Unless necessary to use fuel from opposite wing tanks. Refer to Fig. Then, Suction Cross Feed Trim airplane to fly hands off by adjusting the trim tabs.

PROPELLER FEATHERING PROCEDURE

Make certain the inoperative engine is definitely determined before feathering the propeller.

Operating Engine - Throttle "OPEN" to maintain altitude and airspeed.

Inoperative Engine - Throttle "CLOSED"

Propeller Control "Feathered" (Cannot be Feathered
under 500 RPM)

Mixture Control - Idle Cut-Off

Ignition switches - Off

Electric fuel pump (if in use) - Off

Main fuel valve - OFF

Unfeathering Procedure (Inoperative Engine)

Main fuel valve - ON

Throttle - Closed

Mixture control Idle Cut-Off

Ignition switches - OFF

Mixture - Full Rich

Set Propeller Control and throttle to Intermediate RPM for 2 to 4-Minute Engine Warm-Up
Re-synchronize Engines.

H4U ALTERNATE UNFEATHERING PROCEDURE *H4U*

(Airplanes without unfeathering kit or inoperative unfeathering kit.)

Inoperative Engine

Main fuel valve "ON"

Throttle "CLOSED"

Mixture control "Rich or Full Forward"

Move propeller control out of feathered position

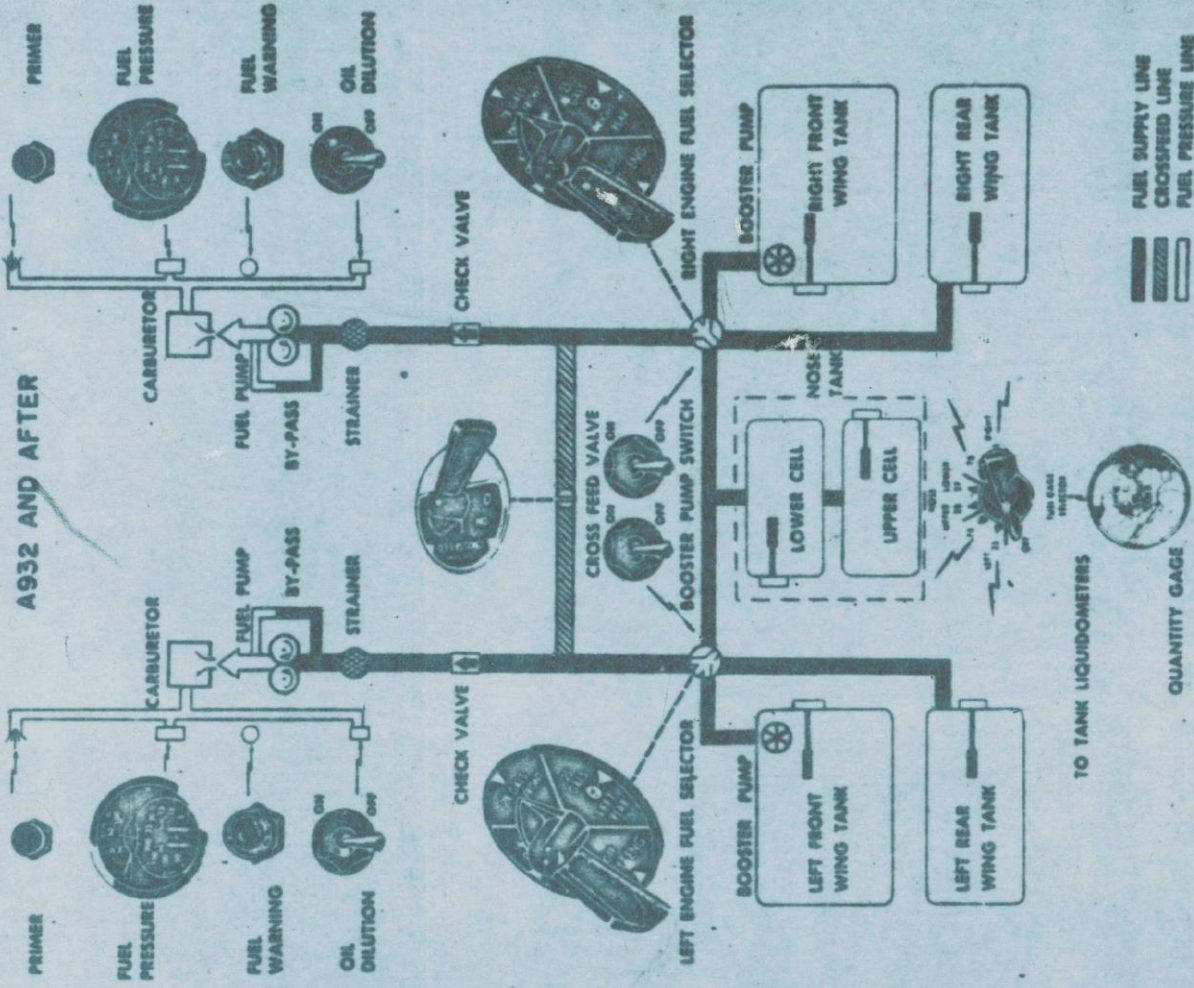
Ignition switches "ON"

Start Engine with starter

Set propeller control and throttle to Intermediate RPM
for 2 to 4-Minute Engine Warm-Up

Re-synchronize Engines

FUEL SYSTEM DIAGRAM



FUEL SYSTEM.

The fuel system basically is an individual system for each engine, interconnected by a suction cross-feed valve. In each system there is a front fuel tank, which has a submerged electric fuel booster pump; and a rear fuel tank; both located in the wing root. In the nose is a tank, comprised of two fuel cells (upper and lower) which is a part of both systems. The nose cells are separated for ease of installation, but are interconnected and drain through a common sump. Fuel quantities for each tank and cell is read on a single instrument.

NOTE

The engines will not operate on gravity pressure alone, if both engine and boost pumps fail, since the tanks are so near the same level as the carburetors.

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Aircraft Spec. A-765.

FIRE EXTINGUISHER OPERATION

Any indication of an engine being on fire:

Select the correct engine by rotating the selector valve.
Pull the red handle with a quick snap.

EMERGENCY OPERATION OF FUEL SYSTEM

To Supply Both Engines from Left Tank:

Left Tank Selector Valve
Right Tank Selector Valve
Suction Cross Feed Valve

On Desired Tank
Off
On

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To Supply Both Engines from Right Tank:

Left Tank Selector Valve
Right Tank Selector Valve
Suction Cross Feed Valve

Off
On Desired Tank
On

To Supply Either Engine from Left Tank:

Left Tank Selector Valve
Right Tank Selector Valve
Suction Cross Feed Valve

On Desired Tank
Off
On

To Supply Either Engine from Right Tank:

Left Tank Selector Valve
Right Tank Selector Valve
Suction Cross Feed

Off
On Desired Tank
On

EMERGENCY OIL OPERATION

Oil Shut-Off Control

Pull out the control to shut off the supply at the engine.

EMERGENCY ELECTRICAL OPERATION

Ignition Switch

Off - Disconnects the entire ignition system.

Master switch throw 'off' - will simultaneously throw the battery switches and the generator switches to disconnect the batteries and generators from the electrical system.

CIRCUIT BREAKER OPERATION

A trip free circuit breaker is installed in the landing gear motor circuit and in each of the generator circuits. The landing gear breaker is directly beneath the pilot's seat on the floorboards. The generator circuit breakers are on the inboard side of the generator control boxes, which are directly behind the pilot's and copilot's seats. On late model airplanes the generator control boxes have been moved into the wing stubs and the circuit breakers are located on the side-walls of the cabin to the left of the pilot's seat and to the right of the copilot's seat. These circuit breakers may be reset by pushing the red button after the overload has been corrected. A non-trip free, toggle action circuit breaker is installed in the propeller feathering switch circuit directly in front of the propeller feathering switch. In case of an overload, the circuit breaker may be overpowered and the circuit manually closed.

