



Light Twin Takeoff Control & Performance Briefing

Density altitude =

Runway length =

Takeoff wt =

Takeoff dist =

Accel-stop dist =

SE climb rate =

SE svc ceiling =

V_{mc} = **65**

V_r = **71**

V_{yse} = **85**

V_y = **85**

- If an engine fails below **65** (V_{mc}) or **71** (V_r), I will retard the throttles and abort the takeoff.
- If an engine fails after liftoff and the landing gear is down, I will close both throttles and land straight ahead.
- If an engine fails after liftoff (at/above V_{xse}) and the landing gear is retracted, I will follow the Airplane Flight Manual procedures to:
 - Control (pitch & power for V_{yse})
 - Configure (flaps, gear, prop)
 - Climb (maintain V_{yse}; zero sideslip)
 - Checklist (upon reaching 400 AGL)

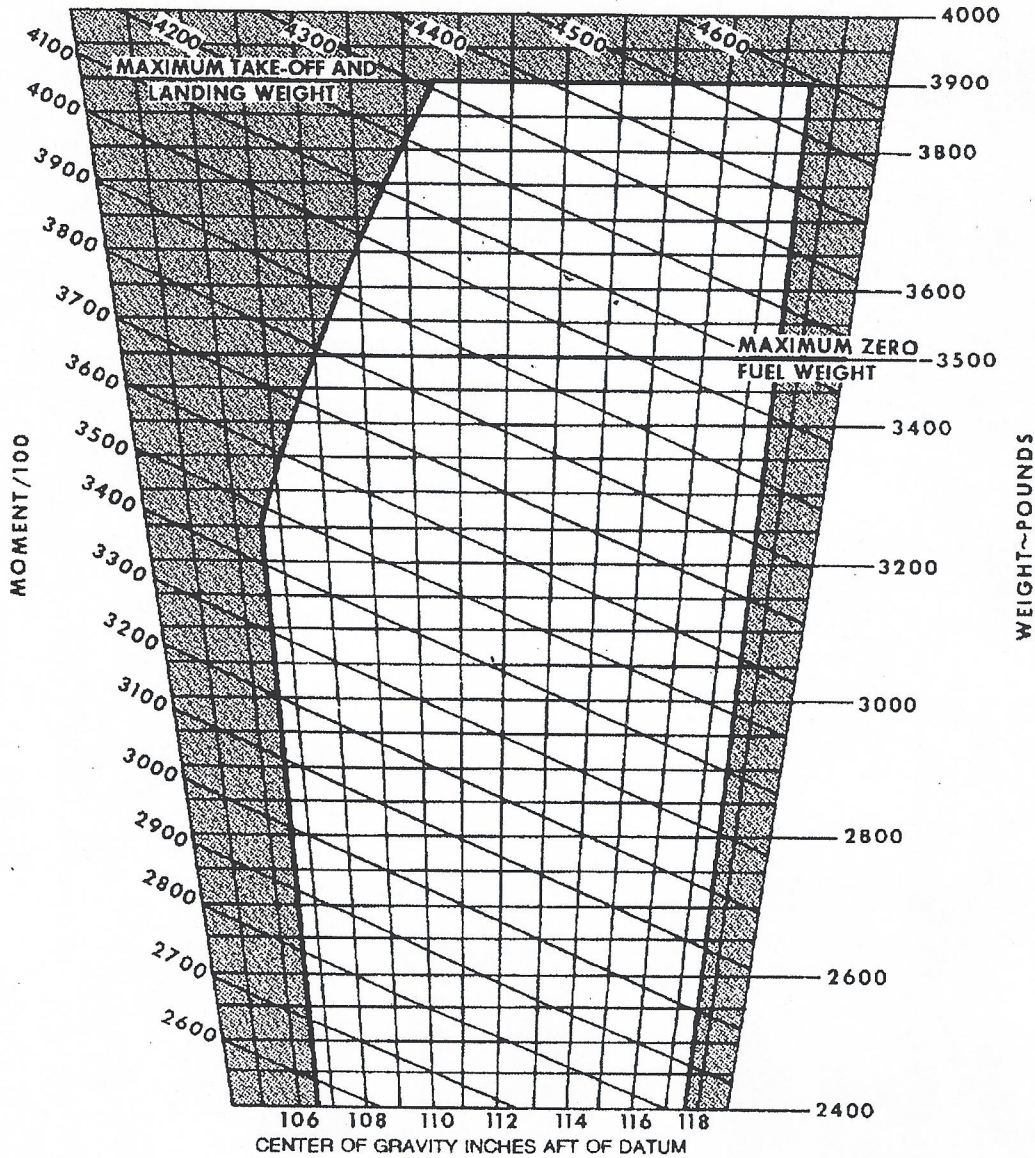
Weight and Balance

<i>Duchess 76</i>	Weight (LBS)	Arm Aft Datum (Inches)	Moment (In-LBS)
