APPENDIX D

AIRCRAFT PERFORMANCE CHARTS

AIRCRAFT PERFORMANCE TABLES AND CHARTS

Beechcraft King Air 250

Figure 1 - King Air 250 - Take Off

Figure 2 - King Air 250 - Landing

DeHavilland Beaver DHC-2

Figure 3 - De Havilland Beaver DHC-2 – Take Off

Figure 4 - De Havilland Beaver DHC-2 - Landing

DeHavilland Twin Otter DHC-6

Figure 5 - De Havilland Twin Otter DH-6-300 – Take Off

Figure 6 - De Havilland Twin Otter DH-6-300 - Landing

Socata TBM-700

Figure 7 - Socata TBM 700 – Take Off

Figure 8 - Socata TBM 700 – Landing

Quest Kodiak 100

Figure 9 - Quest Kodiak 100 – Take Off

Figure 10 - Quest Kodiak 100 – Landing

Cessna Caravan 208B with Blackhawk Engine Conversion

Figure 11 - Cessna Caravan 208B with Blackhawk Engine Conversion – Take Off

Figure 12 - Cessna Caravan 208B with Blackhawk Engine Conversion – Landing

Please Note:

Performance charts excerpted from manuals available only in print cannot be 100% reconciled with the computer screen perpendicular axis. The red arrows on performance charts - showing methodology for deriving relevant distances – were applied from a computer screen and are therefore not 100% aligned with the graphs perpendicular axis.

However, takeoff and landing distances reported herein were accurately derived from printed performance charts.

Figure 1 - King Air 250 - Take Off

TAKE-OFF DISTANCE – FLAPS APPROACH

ASSOCIATED CONDITIONS:

POWER.....TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS.....APPROACH
LANDING GEAR..RETRACT AFTER LIFT-OFF
RUNWAY.....PAVED, LEVEL, DRY SURFACE

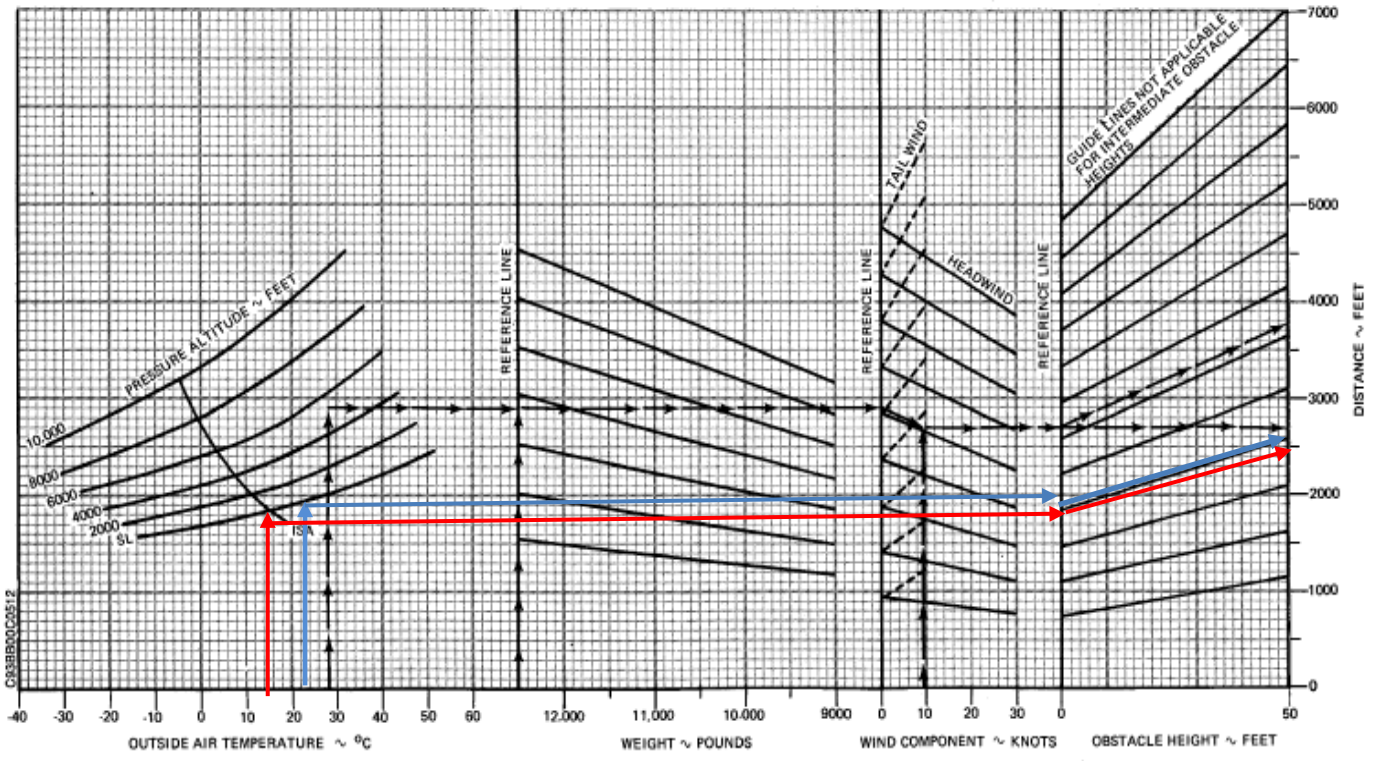
WEIGHT ∿ POUNDS	TAKE-OFF SPEED ∿ KNOTS	
	V_R	V_2
12,500	94	106
12,000	94	105
11,000	94	103
10,000	94	101
9000	94	99

NOTE: FOR OPERATION WITH ICE VANES EXTENDED, ADD 10° C TO THE ACTUAL OAT BEFORE ENTERING GRAPH.

EXAMPLE:

OAT.....28°C
PRESSURE ALTITUDE.....5433 FT
TAKE-OFF WEIGHT.....12,500 LBS
HEADWIND COMPONENT.....9.5 KTS

GROUND ROLL.....2700 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE.....3750 FT
TAKE-OFF SPEED AT V_R.....94 KTS
AT V_2.....106 KTS



Right - Fold over

Beechcraft King Air 250 Take Off @ Harvey Field: Follow Red Lines on Take Off Distance Chart Above for Harvey Field on 2400' runway @ 15°C (Annual Mean High Temp) @ Max Gross Weight 12.5K lbs. Follow Blue Line for 2600' runway requirement @ Mean Max High Temp 23o C @ Max Gross 12.5K lbs.