EMERGENCY OPERATION OF LANDING GEAR

Turn the landing gear switch to 'Off' position.
Turn the generator and battery master switches to 'Off' position.
Raise the landing gear clutch cover guard.
Depress the landing gear clutch.
Engage the handcrank by pulling out toward the copilot's seat.
Rotate as indicated by the placard on the floor.
Release the clutch pedal when the gear is down.

EMERGENCY OPERATION OF LANDING GEAR (Continued)

The clutch teeth must engage when the clutch pedal is released. If they do not, as indicated by the clutch pedal remaining forward, move handcrank back and forth slightly until pedal snaps back.

EMERGENCY OPERATION OF FLAPS

Turn the flap operating switch to 'Off' center position.
Engage the handcrank by pushing it toward the pilot's seat.
Rotate the handcrank in the direction indicated by the placard on the floor.

IV PERFORMANCE INFORMATION

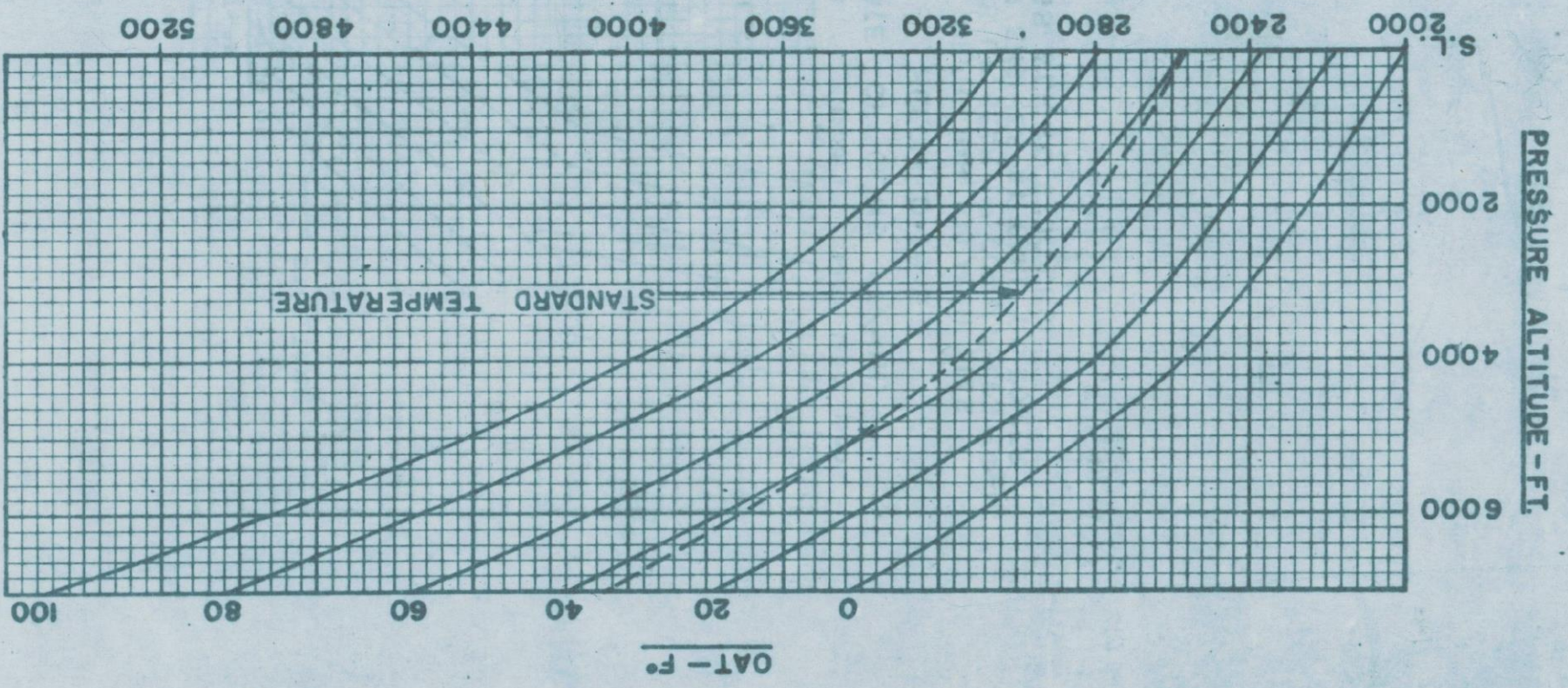
CHARTS

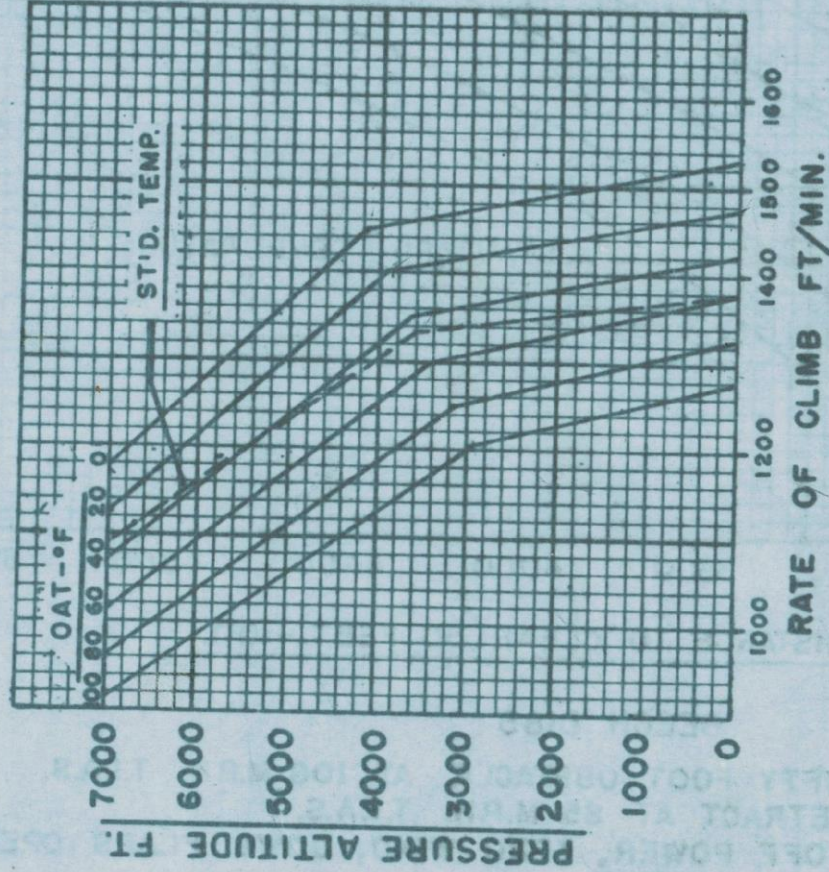
- Take-Off Data
- Take-Off Climb
- Normal Climb
- Balked Landing Climb
- One Engine Inoperative Climb
- Stall Data
- Landing Data
- Crosswind Component
- Airspeed Calibration
- Power Curve

TAKE OFF OVER FIFTY FOOT OBSTACLE AT 108 M.P.H. T.I.A.S.
 GEAR START TO RETRACT AT 85 M.P.H. T.I.A.S.
 FLAPS UP, TAKE OFF POWER, ZERO WIND, COWL FLAPS OPEN
 GROSS WT. - 8750 LBS.

BEECH D18S

TAKE OFF DISTANCE TO CLEAR 50 FEET - (FT.)