Basic Empty Weight	2629	112.37	295,427
Pilot and Front Passenger		108.0	
Passengers (Rear Seats)		144.0	
Fuel (100 GAL MAX)		117.0	
Baggage (200 LBS MAX)		167.0	
Total Loaded Airplane (3,916 LBS MAX)*			
Zero Fuel Weight (3,500 LBS MAX)			

*Fuel for start, taxi, and takeoff is normally 16 lbs at an average mom/100 of 19.
(MAX TAKEOFF WEIGHT – 3,900 LBS)

Totals must be within approved weight and C.G. limits. It is the responsibility of the Pilot In Command to insure that the airplane is loaded properly. The Basic Empty Weight C.G. is noted on the Weight and Balance Data Form.

MOMENT LIMITS VS WEIGHT



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

WEIGHT CONDITION	FWD C. G. LIMIT	AFT C. G. LIMIT
3900 POUNDS (MAX. TAKE-OFF/LANDING)	110.6	117.5
3250 POUNDS OR LESS	106.6	117.5

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TAKE-OFF DISTANCE

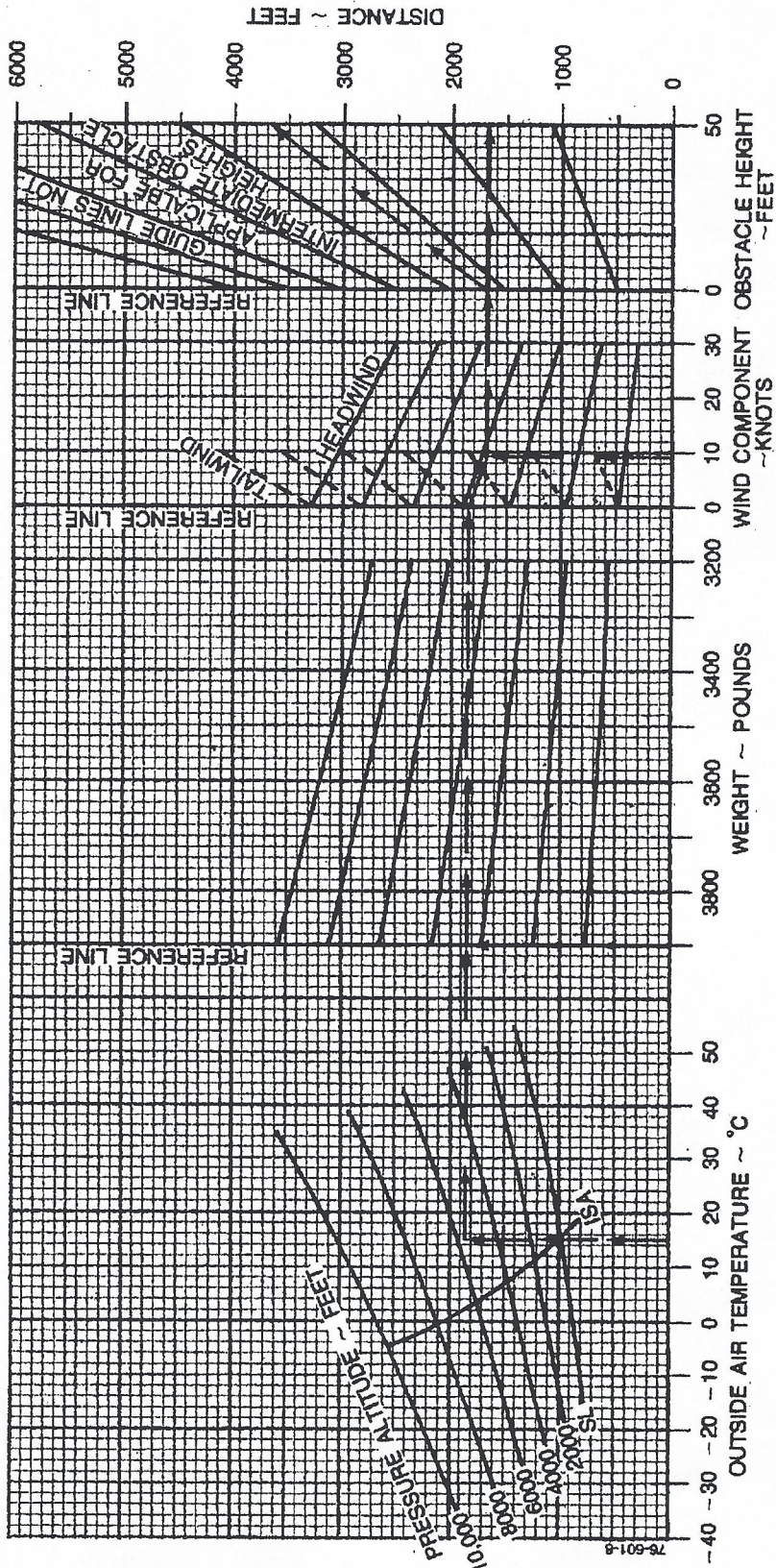
ASSOCIATED CONDITIONS:

