TEMPERATURE CONVERSION
Figure 5-1
PA-28-181
AIRSPEED SYSTEM CALIBRATION

2550 LBS. GROSS WEIGHT

0° FLAPS
40° FLAPS

CALIBRATED AIRSPEED — KNOTS

KIAS — NO INSTRUMENT ERROR

AIRSPEED SYSTEM CALIBRATION
Figure 5-3
Example:
Gross weight: 2300 lbs.
Angle of bank: 20°
Flap position: 25°
Stall speed: 48 knots (indicated airspeed)

*Indicated airspeed, no indicator error
Example:
Departure airport pressure altitude: 2000 ft.
Temperature: 21°C
Wind: 15 knots (headwind)
Gross weight: 2400 lbs.
Takeoff distance: 1900 ft.

PA-28-181
0° FLAPS TAKEOFF PERFORMANCE
FULL THROTTLE BEFORE BRAKE RELEASE
PAVED, LEVEL DRY RUNWAY

TAKOFF SPEEDS — KIAS
WT. LBS.  LIFT-OFF  50 FT.
2550     53      58
2450     51      57
2350     51      56
2250     50      55
2150     49      54
2050     48      52

OUTSIDE AIR TEMP. — °C
WEIGHT — LBS.
WIND — KNOTS
TAKOFF DISTANCE OVER 50 FT. BARRIER — FEET
Example:
Departure airport pressure altitude: 2000 ft.
Temperature: 21°C
Gross weight: 2400 lbs.
Wind: 8 knots (headwind)
Takeoff distance: 1860 ft.
Example:
Departure airport pressure altitude: 2000 ft.
Temperature: 21°C
Gross weight: 2400 lbs.
Wind: 10 knots (headwind)
Takeoff ground roll: 950 ft.

<table>
<thead>
<tr>
<th>WT.-LBS.</th>
<th>LIFT OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>2550</td>
<td>49</td>
</tr>
<tr>
<td>2450</td>
<td>47</td>
</tr>
<tr>
<td>2250</td>
<td>43</td>
</tr>
<tr>
<td>2050</td>
<td>41</td>
</tr>
</tbody>
</table>
Example:
Climb pressure altitude: 3600 ft.
OAT: -1°C
Rate of climb: 620 F.P.M.

PA-28-181
CLIMB PERFORMANCE
FULL THROTTLE, FLAPS UP, 76 KIAS
2550 LBS. GROSS WEIGHT
SERVICE CEILING — 13,650 FT.
ABSOLUTE CEILING — 15,750 FT.

MIXTURE
LEANED 100°F
RICH OF PEAK EGT

MIXTURE FULL RICH

CLIMB PERFORMANCE
Figure 5-15

OUTSIDE AIR TEMP. — °C
1000
800
600
400
200
0
-20
-40

RATE OF CLIMB — F.P.M.
0
200
400
600
800
1000
TIME, DISTANCE AND FUEL TO CLIMB

CLIMB AT 78 KIAS AND FULL THROTTLE
2550 LBS. GROSS WEIGHT

THIS CHART INCLUDES FUEL ALLOWANCE FOR START, TAXI AND TAKEOFF.

Example:
- Departure airport pressure altitude: 2000 ft.
- Departure airport temperature: 21°C
- Cruise pressure altitude: 6000 ft.
- Cruise OAT: 13°C
- Time to climb: 11.5 min. minus 3 min. = 8.5 min.
- Distance to climb: 16.0 miles minus 4.5 miles = 11.5 nautical miles
- Fuel to climb: 2 gal. minus 1 gal. = 1 gal.
Example:
Cruise pressure altitude: 5500 ft.
Cruise OAT: 4°C
Percent power: 65%
Engine RPM: 2450 RPM

PA-28-181
ENGINE PERFORMANCE

BEST POWER MIXTURE
(MIXTURE LEANED TO 100°F RICH OF PEAK EGT)

FUEL FLOW GALLONS PER HOUR

<table>
<thead>
<tr>
<th>BEST POWER % POWER ECONOMY</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
</tr>
<tr>
<td>9.0</td>
</tr>
<tr>
<td>10.5</td>
</tr>
</tbody>
</table>

PERCENT POWER 55-60-65-70-75%

OUTSIDE AIR TEMP. — °C

ENGINE SPEED — RPM
Example:
Cruise pressure altitude: 5500 ft.
Cruise OAT: -1°C
Power setting: 55%
True airspeed: 101 knots
Example:
Cruise pressure altitude: 6000 ft.
Cruise OAT: 13 °C
Power setting: 65%
True airspeed: 116 knots