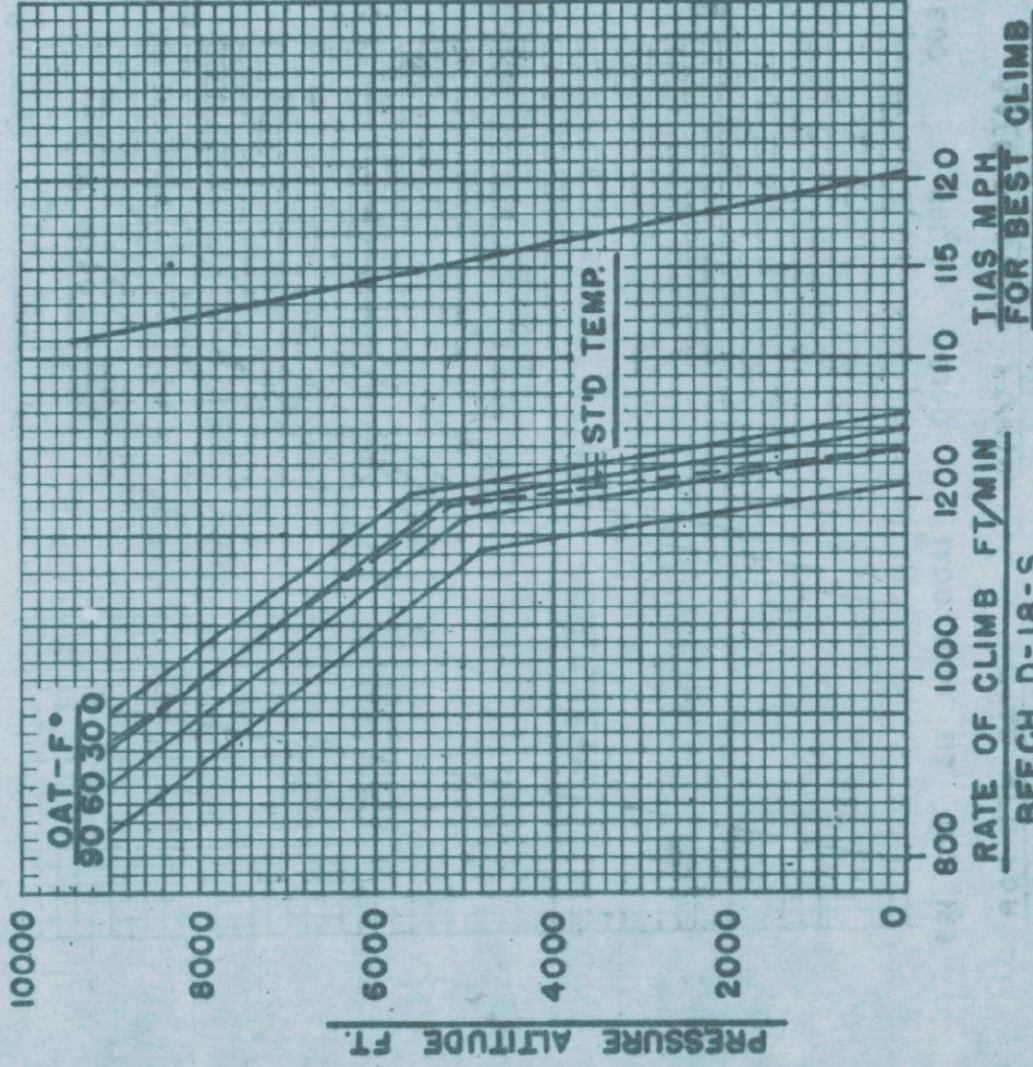




BEECH D-18-S

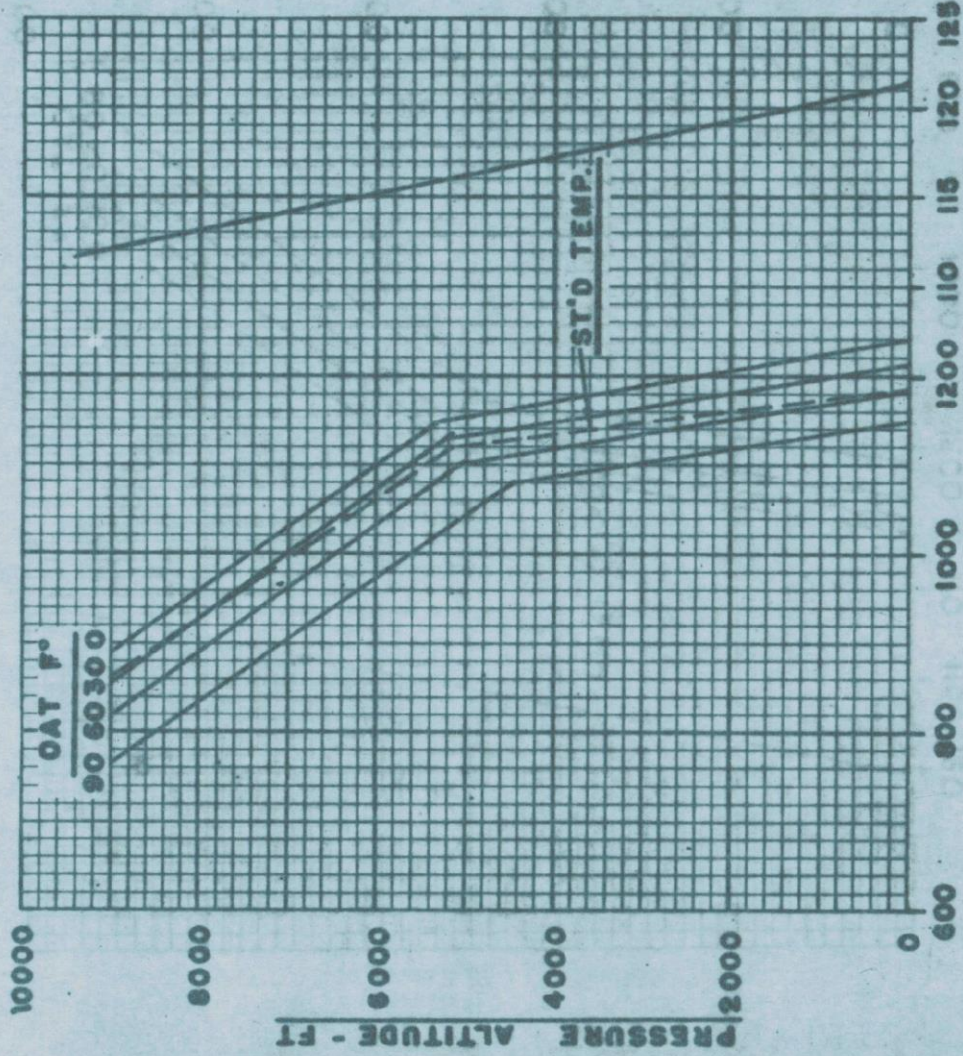
**TAKE OFF CLIMB, 108 MPH TIAS
 FLAPS UP, GEAR UP, COWL FLAPS OPEN
 BOTH ENGINES AT TAKE OFF POWER
 GROSS WEIGHT 8750 LBS.**

4900



BEECH D-18-S
NORMAL CLIMB
FLAPS UP GEAR UP COWL FLAPS OPEN
BOTH ENGINES AT MAXIMUM CONTINUOUS POWER
GROSS WEIGHT 8500 LBS.

720



RATE OF CLIMB FT/MIN.