1. Follow Airfield Temperature at **15°C or 23°C (Mean Max Temp**) upward vertically to Sea Level curve.
2. Follow horizontally to intercept vertical Gross Weight reference line, then continue horizontally for **12.5K lbs**
3. Continue horizontally to intercept vertical Wind Component reference line.
4. **Assuming no wind**, continue horizontally to intercept Obstacle Height line. Incept point @ O' shows **Ground Roll.**
5. Follow sloping Obstacle Height line up to 50', read **Total Take Off Distance to Clear 50' Obstacle.**

2400' required for Max Gross Take Off at 15°C **Annual Mean High Temp.**

Figure 2 - King Air 250 - Landing

LANDING DISTANCE WITH PROPELLER REVERSING - FLAPS DOWN

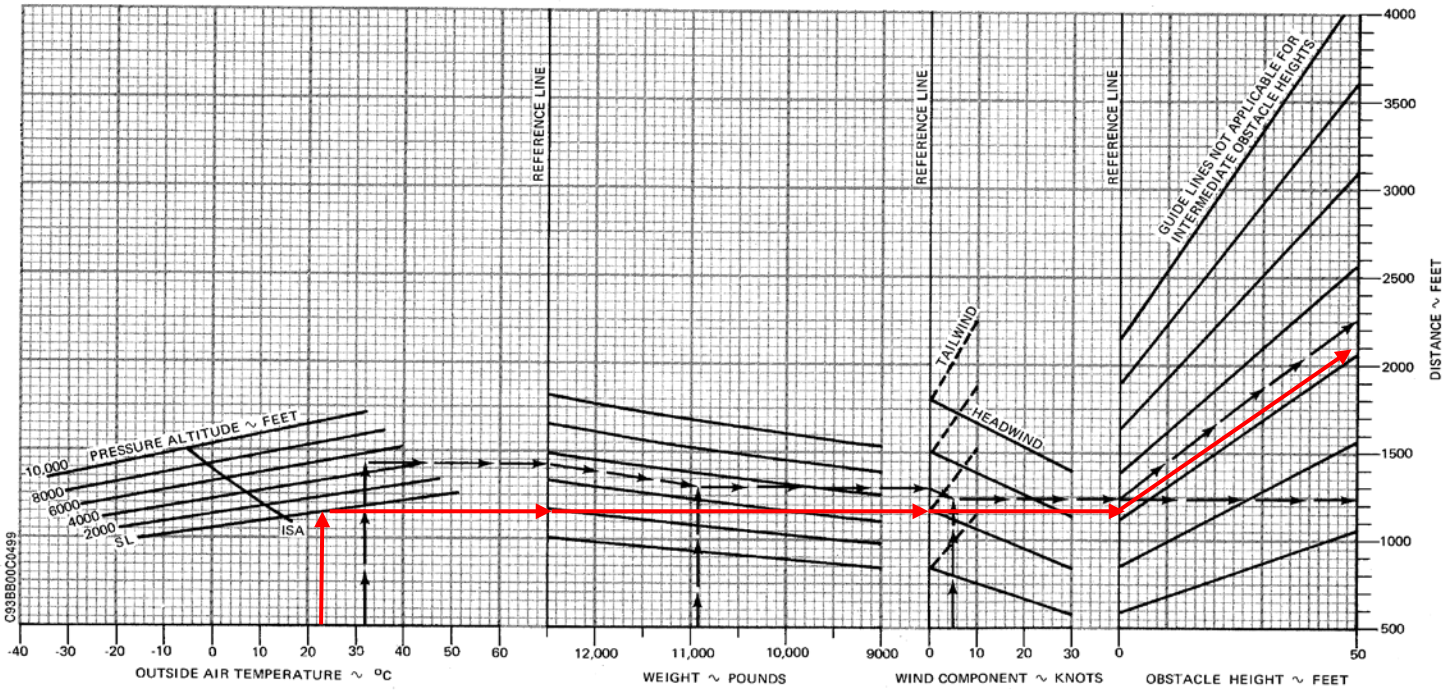
ASSOCIATED CONDITIONS:

POWER	RETARD TO MAINTAIN 1000 FT/MIN ON FINAL APPROACH
FLAPS	DOWN
RUNWAY	PAVED, LEVEL, DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM
CONDITION LEVERS	HIGH IDLE
PROPELLER CONTROLS	FULL FORWARD
POWER LEVERS	MAXIMUM REVERSE AFTER TOUCHDOWN UNTIL FULLY STOPPED

WEIGHT ~ POUNDS	APPROACH SPEED ~ KNOTS
12,500	103
12,000	102
11,000	99
10,000	96
9000	93

EXAMPLE:

OAT	32°C
PRESSURE ALTITUDE	4732 FT
LANDING WEIGHT	10,937 POUNDS
HEADWIND COMPONENT	4.7 KNOTS
GROUND ROLL	1240 FEET
TOTAL OVER 50 FOOT OBSTACLE	2260 FEET
APPROACH SPEED	99 KNOTS