- POWER TAKE-OFF POWER AT 2700 RPM SET BEFORE BRAKE RELEASE
- MIXTURE FULL, RICH (ABOVE 5000 FT LEAN TO 75°-100° F ON RICH SIDE OF PEAK EGT)
- FLAPS UP
- LANDING GEAR RETRACT AFTER POSITIVE CLIMB ESTABLISHED
- RUNWAY PAVED, LEVEL, DRY SURFACE
- COWL FLAPS OPEN

TAKE-OFF SPEEDS (ALL WEIGHTS)	
LIFT-OFF	71 KNOTS
50 FEET	80 KNOTS

EXAMPLE:

- OAT 15°C
 - PRESSURE ALTITUDE 5650 FT
 - TAKE-OFF WEIGHT 3900 LBS
 - HEADWIND COMPONENT 9.5 KTS
-
- GROUND ROLL 1680 FT
 - TOTAL DISTANCE OVER 50-FT OBSTACLE 3670 FT



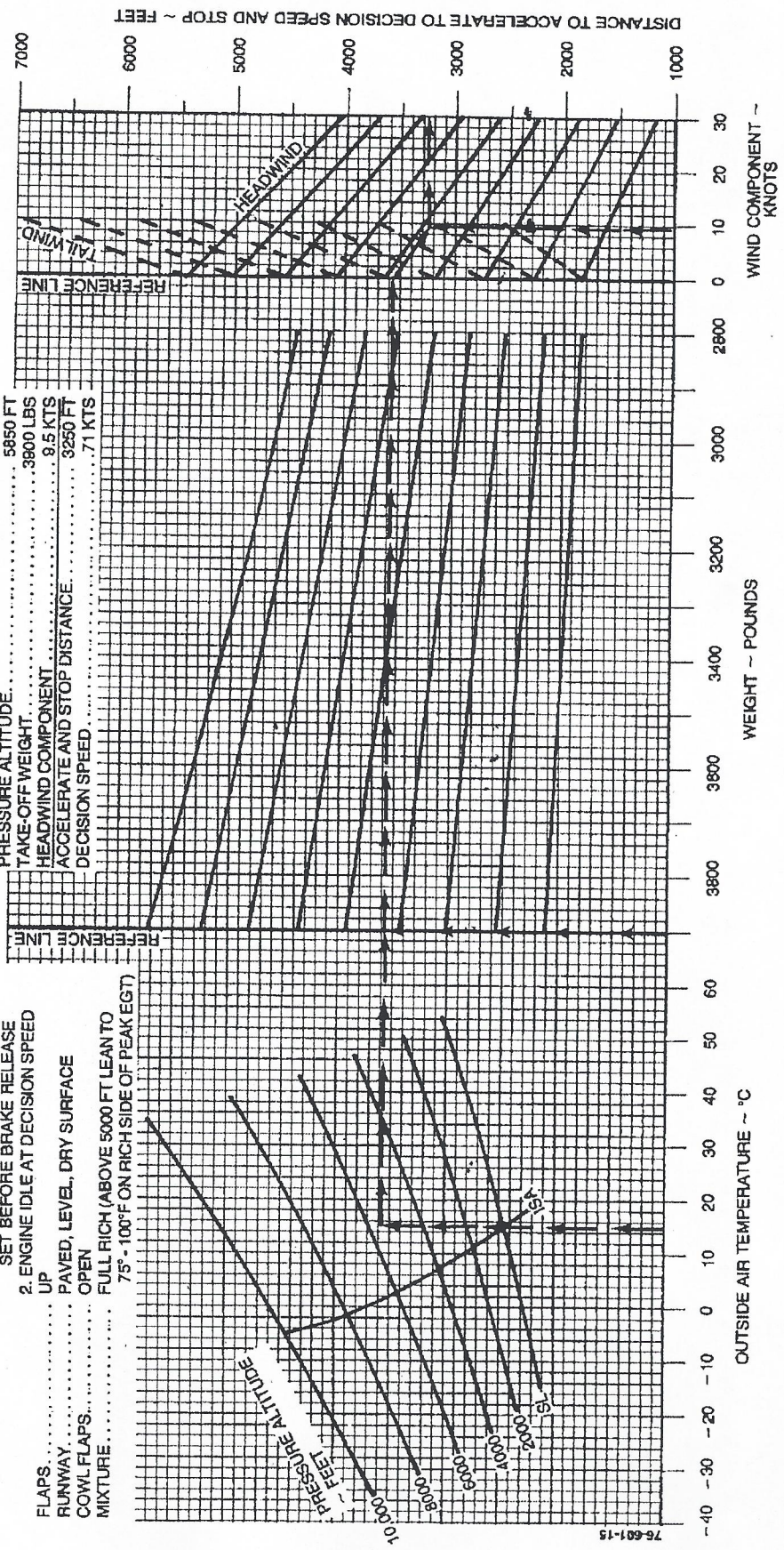
Section V
Performance

BEECHCRAFT
Duchess 76

ACCELERATE - STOP DISTANCE
DECISION SPEED 71 KNOTS (ALL WEIGHTS)

EXAMPLE:
OAT 15°C
PRESSURE ALTITUDE 5850 FT
TAKE-OFF WEIGHT 3800 LBS
HEADWIND COMPONENT 8.5 KTS
ACCELERATE AND STOP DISTANCE 3250 FT
DECISION SPEED 71 KTS

ASSOCIATED CONDITIONS:
POWER 1. TAKE-OFF POWER AT 2700 RPM
SET BEFORE BRAKE RELEASE
2. ENGINE IDLE AT DECISION SPEED
FLAPS UP
RUNWAY PAVED, LEVEL, DRY SURFACE
COWL FLAPS OPEN
MIXTURE FULL RICH (ABOVE 5000 FT LEAN TO
75° - 100°F ON RICH SIDE OF PEAK EGT)



ACCELERATE-GO DISTANCE

ASSOCIATED CONDITIONS:

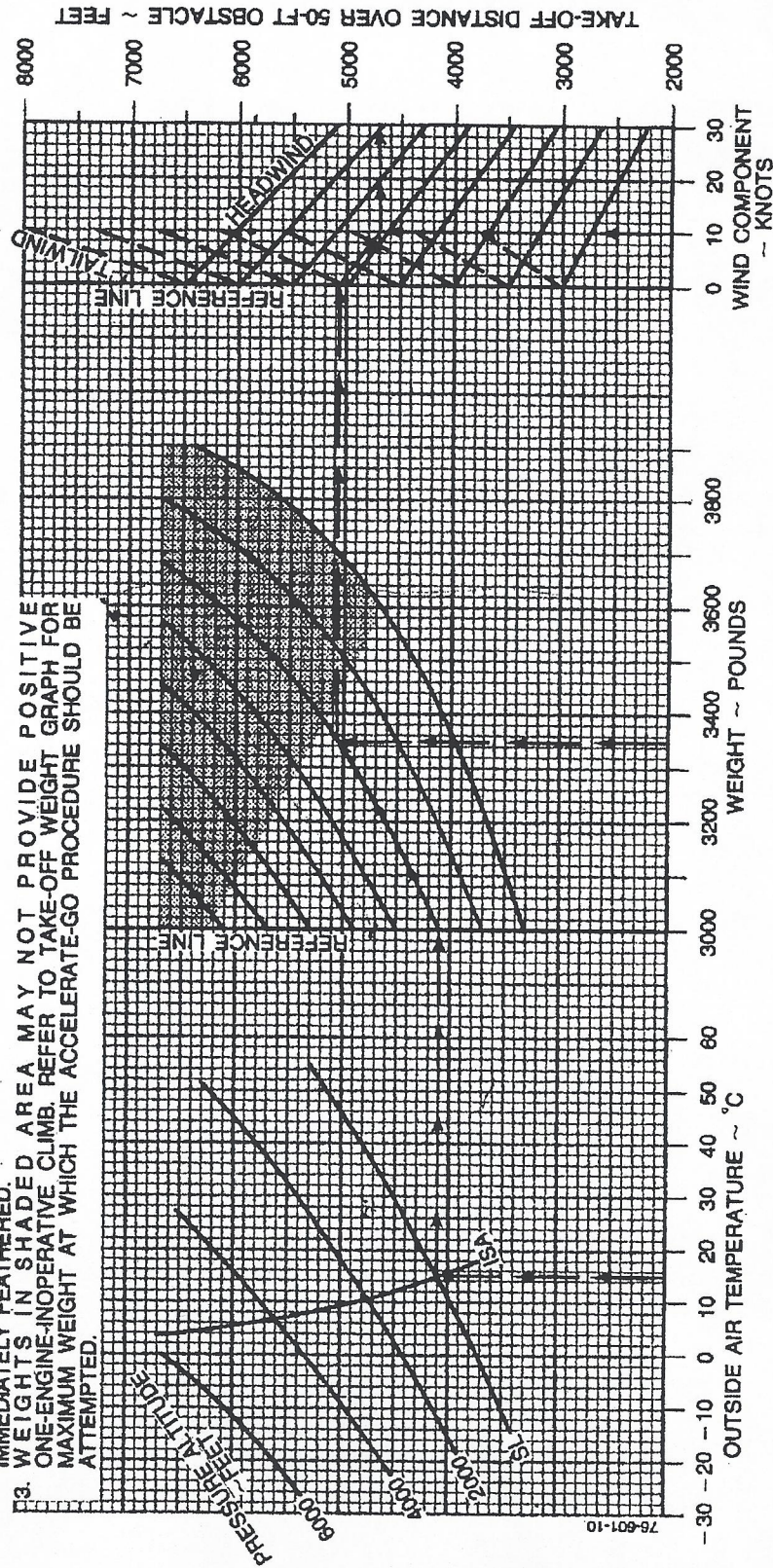
- POWER TAKE-OFF POWER AT 2700 RPM.
SET BEFORE BRAKE RELEASE.
- FLAPS UP
- LANDING GEAR RETRACT AFTER LIFT-OFF
- RUNWAY PAVED, LEVEL, DRY SURFACE.
- COWL FLAPS OPEN
- MIXTURE FULL RICH (ABOVE 5000 FT., SET TO
75-100 F. ON RICH SIDE OF PEAK EGT)

TAKE-OFF SPEEDS (ALL WEIGHTS)
LIFT-OFF 71 KNOTS 50 FT 80 KNOTS

EXAMPLE:

- OAT 15°C
- PRESSURE ALTITUDE SL
- TAKE-OFF WEIGHT 3350 LBS
- HEADWIND COMPONENT 10 KTS
- TOTAL DISTANCE OVER
50-FT OBSTACLE 4700 FT
- GROUND ROLL 940 FT

NOTE: 1. GROUND ROLL DISTANCE IS 20% OF TAKE-OFF DISTANCE OVER 50-FT OBSTACLE.
2. DISTANCES ASSUME AN ENGINE FAILURE AT LIFT-OFF AND PROPELLER
IMMEDIATELY FEATHERED.
3. WEIGHTS IN SHADED AREA MAY NOT PROVIDE POSITIVE
ONE-ENGINE-INOPERATIVE CLIMB. REFER TO TAKE-OFF WEIGHT GRAPH FOR
MAXIMUM WEIGHT AT WHICH THE ACCELERATE-GO PROCEDURE SHOULD BE
ATTEMPTED.