BEECH D-18-S

NORMAL CLIMB

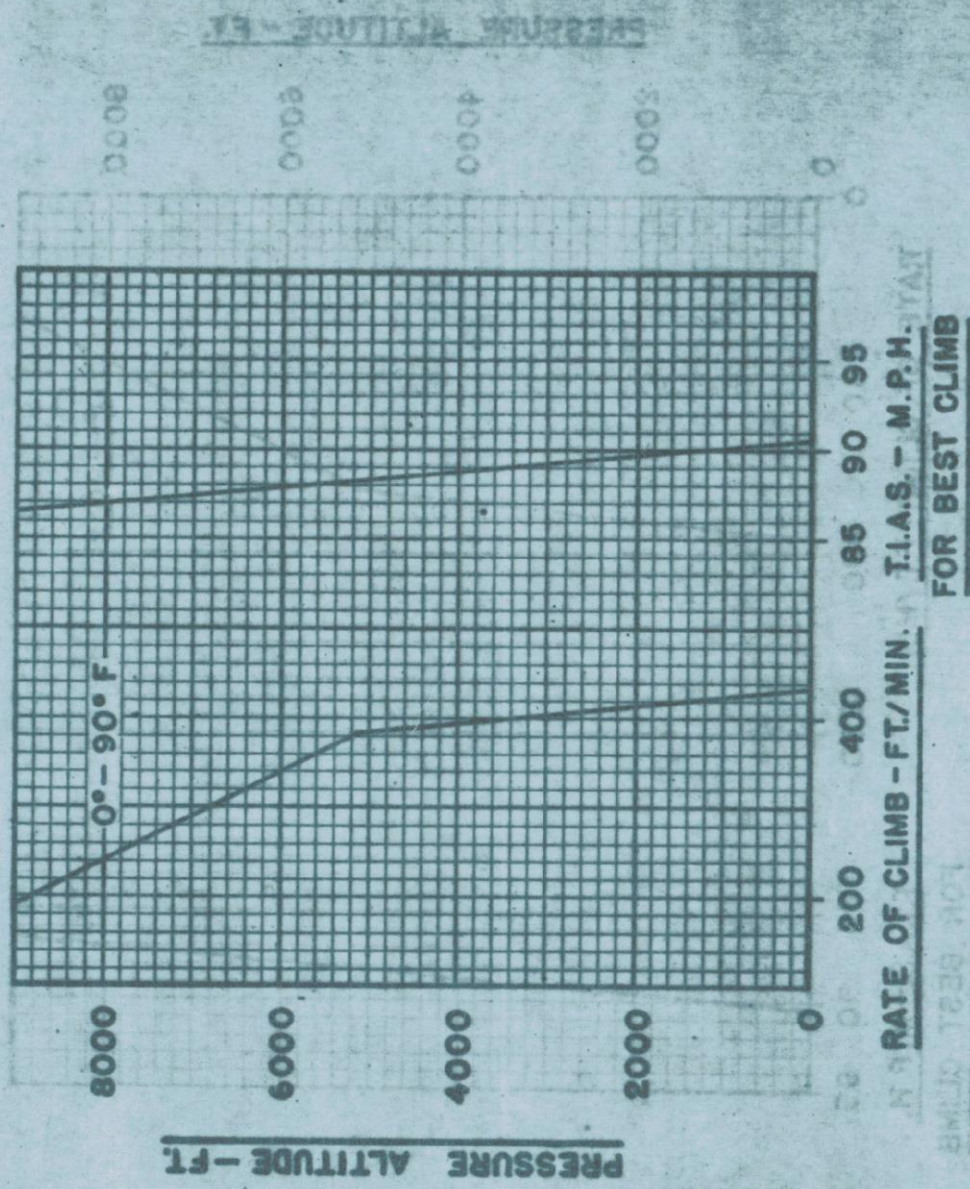
FLAPS UP, GEAR UP, COWL FLAPS OPEN

BOTH ENGINES AT MAXIMUM CONTINUOUS POWER

GROSS WEIGHT 9750 LBS.

TIAS MPH FOR

BEST CLIMB

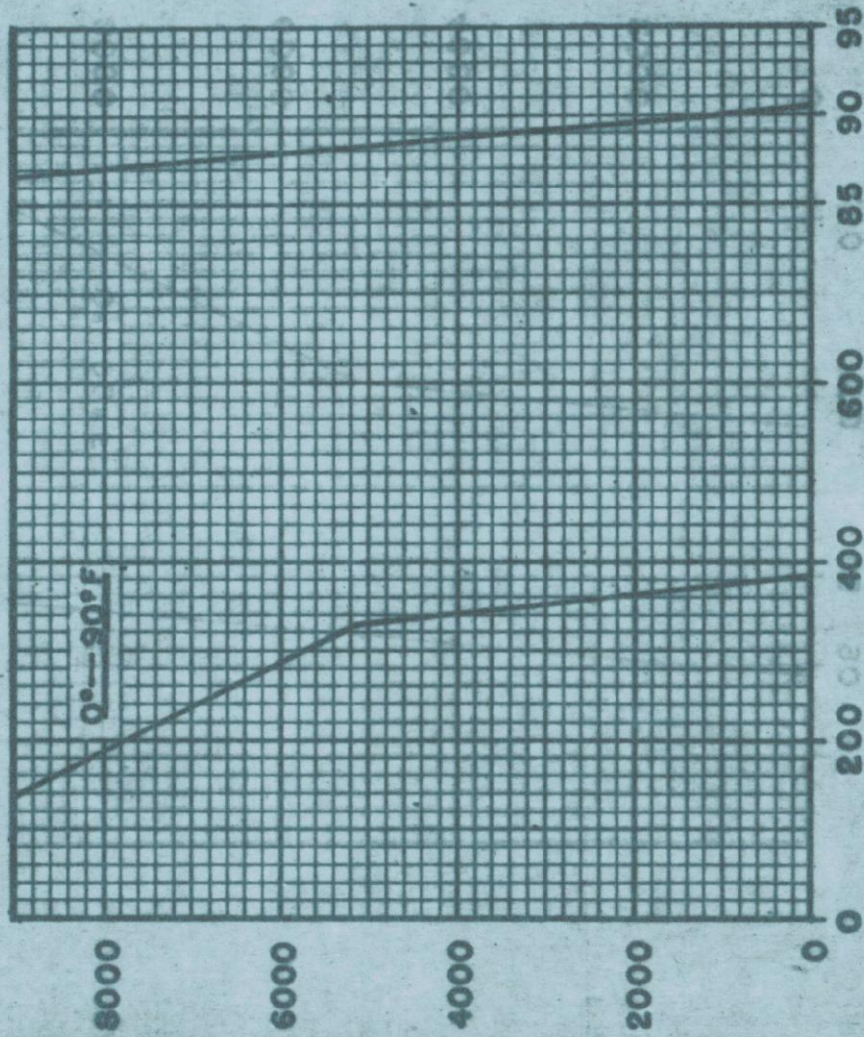


BEECH D18S

BALKED LANDING CLIMB.
 FLAPS 45°, GEAR DOWN, COWL FLAPS OPEN
 MAXIMUM CONTINUOUS POWER - BOTH ENGINES
 GROSS WT. 8500 LBS.

NOTE: TAKE OFF POWER IS AVAILABLE FOR THIS CLIMB SEGMENT.

720



PRESSURE ALTITUDE - FT.

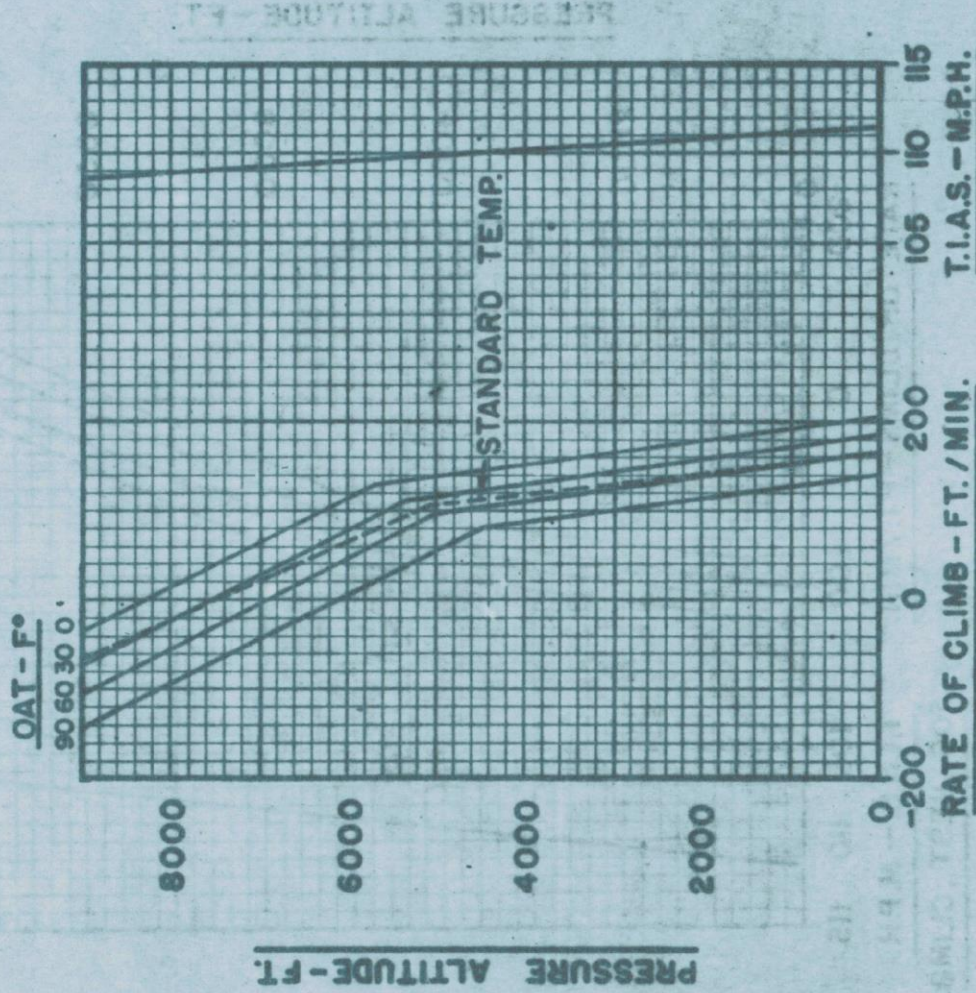
0 200 400 600 800 95
 RATE OF CLIMB FT./MIN. T.I.A.S. - M.P.H.