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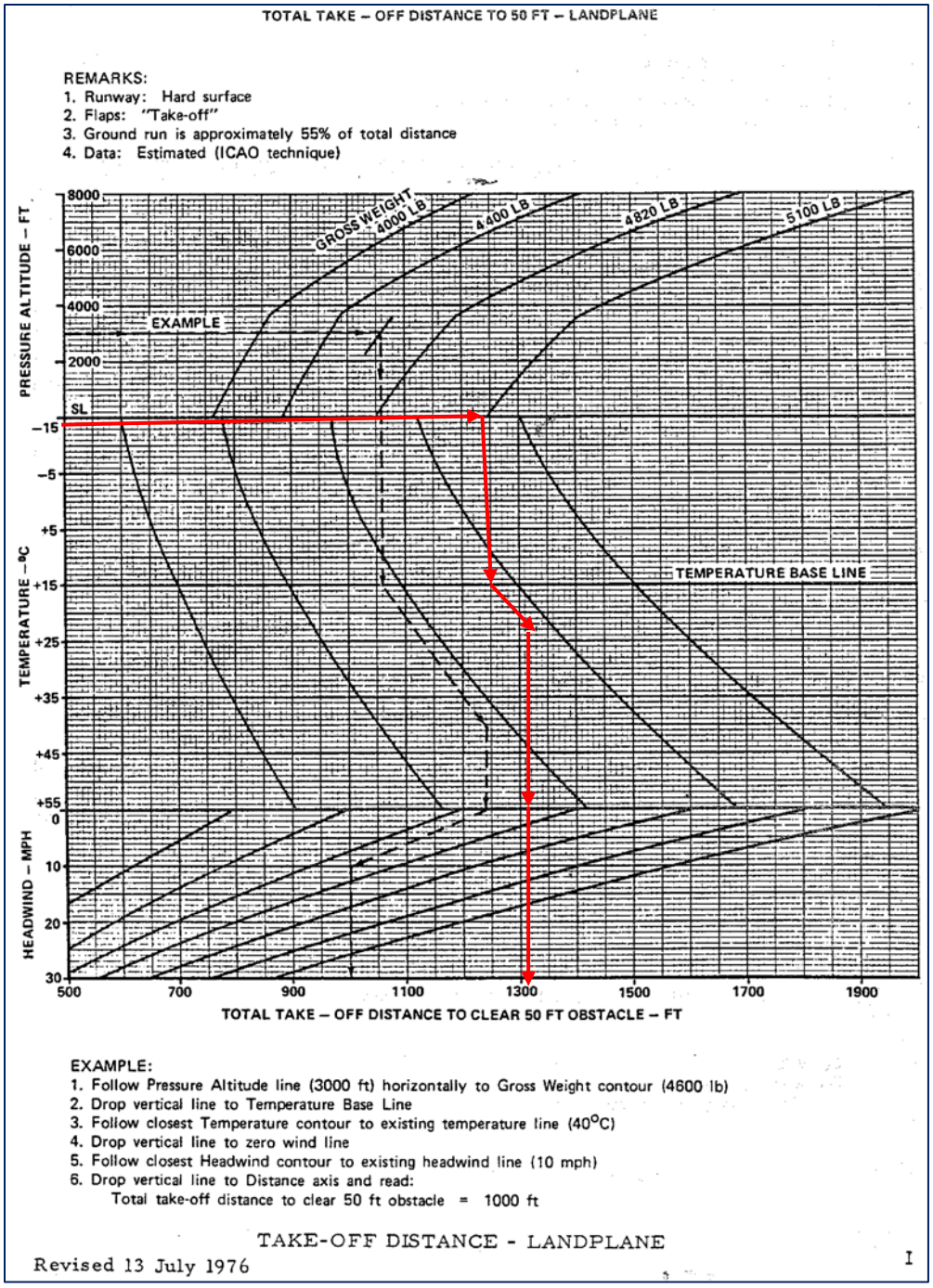
Beechcraft King Air 250 Landing Distance Required @ Harvey Field: Follow Red Lines on Landing Distance Chart Above for Harvey Field.

1. Follow Airfield Temperature at **23°C (Mean Max Temp**) upward vertically to Sea Level
2. Follow horizontally to intercept vertical Gross Weight reference line at **12.5K lbs.**
3. Continue horizontally to intercept vertical Wind Component reference line.
4. **Assuming no wind**, continue horizontally to intercept Obstacle Height line. Incept point @ O' means **Ground Roll is 1200'.**
5. Follow sloping Obstacle Height line up to 50', reading **Total Landing Distance Over 50' Obstacle is 2100'**.

2100' required for Landing at Max Gross Weight 12.5K pounds - and Mean Max Temp at Harvey Field.

Figure 3 - De Havilland Beaver DHC-2 – Take Off



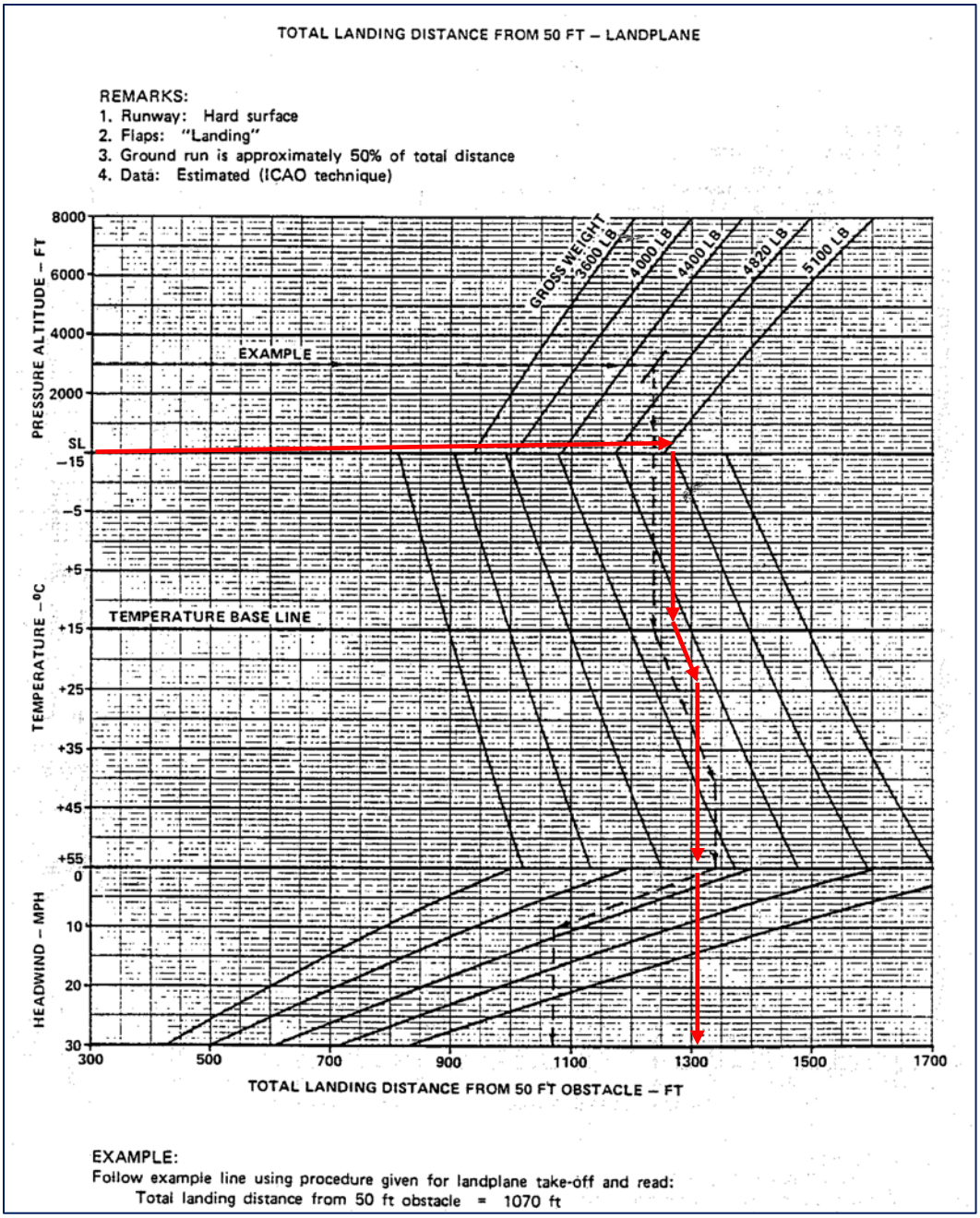
DHC-2 Beaver Take Off @ Harvey Field: Follow Red Lines on Take Off Distance Chart Above for Harvey Field