Section V Performance

BEECHCRAFT Duchess 76

CLIMB - TWO ENGINE CLIMB SPEED 85 KNOTS (ALL WEIGHTS)

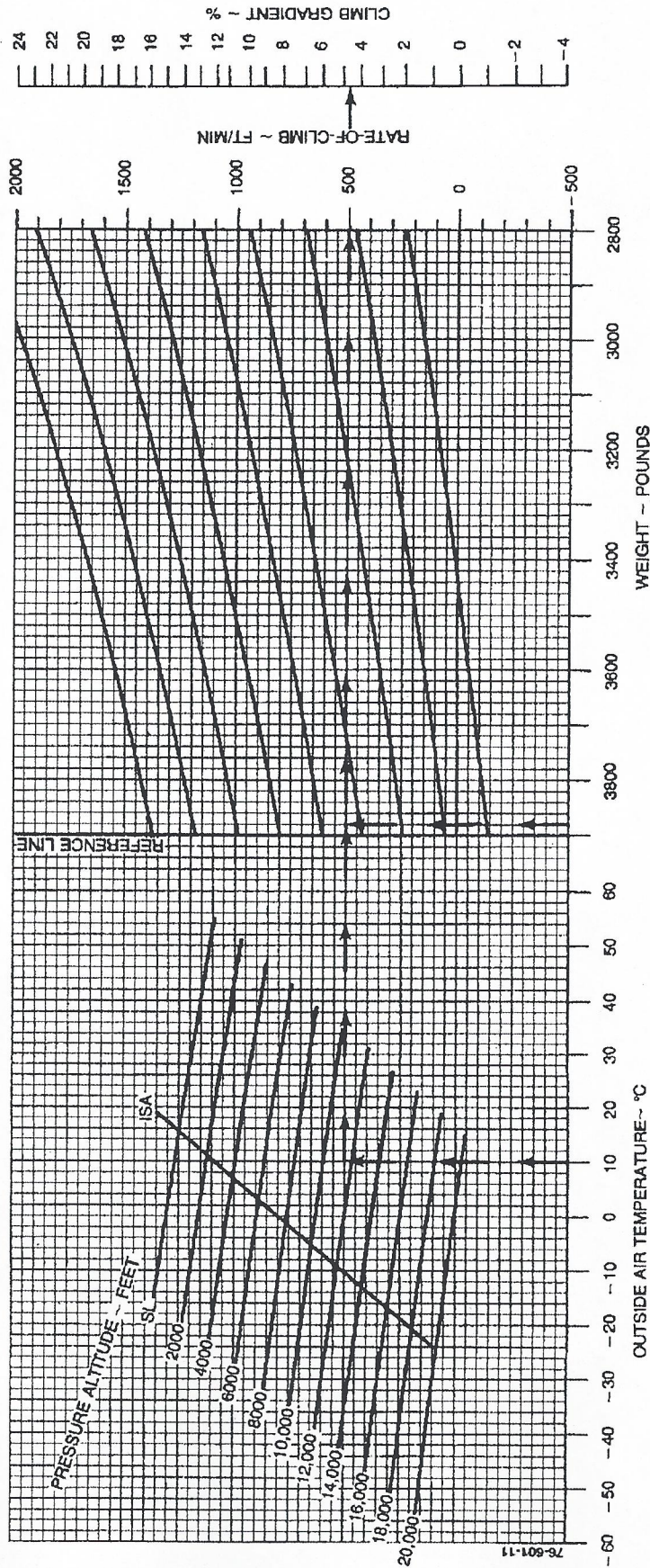
EXAMPLE:

OAT 10°C
 PRESSURE ALTITUDE 11,500 FT
 WEIGHT 3880 LBS

RATE OF CLIMB 500 FT/MIN
 CLIMB GRADIENT 4.6%

ASSOCIATED CONDITIONS:

POWER MAXIMUM CONTINUOUS AT 2700 RPM
 FLAPS UP
 LANDING GEAR UP
 COWL FLAPS OPEN
 MIXTURE FULL RICH (ABOVE 5000 FT LEAN TO 75° - 100°F ON RICH SIDE OF PEAK EGT)