FOR BEST CLIMB

BEECH DIBS

BALKED LANDING CLIMB
 FLAPS 45°, GEAR DOWN, COWL FLAPS OPEN
 MAXIMUM CONTINUOUS POWER - BOTH ENGINES
 GROSS WT. 8750 LBS.

NOTE: TAKE OFF POWER IS AVAILABLE FOR THIS CLIMB SEGMENT.



BEECH D18S 7.10MB

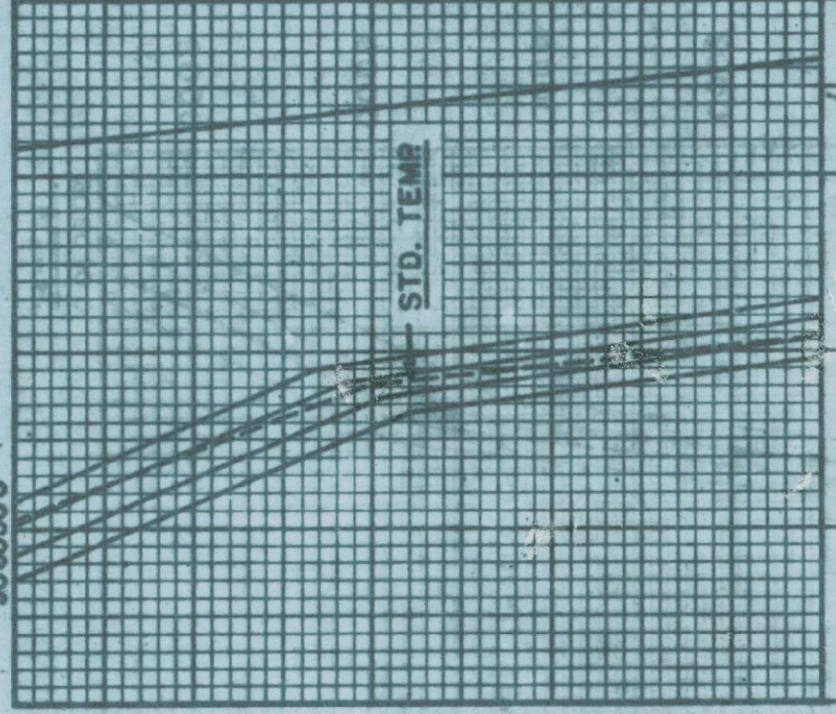
SINGLE ENGINE CLIMB
GEAR UP, FLAPS UP, COWL FLAP OPEN
INOPERATIVE ENGINE - PROPELLER IDLING
IN HIGH PITCH

OPERATING ENGINE - MAX. CONTINUOUS POWER
GROSS WT. 8500 LBS.

700

OAT-°F

9060300



PRESSURE ALTITUDE - FT.

PRESSURE ALTITUDE - FT.

STD. TEMR

RATE OF CLIMB - FT./MIN.

T.I.A.S. - M.P.H.

FOR BEST CLIMB

BEECH D18S

SINGLE ENGINE CLIMB
GEAR UP, FLAPS UP, COWL FLAPS OPEN
INOPERATIVE ENGINE - PROPELLER FEATHERED
OPERATING ENGINE - MAX. CONTINUOUS POWER
GROSS WT. 8750 LBS.

OPERATING ENGINE - MAX. CONTINUOUS POWER
GROSS WT. 8750 LBS.

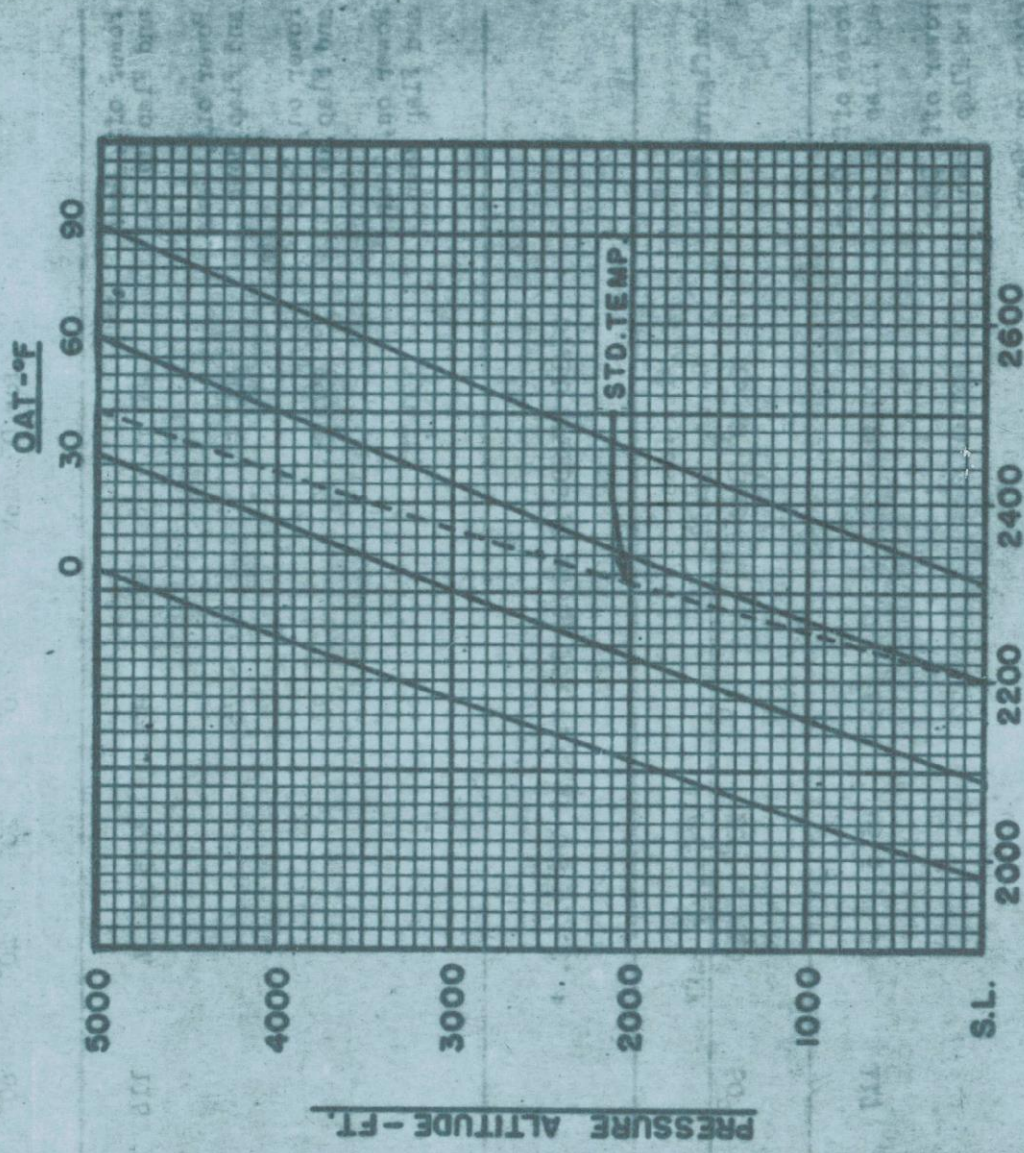
STALL SPEEDS AT 8500# FOR C.G. AT 16% M.A.C. *

| Configuration | Alt. Loss During Stall for 0° Bank | ANGLE OF BANK | | |
|----------------------------------|--|---------------|------|---------|
| | | 0° | 20° | 40° 60° |
| Power off, Gear and Flap up | 400 ft. | 82 | 84.5 | 94 116 |
| Power off, Gear and Flap down | 400 ft. | 76 | | |
| Power on, Gear and Flap up | 250 ft. | 71 | | |
| Power on, Gear and Flap down | 350 ft. | 64 | | |