1. Follow Pressure Altitude line (Sea Level) horizontally to **Max Gross Weight (5100lbs)**
2. Drop vertical line to Temperature Base Line, then follow Temperature contour to **23°C (Mean Max Temp**).
3. Drop vertical line to zero wind line. Assuming zero headwind, drop vertical line to DISTANCE axis, reading:

1310' required for takeoff at Max Gross Take Off Weight and Mean Max Temp at Harvey Field.

Source: DeHavilland, DHC-2 Beaver Flight Manual

Figure 4 - De Havilland Beaver DHC-2 - Landing



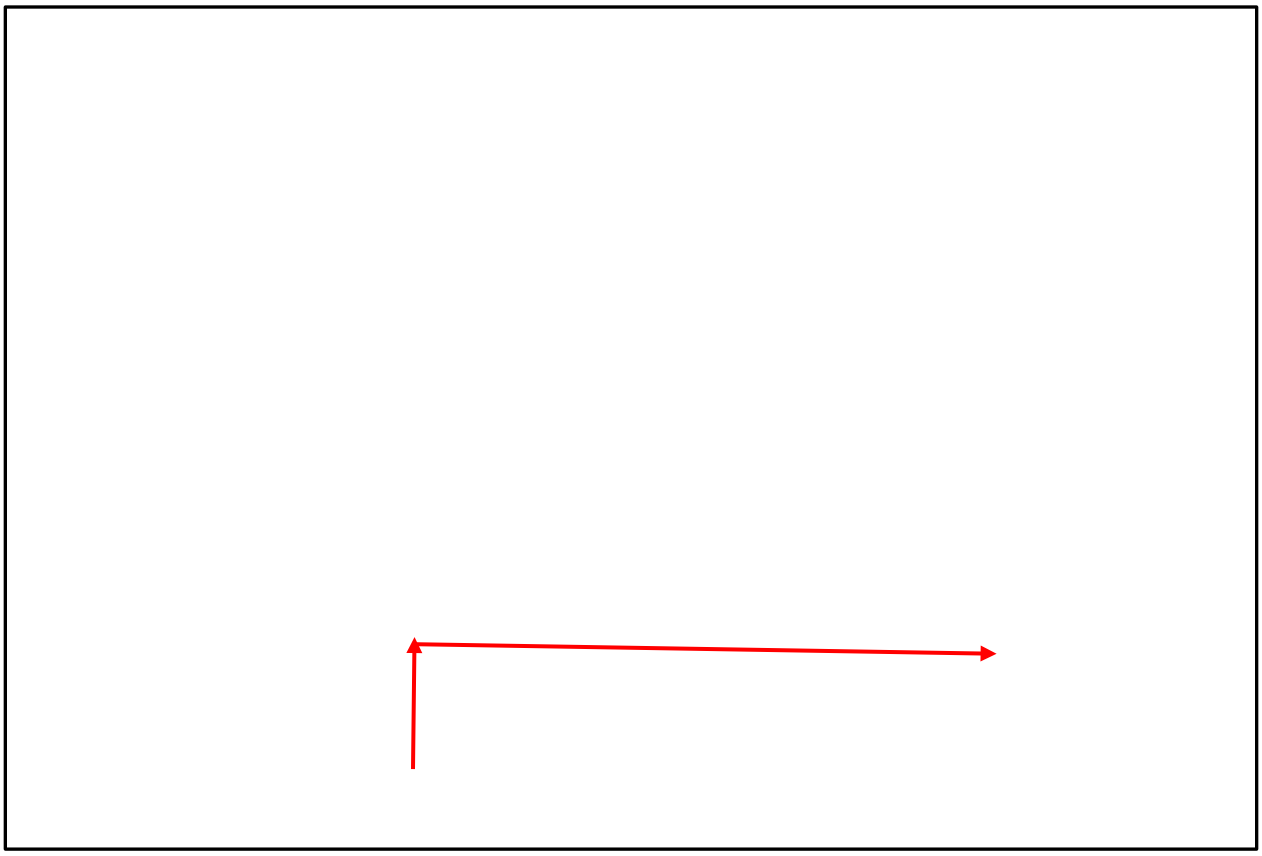
DHC-2 Beaver Landing @ Harvey Field: Follow Red Lines on Landing Distance Chart Above for Harvey Field

1. Follow Pressure Altitude line (Sea Level) horizontally to **Max Gross Weight (5100lbs)**
2. Drop vertical line to Temperature Base Line, then follow Temperature contour to **23°C (Mean Max Temp**).
3. Drop vertical line to zero wind line. Assuming zero headwind, drop vertical line to DISTANCE axis, reading:

1300' required for landing at Max Gross Weight and Mean Max Temp at Harvey Field

Source: DeHavilland, DHC-2 Beaver Flight Manual

Figure 5 - De Havilland Twin Otter DH-6-300 – Take Off



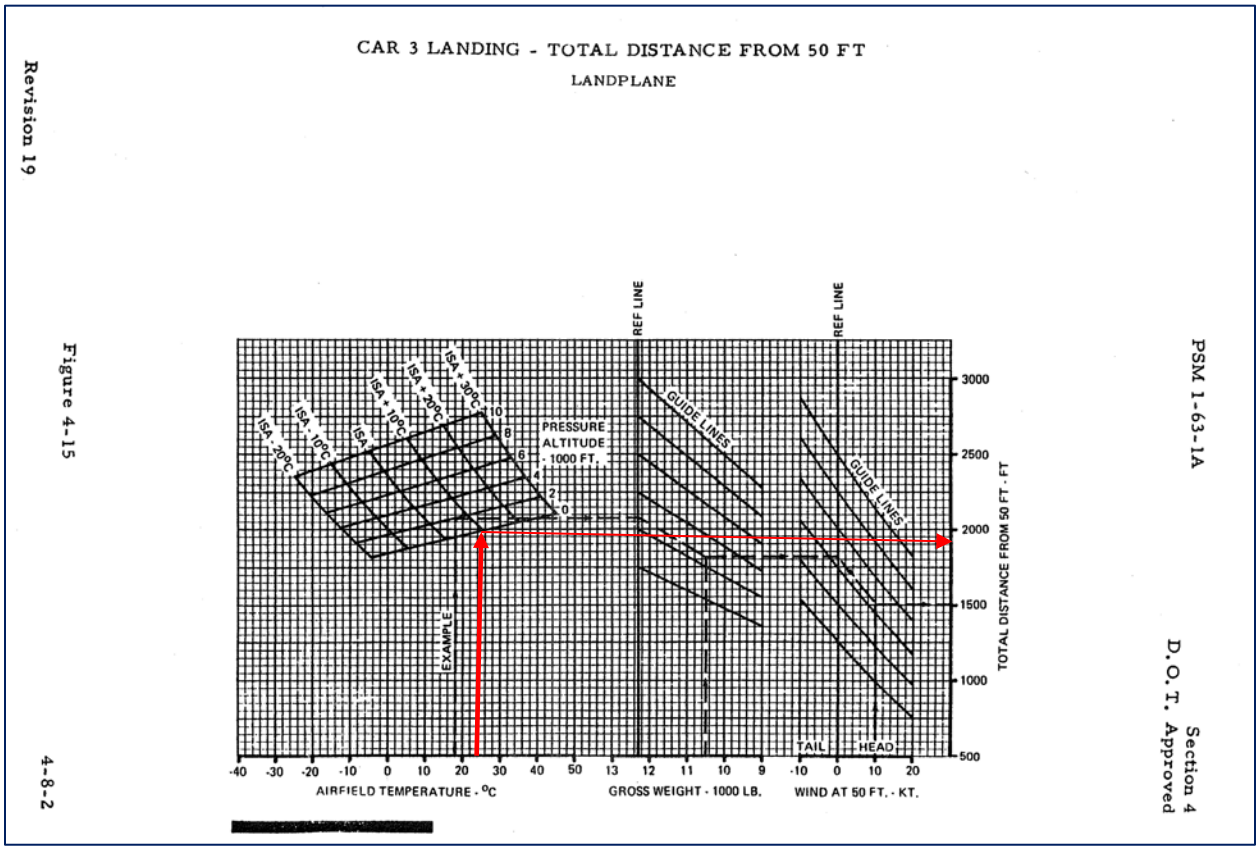
DHC-6 Twin Otter Take Off @ Harvey Field: Follow Red Lines on Take Off Distance Chart Above for Harvey Field.

1. Follow Airfield Temperature at **23°C (Mean Max Temp**) upward vertically to ISA +10°C (equating to 23°C @ Sea Level)
2. Follow horizontally to intercept Gross Weight reference line at **Max Gross Take Off Weight 12.5K lbs**.
3. Continue horizontally to intercept **Zero Wind** line.
4. Continue horizontally reading:

1500' required for Take Off at Max Gross Weight and Mean Max Temp at Harvey Field.

Source: DeHavilland, DHC-6 Aircraft Flight Manual, Section 4

Figure 6 - De Havilland Twin Otter DH-6-300 - Landing



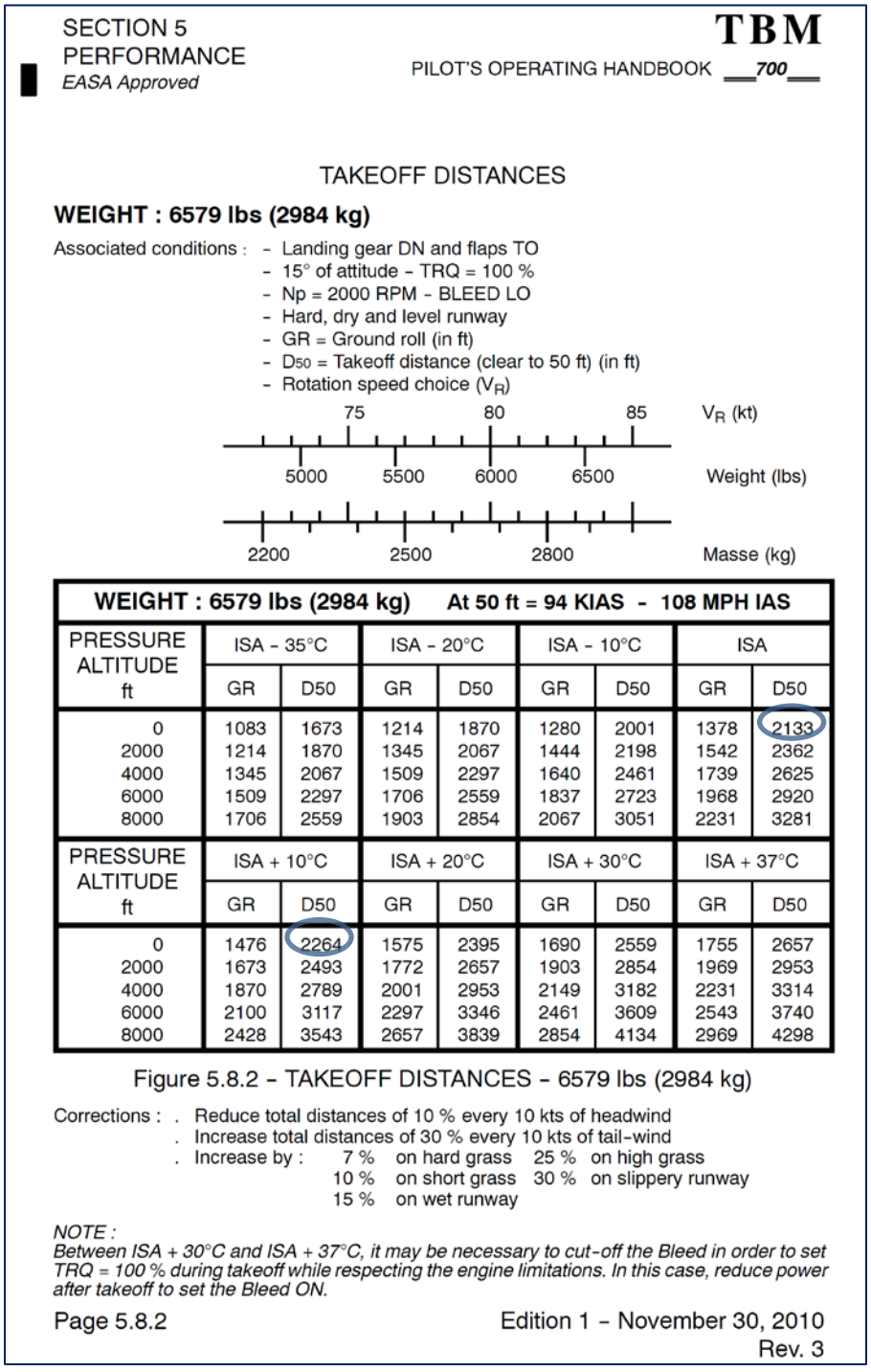
DHC-6 Twin Otter Landing @ Harvey Field: Follow Red Lines on Landing Distance Chart Above for Harvey Field.