TAKE-OFF CLIMB GRADIENT - ONE ENGINE INOPERATIVE

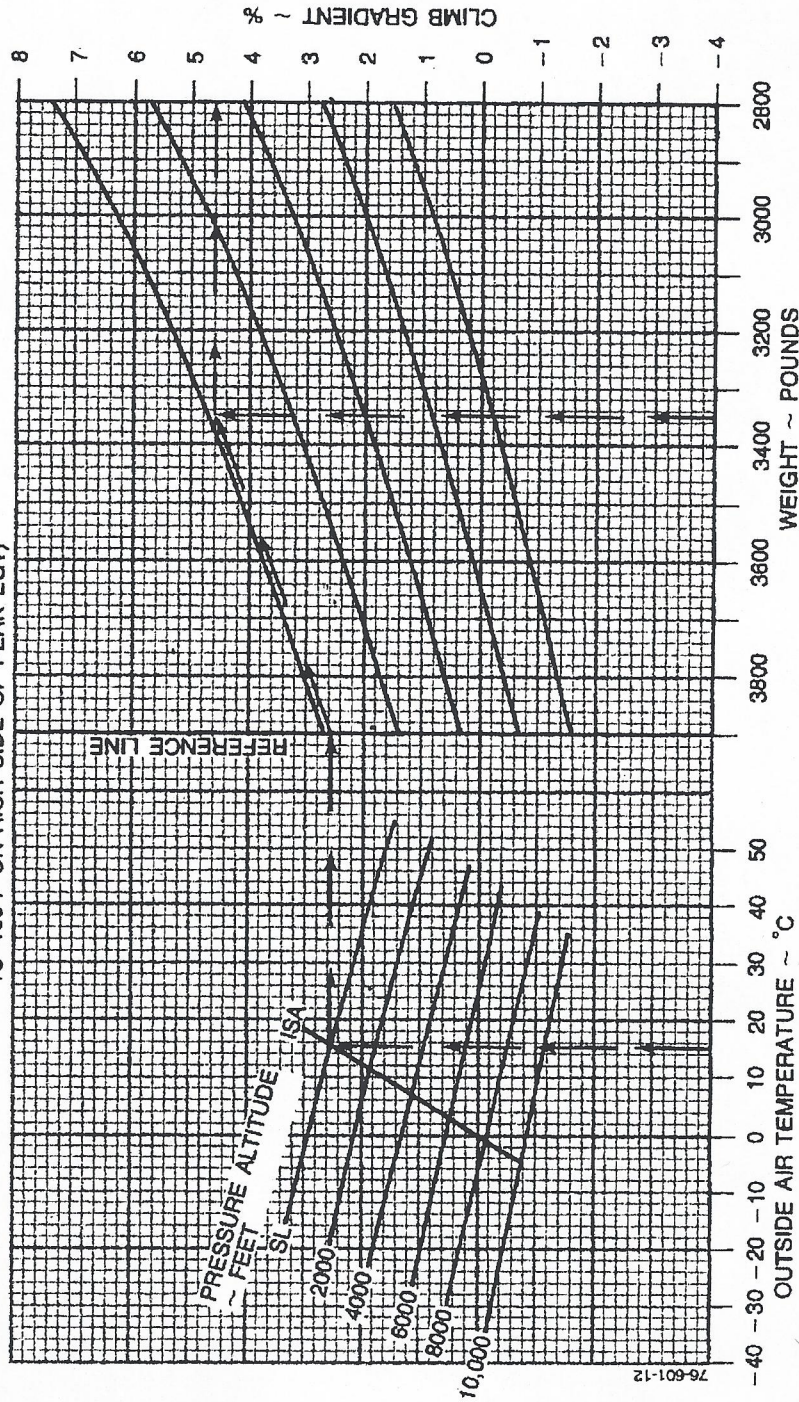
CLIMB SPEED 80 KNOTS (ALL WEIGHTS)

ASSOCIATED CONDITIONS:

POWER TAKE-OFF AT 2700 RPM
 LANDING GEAR UP
 FLAPS UP
 INOPERATIVE PROPELLER FEATHERED
 COWL FLAPS OPEN
 MIXTURE FULL RICH (ABOVE 5000 FT LEAN TO 75°-100° F ON RICH SIDE OF PEAK EGT)

EXAMPLE:

OAT 15°C
 PRESSURE ALTITUDE SL
 WEIGHT 3350 LBS
 GRADIENT OF CLIMB 4.6%



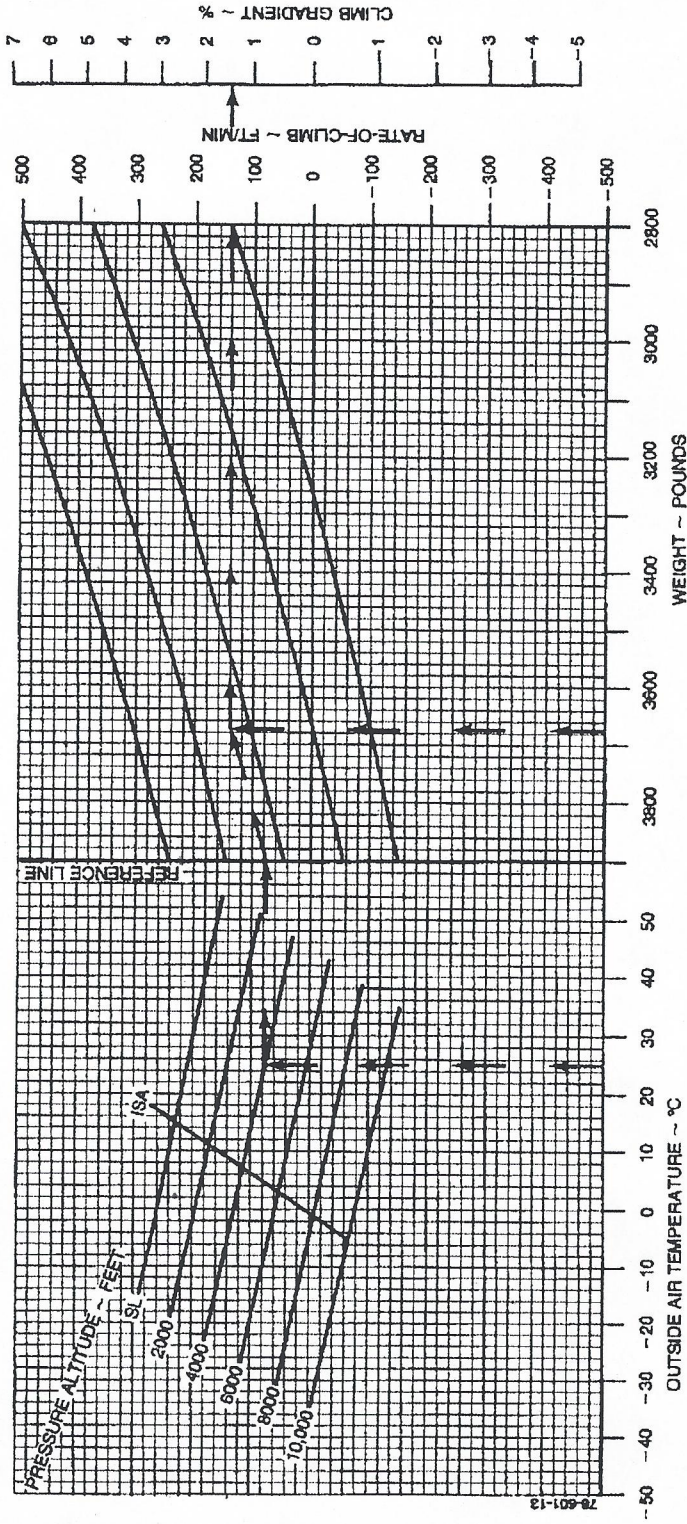
**CLIMB - ONE ENGINE INOPERATIVE
CLIMB SPEED 85 KNOTS (ALL WEIGHTS)**

ASSOCIATED CONDITIONS:

POWER..... TAKE-OFF AT 2700 RPM
 LANDING GEAR..... UP
 FLAPS..... UP
 INOPERATIVE PROPELLER..... FEATHERED
 COWL FLAPS..... OPEN
 MIXTURE..... FULL RICH (ABOVE 5000 FT LEAN TO 75° - 100°F ON RICH SIDE OF PEAK EGT)

EXAMPLE:

OAT..... 25°C
 PRESSURE ALTITUDE..... 3965 FT
 WEIGHT..... 3677 LBS
 RATE OF CLIMB..... 140 FT/MIN
 CLIMB GRADIENT..... 1.5%
 CLIMB SPEED..... 85 KTS



LANDING DISTANCE - FLAPS DOWN (DN)

APPROACH SPEED 76 KNOTS (ALL WEIGHTS)

ASSOCIATED CONDITIONS:

- POWER..... RETARD TO MAINTAIN 600 FT/MIN ON FINAL APPROACH
- FLAPS..... DOWN (DN)
- LANDING GEAR..... DOWN
- RUNWAY..... PAVED, LEVEL, DRY SURFACE
- APPROACH SPEED... 76 KNOTS IAS
- BRAKING..... MAXIMUM

EXAMPLE:

- OAT..... 25°C
- PRESSURE ALTITUDE..... 3985 FT
- HEADWIND COMPONENT..... 9.6 KTS
- GROUND ROLL..... 1050 FT
- TOTAL OVER 50 FT OBSTACLE..... 1970 FT
- APPROACH SPEED..... 76 KTS