STALL SPEEDS AT 8750# FOR C.G. AT 16% M.A.C. *

| Configuration | Alt. Loss During Stall for 0° Bank | ANGLE OF BANK | | |
|----------------------------------|--|---------------|------|---------|
| | | 0° | 20° | 40° 60° |
| Power off, Gear and Flap up | 400 ft. | 83 | 85.5 | 95 117 |
| Power off, Gear and Flap down | 400 ft. | 77 | | |
| Power on, Gear and Flap up | 250 ft. | 72 | | |
| Power on, Gear and Flap down | 350 ft. | 65 | | |

* Stall speeds are given in M.P.H., T.I.A.S.



HORIZONTAL DISTANCE - FT.

LANDING DISTANCE OVER 50 FT.

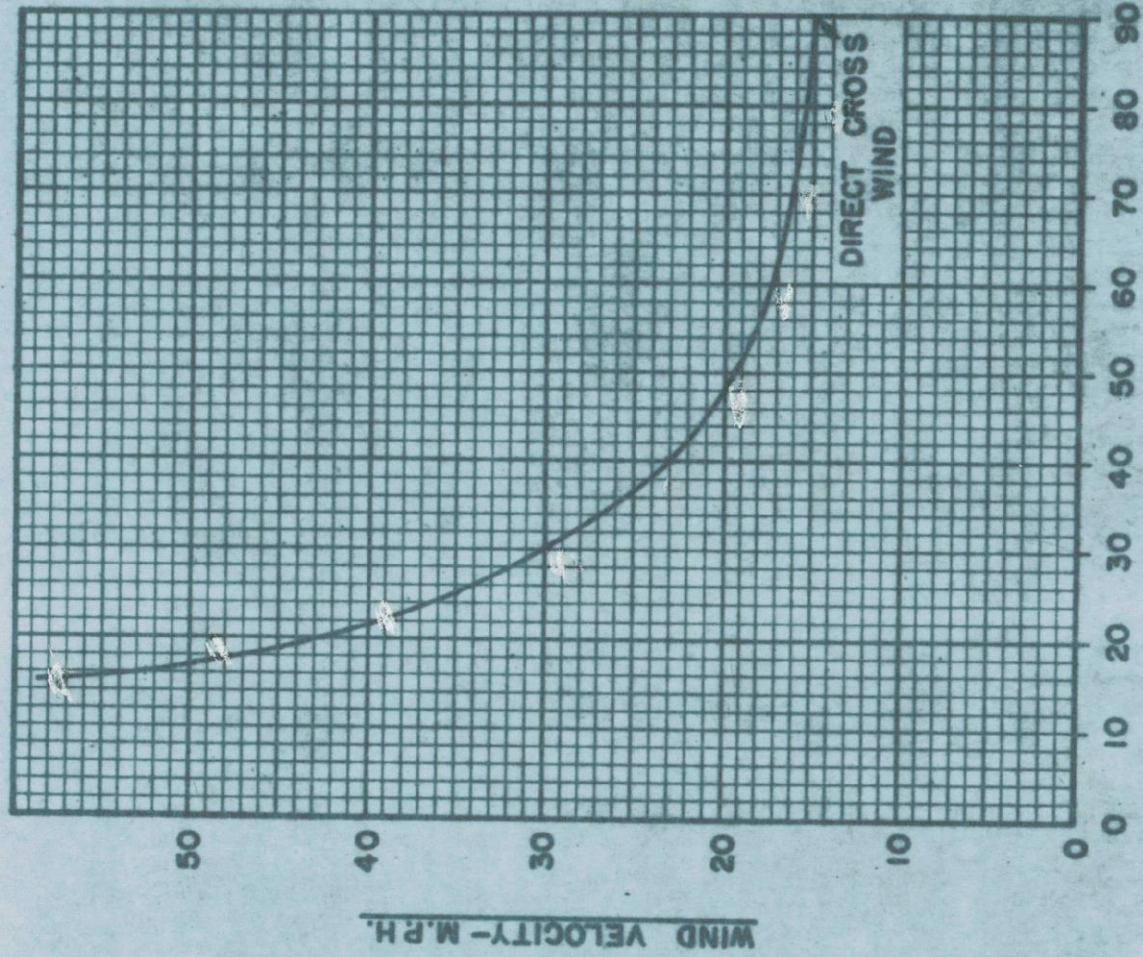
GEAR DOWN FLAPS 45°

APPROACH SPEED - 100.4 MPH. T.I.A.S.

ZERO WIND

GROSS WT. - 8750 LBS.

yes



ANGLE FROM DIRECT HEAD WIND
 MAXIMUM CROSS WIND VELOCITY
 AND ANGLE FOR SAFE GROUND HANDLING
 8750 GROSS WT.