1. Follow Airfield Temperature at **23°C (Mean Max Temp**) upward vertically to ISA +10°C (equating to 23°C @ Sea Level)
2. Follow horizontally to intercept Gross Weight reference line at **Max Gross Take Off Weight 12.5K lbs**.
3. Continue horizontally to intercept **Zero Wind** line.
4. Continue horizontally reading:

1975' required for Landing at Max Gross Weight and Mean Max Temp at Harvey Field.

Source: DeHavilland, DHC-6 Aircraft Flight Manual, Section 4

Figure 7 - Socata TBM 700 – Take Off



SECTION 5
PERFORMANCE
EASA Approved

TBM
PILOT'S OPERATING HANDBOOK ___700___

TAKEOFF DISTANCES

WEIGHT : 6579 lbs (2984 kg)

Associated conditions :
- Landing gear DN and flaps TO
- 15° of attitude - TRQ = 100 %
- Np = 2000 RPM - BLEED LO
- Hard, dry and level runway
- GR = Ground roll (in ft)
- D50 = Takeoff distance (clear to 50 ft) (in ft)
- Rotation speed choice (V_R)

75 80 85 V_R (kt)
5000 5500 6000 6500 Weight (lbs)
2200 2500 2800 Masse (kg)

WEIGHT : 6579 lbs (2984 kg) At 50 ft = 94 KIAS - 108 MPH IAS

PRESSURE ALTITUDE ft	ISA - 35°C		ISA - 20°C		ISA - 10°C		ISA	
	GR	D50	GR	D50	GR	D50	GR	D50
0	1083	1673	1214	1870	1280	2001	1378	2133
2000	1214	1870	1345	2067	1444	2198	1542	2362
4000	1345	2067	1509	2297	1640	2461	1739	2625
6000	1509	2297	1706	2559	1837	2723	1968	2920
8000	1706	2559	1903	2854	2067	3051	2231	3281
PRESSURE ALTITUDE ft	ISA + 10°C		ISA + 20°C		ISA + 30°C		ISA + 37°C	
	GR	D50	GR	D50	GR	D50	GR	D50
0	1476	2264	1575	2395	1690	2559	1755	2657
2000	1673	2493	1772	2657	1903	2854	1969	2953
4000	1870	2789	2001	2953	2149	3182	2231	3314
6000	2100	3117	2297	3346	2461	3609	2543	3740
8000	2428	3543	2657	3839	2854	4134	2969	4298

Figure 5.8.2 - TAKEOFF DISTANCES - 6579 lbs (2984 kg)

Corrections : . Reduce total distances of 10 % every 10 kts of headwind
. Increase total distances of 30 % every 10 kts of tail-wind
. Increase by : 7 % on hard grass 25 % on high grass
10 % on short grass 30 % on slippery runway
15 % on wet runway

NOTE :
Between ISA + 30°C and ISA + 37°C, it may be necessary to cut-off the Bleed in order to set TRQ = 100 % during takeoff while respecting the engine limitations. In this case, reduce power after takeoff to set the Bleed ON.

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Rev. 3

Source: Daher Socata, TBM 700 Pilot Operating Handbook, Section 5

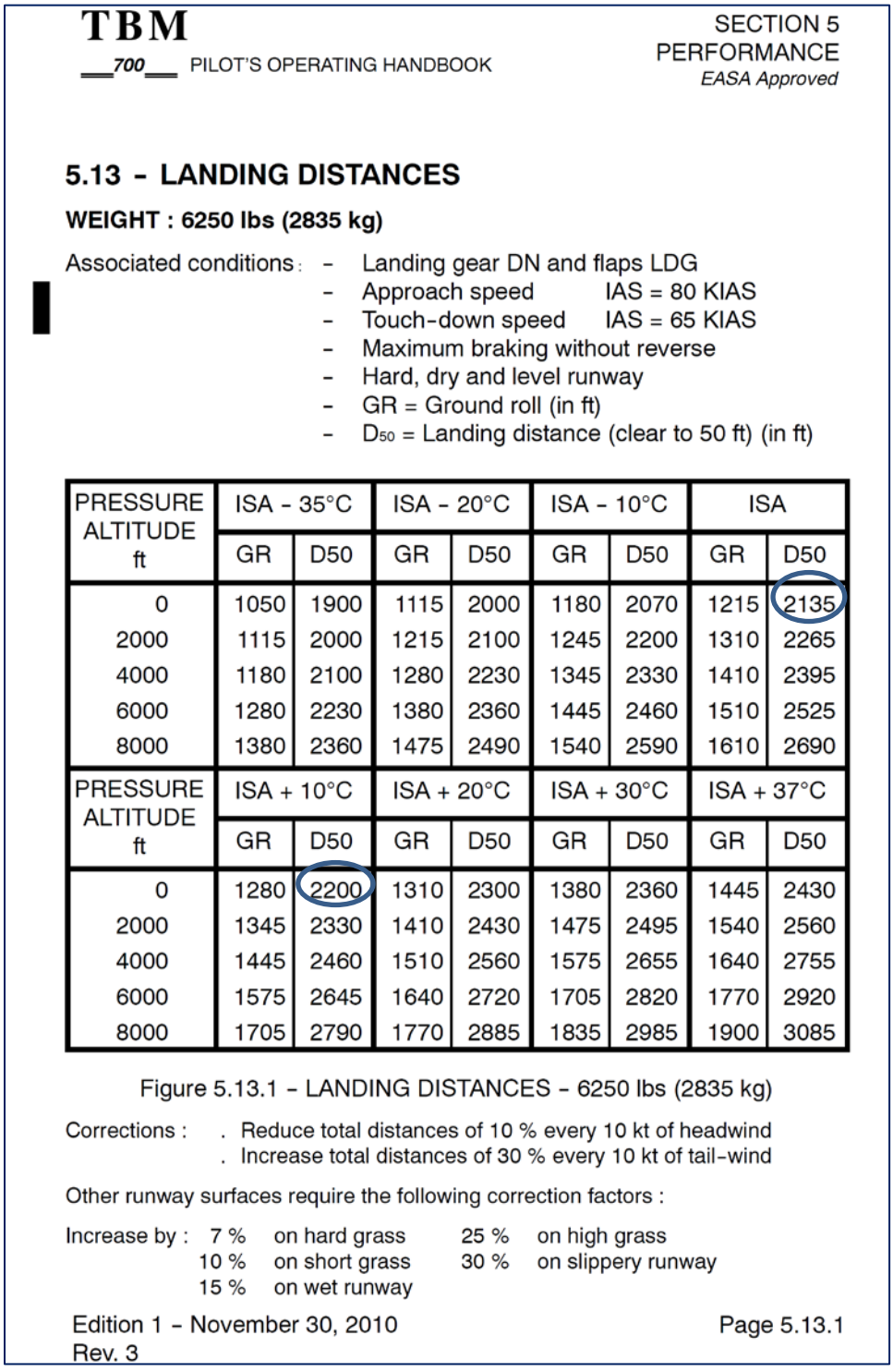
Socata TBM 700 Takeoff **Design** Conditions