PA-28-181
SPEED POWER - ECONOMY CRUISE

BEST ECONOMY MIXTURE
MIXTURE LEANED TO PEAK EGT
2550 LBS. MAX. GROSS WT.
WHEEL FAIRINGS INSTALLED
SUBTRACT 8 KTS.
IF REMOVED

OUTSIDE AIR TEMP. - °C
TRUE AIRSPEED - KNOTS
Example:
Cruise pressure altitude: 5500 ft.
Cruise OAT: 2°C
Power setting: 75%
Range (with reserve): 505 nautical miles
Range (no reserve): 560 nautical miles

PA-28-181
RANGE - PERFORMANCE CRUISE

BEST POWER MIXTURE
MIXTURE LEANED TO 100°F RICH OR PEAK EGT
WHEEL FAIRINGS INSTALLED
48 GAL. USABLE FUEL
2550 POUNDS, ZERO WIND
RANGE INCLUDES CLimb AND DESCENT DISTANCE

65% POWER

RANGE WITH
RESERVE AT 55%,
POWER

NOTE
RANGE MAY BE REDUCED BY UP TO
6% IF WHEEL FAIRINGS ARE NOT INSTALLED.

65% POWER

RANGE WITH
NO RESERVE

55% POWER

RANGE WITH
NO RESERVE

OUTSIDE AIR TEMP. - °C

RANGE - NAUTICAL MILES

Figure 5-25
Example:
Cruise pressure altitude: 3000 ft.
Cruise OAT: 2°C
Power setting: 65%
Range (with reserve): 600 nautical miles
Range (no reserve): 670 nautical miles

PA-28-181
RANGE - ECONOMY CRUISE
BEST ECONOMY MIXTURE
MIXTURE LEANED TO PEAK EGT
WHEEL FAIRINGS INSTALLED
48 GAL. USABLE FUEL
2550 POUNDS, ZERO WIND
RANGE INCREASES CLIMB AND DESCENT DISTANCE
RANGE WITH 45 MIN. 65% POWER
RESERVE AT 55% POWER
NOTE
RANGE MAY BE REDUCED BY UP TO 8% IF WHEEL FAIRINGS ARE NOT INSTALLED.

OUTSIDE AIR TEMP. - °C
RANGE - NAUTICAL MILES
Example:
Cruise pressure altitude: 2000 ft.
Power setting: 65%
Endurance (with reserve): 5.5 hrs.
Endurance (no reserve): 6.1 hrs.

PA-28-181
ENDURANCE

ENDURANCE WITH
BEST ECONOMY MIXTURE
45 MIN. RESERVE
(MIXTURE LEANED TO PEAK EGT)
AT 65% POWER
2550 LBS. MAX. GROSS WT.
THE ENDURANCE SHOWN
INCLUDES CLIMB AND
DESCEnt TIMES.

ENDURANCE WITH
NO RESERVE
65% POWER

PRESSURE ALTITUDE - FT.

S.L.

ENDURANCE - HOURS
PA-28-181
TIME, DISTANCE AND FUEL TO DESCEND

DESCEND AT 122 KIAS AND 2500 R.P.M.
2550 LBS. GROSS WT.

Example:
Cruise pressure altitude: 6000 ft.
Cruise OAT: 13°C
Destination airport pressure altitude: 2300 ft.
Destination airport temperature: 21°C
Fuel to descend: 2.0 gal. minus 1.0 gal. = 1.0 gal.
Time to descend: 16 min. minus 7.5 min = 8.5 min
Distance to descend: 35 miles minus 14.5 miles = 20.5 nautical miles
Example:
Cruise pressure altitude: 8000 ft.
Terrain pressure altitude: 2000 ft.
Glide range: 13.5 miles minus 3.5 miles =

10 nautical miles

PA-28-181
GLIDE RANGE

POWER OFF, FLAPS UP, 76 KIAS, 2550 LBS.
NO WIND

GLIDE RANGE - NAUTICAL MILES

PRESSURE ALTITUDE - FT.

0 2000 4000 6000 8000 10000 12000

CRUISE
TERRAIN
GLIDE RANGE

Figure 5-33
Example:
Airport pressure altitude: 2300 ft.
Gross weight: 2264 lbs.
Temperature: 21°C
Wind: 5 knots (headwind)
Landing distance: 1290 ft.
Example:
Airport pressure altitude: 2300 ft.
Airport temperature: 21°C
Gross weight: 2264 lbs.
Wind: 5 knots (headwind)
Ground roll: 825 ft.