4/10

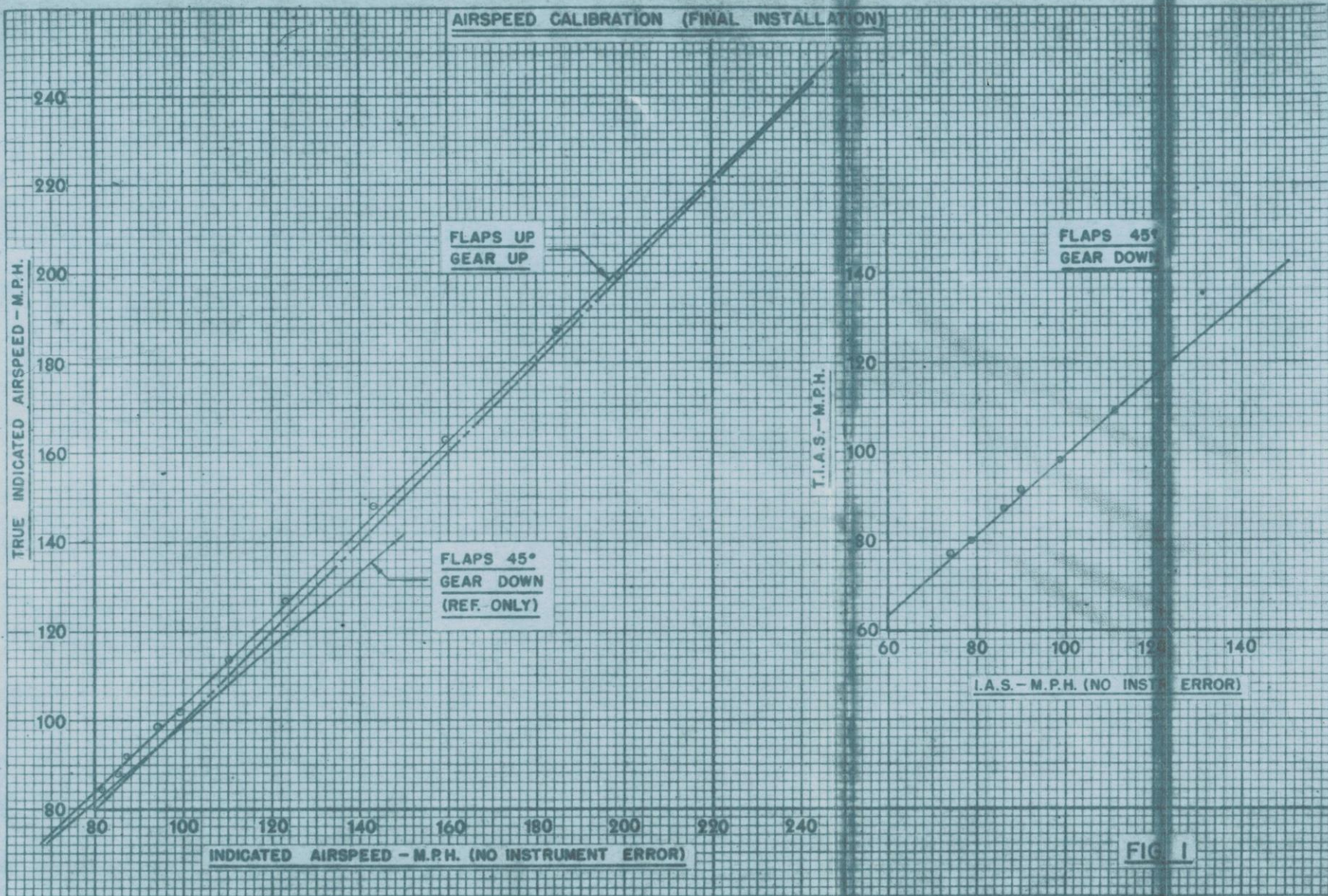


FIG 1

C-E

SEA LEVEL CALIBRATION

ALTITUDE CALIBRATION

WITHOUT HOTSPOT HEAT

PRATT & WHITNEY AIRCRAFT

ENGINE WASP JR R-985 58,582

PROPELLER GEAR RATIO D.D.

COMPRESSION RATIO 6:1

BLOWER GEAR RATIO 10:1

IMPELLER DIA. INCHES 6.875

CARBURETION

FUEL AVIATION GRADE 91

DATE 6-26-36

REVISED: 5-19-39, 12-5-40, 6-9-41

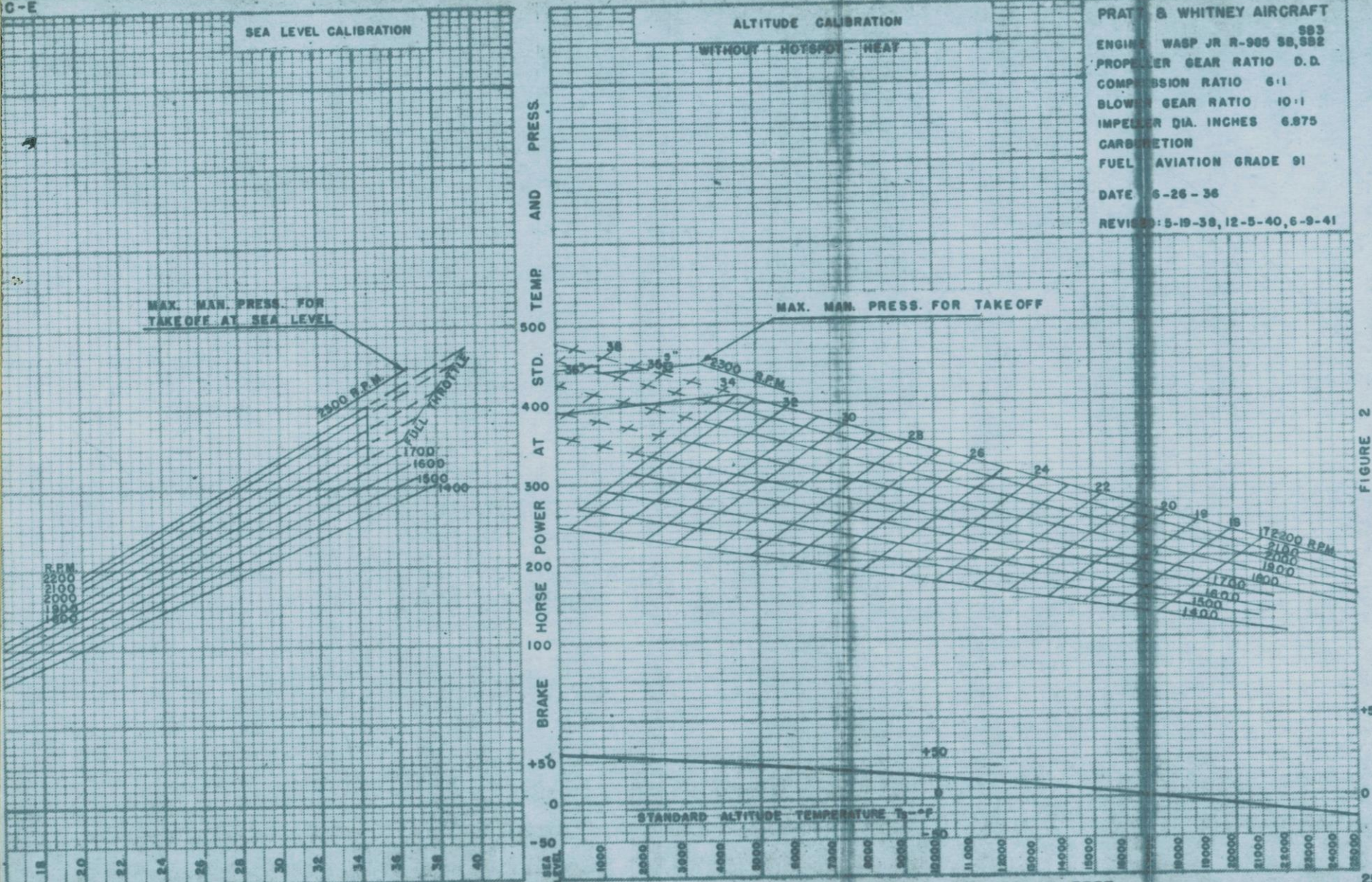


FIGURE 2

SEA LEVEL CALIBRATION HORSE POWER VS. MANIFOLD PRESSURE
WITH CARBURETED MIXTURE STRENGTH UNLESS OTHERWISE NOTED

WASP JR.

B4 & B5

ALTITUDE CALIBRATION—HORSE POWER AND MANIFOLD PRESSURE AT STANDARD ATMOSPHERIC CONDITIONS WITH CARBURETED MIXTURE STRENGTHS UNLESS OTHERWISE NOTED

PRATT & WHITNEY AIRCRAFT
ENGINE CALIBRATION

ENGINE MODEL WASP JR. B4 & B5
PROP. GEAR RATIO D.D.
COMPRESSION RATIO 6:1
IMPELLER GEAR RATIO 10:1
IMPELLER DIA. IN. 6.875
FUEL METERING NA-R9B-19
NA-R9C2-4

FUEL GRADE 91 / 96
DATE 11-9-45
REVISED 12-5-45

RPM
3100
2900
2700
2500
2300
2100
1900
1700
1500
1300

FULL THROTTLE

POWER
HORSE
BRAKE

SEA LEVEL

100

200

300

400

500

STANDARD ALTITUDE TEMPERATURE °F - T_s

ABSOLUTE MANIFOLD PRESSURE - IN. HG

ALTITUDE IN FEET

ABSOLUTE MANIFOLD PRESSURE - IN. HG.

20 22 24 26 28 30 32 34 36 38

100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900 10000

V WEIGHT AND BALANCE INFORMATION

*(See weight & balance report)
(at rear of this book)*

Weight Limits

Hydromatic Propeller
Counterweight Propeller

8750 lbs.
8500 lbs.

Center of Gravity Limits

(\neq 109.8) (18.9% MAC) to (\neq 117.7) (27.1% MAC)

Landing Gear Extended
Gross Weight or Less

Ldg. Gr. Retraction moment is 11783 in. lbs.
Forward limit to rear limit.

Datum is the forward part of the fuselage, 102 inches forward of the centerline of the main spar, as denoted by the placard on the underside of the fuselage.

Empty Weight & Empty Weight C.G.

The empty weight of the airplane is dependent upon the equipment installed in each airplane. Refer to the Approved Loading Schedule for empty weight and empty weight center of gravity.

Equipment List

The items of the equipment list will vary with individual airplanes. See Approved Loading Schedule. Any change of equipment which will effect the empty weight or balance must be recorded on the Alteration and Repair page and the loading schedule revised accordingly. See pages 27, 28, 29, and 30 for approved equipment list.