- Mean Daily Max Temp 74°F/23°C
- Airport Elevation 24 feet
- Max Takeoff Weight 6579 lbs
- Flap Setting Normal T/O
- 0.3% runway gradient

Note that Mean High Temp @ S43 = 74° F/ 23°C, or ISA + 8°C.

Therefore, from table for ISA and ISA + 10°C (blue ovals), interpolating for ISA + 8°C yields **required take off distance of 2238'.**

Figure 8 - Socata TBM 700 - Landing



TBM 700 PILOT'S OPERATING HANDBOOK

SECTION 5
PERFORMANCE
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5.13 - LANDING DISTANCES

WEIGHT : 6250 lbs (2835 kg)

Associated conditions :
- Landing gear DN and flaps LDG
- Approach speed IAS = 80 KIAS
- Touch-down speed IAS = 65 KIAS
- Maximum braking without reverse
- Hard, dry and level runway
- GR = Ground roll (in ft)
- D_{50} = Landing distance (clear to 50 ft) (in ft)

PRESSURE ALTITUDE ft	ISA - 35°C		ISA - 20°C		ISA - 10°C		ISA	
	GR	D50	GR	D50	GR	D50	GR	D50
0	1050	1900	1115	2000	1180	2070	1215	2135
2000	1115	2000	1215	2100	1245	2200	1310	2265
4000	1180	2100	1280	2230	1345	2330	1410	2395
6000	1280	2230	1380	2360	1445	2460	1510	2525
8000	1380	2360	1475	2490	1540	2590	1610	2690
PRESSURE ALTITUDE ft	ISA + 10°C		ISA + 20°C		ISA + 30°C		ISA + 37°C	
	GR	D50	GR	D50	GR	D50	GR	D50
0	1280	2200	1310	2300	1380	2360	1445	2430
2000	1345	2330	1410	2430	1475	2495	1540	2560
4000	1445	2460	1510	2560	1575	2655	1640	2755
6000	1575	2645	1640	2720	1705	2820	1770	2920
8000	1705	2790	1770	2885	1835	2985	1900	3085

Figure 5.13.1 - LANDING DISTANCES - 6250 lbs (2835 kg)

Corrections :
- Reduce total distances of 10 % every 10 kt of headwind
- Increase total distances of 30 % every 10 kt of tail-wind

Other runway surfaces require the following correction factors :

Increase by : 7 % on hard grass; 25 % on high grass; 10 % on short grass; 30 % on slippery runway; 15 % on wet runway

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Rev. 3

Source: Daher Socata, TBM 700 Pilot Operating Handbook, Section 5

Socata TBM 700 Landing **Design** Conditions

- Mean Daily Max Temp: 74°F/23°C
- Airport Elevation: 24 feet
- Max Landing Weight: 6250 lbs
- Flap Setting: Normal Landing
- 0.3% runway gradient
- Zero wind

Note that Mean High Temp @ S43 = 74o F/ 23°C, or ISA + 8°C.

Therefore, from table for ISA and ISA + 10°C (blue ovals), interpolating for ISA + 8°C yields **required landing distance of 2187' @ Max Gross Landing Wt.**

Figure 9 - Quest Kodiak 100 – Take Off

CAUTION: *The takeoff correction factors for runway slope, located on the previous page, are required to be provided. These corrections are applicable to runway slopes up to 3% and should be applied with caution since the published runway slope figures are usually the net slope from one end of the runway to the other. Certain portions of some runways have greater or lesser slopes than the published slope. If the takeoff roll is performed on a portion of the runway that differs from the published slope, the takeoff performance will be greatly affected.*

PRESS ALT (FT)	0° C		10° C		20° C		30° C		40° C		50° C	
	GRND ROLL (FT)	Total Feet to Clear 50' OBS	GRND ROLL (FT)	Total Feet to Clear 50' OBS	GRND ROLL (FT)	Total Feet to Clear 50' OBS	GRND ROLL (FT)	Total Feet to Clear 50' OBS	GRND ROLL (FT)	Total Feet to Clear 50' OBS	GRND ROLL (FT)	Total Feet to Clear 50' OBS
S.L.	691	1089	735	1150	779	1212	890	1384	1035	1612	1223	1913
1000	728	1153	774	1218	842	1319	969	1519	1130	1775	1341	2114
2000	767	1221	815	1290	917	1449	1057	1671	1233	1952	---	---
3000	809	1294	874	1392	1000	1593	1154	1840	1348	2153	---	---
4000	852	1372	954	1533	1092	1753	1260	2026	1473	2374	---	---
5000	920	1493	1042	1689	1191	1928	1374	2228	1609	2615	---	---
6000	1007	1648	1138	1860	1299	2122	1503	2457	---	---	---	---
7000	1100	1816	1244	2050	1421	2342	1648	2718	---	---	---	---
8000	1204	2005	1363	2267	1560	2593	1809	3010	---	---	---	---
9000	1320	2218	1497	2511	1713	2873	1984	3332	---	---	---	---
10000	1445	2450	1640	2777	1880	3182	2182	3699	---	---	---	---
11000	1586	2712	1801	3078	2067	3533	---	---	---	---	---	---
12000	1743	3010	1982	3419	2279	3931	---	---	---	---	---	---

Figure 5-15 – Takeoff Distance (6750 Pounds)