The weight computations, loading schedules instructions, and alteration and repair notation pages are combined in the loading schedule of each airplane. See attached blank loading schedule.

*See weight & balance report
in rear of this book.*

Revised Ac 1960

710

LIST OF EQUIPMENT SPECIFICATIONS A-765-2 Proposed Revision

ITEM

Weight Arm

Propellers and Propeller Accessories Excepting De-Icing

1. Hamilton Standard Constant Speed Propeller Installation

- (a) Hub 2D30 with Blades 6167A-15 or 6167A-16,
Pitch Settings: High 29°, Low 14° at Station 42

or

- Blades 6101A-21 or 6101A-22,
Pitch Settings: High 28°, Low 13° at Station 42

- (b) Governor, Hamilton Standard 1A2-G5 or 1A2-A5
(c) Controls Installation

2. Hamilton Standard Hydromatic Full Feathering Propeller Instal.

- (a) Hub 22D30, Blades 6531A-15 or 6531A-16

Pitch Settings: High 86°, Low 13° at Station 42

- (b) Governor, Hamilton Standard 4B2

- (c) Feathering Pump, Hamilton Standard 66094-1 or 59664-11
both modified by Beech

- (d) Controls Installation

3. Spinner Installations

- (a) Air Associates, HC-1027

- (b) Harry F. Montgomery Metal Spinning Works-Model B-236

Engine and Engine Accessories - Fuel and Oil Systems

101. Two 7" x 9" oil radiators with intake system

102. Fuel Pumps

- (a) Two wobble, United Aircraft U-550-BE
(b) Two wobble, United Aircraft U-550-BO
(c) Two wobble-Romec Pump Company RMD-1563-1
(d) Two wobble-Army Type D-11
(e) Two engine driven - Army Type G6
(f) Two engine driven - AN4100-1
(g) Two engine driven-Romec RD-3890
(h) Two engine driven-Pesco 2P-R400-BRD
(i) Two engine driven-Pesco 2P-R400-BRS
(j) Two engine driven-Pesco 2P-R400-BR
(k) Two engine driven-Chandler Evans 9141
(l) Two engine driven-Chandler Evans 9105
(m) Two engine driven-Candler Hill H2E3
(n) Two engine driven-Thompson TFD400-1
(o) Two engine driven-Thompson TFD-400
(p) Two engine driven-Thompson TFD-900-1

103. Two carburetor air heaters (weight and arm are for the air scoop valve and one set of heater muffs)

104. Two oil radiator by-pass valves S80

105. Exhaust collector gas analyzer-Cambridge No. 10555-1

157 ea. 35

162 ea. 35

5 ea. 66

11 68

168 ea. 34

5 ea. 66

11 ea. 103

32 ea. 79

5 ea. 31

12 ea. 34

20 ea. 80

4 ea. 86

4 ea. 86

4 ea. 86

4 ea. 86

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

3 ea. 62

21 ea. 62

1 ea. 79

10 ea. 77

106. Two vacuum pumps
- (a) Type B-12 5 ea. 64
 - (b) Eclipse-Pioneer 683-3 5 ea. 64
 - (c) Eclipse-Pioneer 683-4 5 ea. 64
 - (d) Eclipse-Pioneer 549-5 5 ea. 64
 - (e) Pesco 3P-207-JA 5 ea. 64
 - (f) Pesco 3P-207-J 5 ea. 64
 - (g) Aro Equipment 207-JA 5 ea. 64
 - (h) Aro Equipment A505-DD 5 ea. 64
 - (i) Romec RD-3880 5 ea. 64
107. Starters - Eclipse E-80 or Army Type J-1 20 ea. 70
108. 80-gallon auxiliary fuel tank in nose baggage compartment 23 ea. 36
109. Carburetor air intake system
- (a) With filters 14 ea. 45
 - (b) Without filters 4 ea. 48
110. Engine compartment pressure fire extinguisher and system with
- (a) Walter Kidde 7-1/4 lbs. CO₂ 33 ea. 56
 - (b) O-11 dilution system 2 ea. 79
113. Engines (must have one 4-1/2N and one 9N damper)
- (a) P&W Wasp Jr. SB-2 15 ea. 54
 - (b) Military R985-AN4 1 ea. 54
 - (c) Military R985-AN14B 9 ea. 54
 - (d) P&W Wasp Jr. B-5 14 ea. 54
115. 47-gallon auxiliary fuel tank in nose baggage compartment 45 ea. 36

Landing Gear

201. Main gear-Goodyear model L12HEM, 11.00-12, Type III, wheel-brake assembly (wheel assembly No. 530884, brake assembly No. 530886) with 11.00-12 8 ply tires and tubes 95 ea.
202. 14.50 tail wheel (Hayes Industries or B. F. Goodrich D-3-180M) with 6 ply S.C. tire and tube 14 ea.
203. Hand-operated parking brakes 3 ea. 51

Electrical and Radio Equipment

301. Two 50 amp. generators
- (a) Army Type M-3 20 ea. 64
 - (b) Leece Neville 24506 20 ea. 64
 - (c) Eclipse 1381-1 20 ea. 64
302. Two batteries-24volt (17 ampere hour minimum) 49 ea. 87
303. Wing flap motor
- (a) Dumore KL-5227 5 ea. 94
 - (b) Dumore KHL-5367 5 ea. 94
 - (c) Lamb. El. Type 39-V 5 ea. 94
 - (d) Black & Decker or Lamb Electric CS-IS 13820 5 ea. 94
304. Landing gear motor-Electric Specialty, Type HCA3, modified or Leland Electric 10559 14 ea. 87
305. Landing Lights-Grimes G-3001 7 ea. 139

Interior Equipment

402. Two 3-minute parachute flares-International 23 ea. 261
403. Two portable fire extinguishers 7 ea.
- (a) Pilot's Compartment 7 ea. 79
 - (b) Passenger Compartment 7 ea. 227

(See weighty balance report in rear of this book)

| | | |
|---|--------|-----|
| 404. Chemical toilet | 7 ea. | 249 |
| 405. Air condition system including cabin heater | 50 ea. | 121 |
| 407. Passenger cabin baggage rack and tie down provision instal. (see maximum baggage allowable) | 6 ea. | 205 |
| 408. Eclipse-Pioneer Type A-10 automatic pilot installation | | |
| (a) Operating unit installation | 70 ea. | 67 |
| (b) Aileron servo installation (Model EP-2-15-1-A) | 16 ea. | 77 |
| (c) Elevator servo installation (Model EP-2-15-1-A) | 12 ea. | 59 |
| (d) Rudder servo installation (Model EP-2-15-1-A) | 13 ea. | 43 |
| 409. Lear Auto-Pilot Model L201 (Lear installation drawing No. 34900) | 61 ea. | 22 |
| 410. Windshield wiper-Marquette | 11 ea. | 43 |
| 411. Control system lock | 1 ea. | 62 |
| Deicing Equipment (Propellers, Wing, and Windshield) | | |
| 501. Surface Deicers-Goodrich Type 2, Model 270 | | |
| (a) Two wing boots (removable) | 14 ea. | 109 |
| (b) Two stabilizer boots (removable) | 5 ea. | 350 |
| (c) Deicer installation (fixed portion) | 41 ea. | 117 |
| 502. Propeller Anti-icer | | |
| (a) 3-gal. Fluid tank, pump and lines | 11 ea. | 85 |
| (b) Two slinger rings-Air Associates HCA69-M-1 or HCA69 (for use with propeller item 1) | 1 ea. | 40 |
| (c) Two slinger rings-Hamilton Standard 54884C or 54751D or Beech CO69206 (for use with propeller item 2 or 4) | 1 ea. | 40 |
| 503. Windshield deicing system | 1 ea. | 55 |
| 504. Surface deicers-Goodrich Type 12, Model 270 | | |
| (a) Two wing boots (removable) | 12 ea. | 109 |
| (b) Two stabilizer boots (removable) | 5 ea. | 350 |
| (c) Deicer installation (fixed portion) | 41 ea. | 117 |

*(See weight & balance report
in rear of this book)*

M