Quest Kodiak 100 Landing **Design** Conditions

- Mean Daily Max Temp: 74°F/23°C
- Airport Elevation: 24 feet
- Max Take Off Weight: 6750 lbs
- Flap Setting: Normal Take Off
- 0.3% runway gradient
- Zero wind

Mean High Temp @ S43 = 74°F/23°C. Interpolating between 20°C and 30°C (blue ovals) yields a **required Take Off Distance of 1264' @ Max Gross T/O Wt.**

Source: Quest Aircraft Company, Kodiak100 Series Pilot Operating Handbook and Aircraft Flight Manual, Section 5

Figure 10 - Quest Kodiak 100 - Landing

WT (LB)	50' Speed (KIAS)	Press Alt (FT)	0°C		20°C		40°C	
			GRD ROLL (FT)	Total Feet to Clear 50' OBS	GRD ROLL (FT)	Total Feet to Clear 50' OBS	GRD ROLL (FT)	Total Feet to Clear 50' OBS
6690	76	SL	867	1603	931	1681	994	1760
		2000	918	1719	986	1807	1053	1896
		4000	973	1849	1045	1947	1116	2047
		6000	1033	1994	1109	2104	---	---
		8000	1097	2156	1177	2279	---	---
		10000	1165	2336	1251	2475	---	---
6000	72	SL	737	1355	791	1419	845	1484
		2000	781	1452	838	1524	895	1597
		4000	827	1560	888	1640	949	1722
		6000	878	1679	943	1769	---	---
		8000	932	1813	1001	1914	---	---
		10000	991	1962	1063	2075	---	---
5000	65	SL	574	1038	616	1086	658	1134
		2000	608	1111	653	1164	697	1218
		4000	645	1191	692	1251	739	1312
		6000	684	1281	734	1348	---	---
		8000	727	1381	780	1455	---	---
		10000	772	1492	828	1576	---	---

Figure 5-27 – Landing Distance

Quest Kodiak 100 Landing **Design** Conditions

- Mean Daily Max Temp: 74°F/23°C
- Airport Elevation: 24 feet
- Max Landing Weight: 6690 lbs
- Flap Setting: Normal Landing
- 0.3% runway gradient
- Zero wind

Mean High Temp @ S43 = 74°F/23°C. Interpolating between 20°C and 40°C (blue ovals) yields a **required Landing Distance of 1693'.**

Source: Quest Aircraft Company, Kodiak100 Series Pilot Operating Handbook and Aircraft Flight Manual, Section 5

Figure 11 - Cessna Caravan 208B with Blackhawk Engine Conversion – Take Off

POH AND AFM SUPPLEMENT
CESSNA CARAVAN 208B EQUIPPED
WITH PT6A-42A ENGINE

Blackhawk
7601 KARL MAY DR, WACO, TX, 254-755-6711

STC SA02357LA
AFMS 200603

(CARGO POD INSTALLED)
NORMAL TAKEOFF DISTANCE
FLAPS 20°

Sheet 2 of 2

Sheet ½ not included as Sheet 2/2 provides relevant temperature i.e. 23°C.

CONDITIONS:
Flaps 20°
2000 RPM
Inertial Separator - Normal
Cabin Heat - Off
Engine Torque For Takeoff
Paved, Level, Dry Runway
Zero Wind
Cargo Pod Installed

NOTES:
1. Engine Torque for Takeoff is the torque provided on pp. 29-30.
2. Normal takeoff procedure as specified in Section 4.
3. Decrease distances 10% for each 11 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
4. For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.
5. When takeoff power is below 2232 ft-lbs, increase distance (both ground roll and total distance) by 3% when the inertial separator is in BYPASS and increase ground roll 5% and total distances 10% when cabin heat is on.
6. For operations above 40° C and below the operating temperature limits, increase distances by 20%.
7. Distances included above the temperature limits are provided for interpolation purposes only.

WEIGHT POUNDS	TAKEOFF SPEED - KIAS LIFT OFF	TAKEOFF SPEED - KIAS AT 50 FT	PRESS ALT FT	20°C GRD ROLL FT	20°C TOTAL FT TO CLEAR 50 FT OBS	30°C GRD ROLL FT	30°C TOTAL FT TO CLEAR 50 FT OBS	40°C GRD ROLL FT	40°C TOTAL FT TO CLEAR 50 FT OBS
9062	71	86	SL	1205	2075	1280	2195	1450	2505
			2000	1345	2285	1480	2535	1665	2905
			4000	1570	2650	1760	3015	2000	3520
			6000	1865	3175	2090	3650	2355	4250
			8000	2235	3905	2510	4515	2835	5300
			10000	2695	4855	3030	5665	----	----
			12000	3275	6140	3710	7325	----	----
8750	70	83	SL	1100	1885	1170	2005	1320	2280
			2000	1230	2090	1365	2330	1540	2650
			4000	1430	2415	1605	2725	1805	3135
			6000	1700	2865	1900	3270	2140	3795
			8000	2030	3500	2280	4035	2570	4710
			10000	2445	4335	2740	5025	----	----
			12000	2965	5435	3340	6400	----	----
8300	67	80	SL	955	1640	1010	1720	1140	1975

- Mean Daily Max Temp: 74°F/23°C
- Airport Elevation: 24 feet
- Max Take Off Weight: 9062 lbs
- Flap Setting: Normal Take Off
- 0.3% runway gradient
- Zero wind

Mean High Temp @ S43 =74°F/23°C. Interpolating between 20°C and 30°C (blue ovals) yields a required **Take Off Distance of 2111'.**

Figure 12 - Cessna Caravan 208B with Blackhawk Engine Conversion – Landing

POH AND AFM SUPPLEMENT
CESSNA CARAVAN 208B EQUIPPED
WITH PT6A-42A ENGINE

Blackhawk
7601 KARL MAY DR, WACO, TX, 254-755-6711

STC SA02357LA
AFMS 200803

(CARGO POD INSTALLED)
LANDING DISTANCE (CONTINUED)
SHORT FIELD - FLAPS 30°

CONDITIONS:
Flaps 30°

Power Lever – Idle after clearing obstacles, BETA range (lever against spring) after touchdown.
Propeller Control Lever - MAX
Paved, Level, Dry Runway
Zero Wind
Cargo Pod Installed

NOTES:
1. Short field landing procedure Section 4 of the basic Cessna POH and AFM.
2. Decrease distances 10% for each 11 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 40% of the "ground roll" figure.
4. If a landing with flaps up is necessary, increase the approach speed by 15 KIAS and allow for 40% longer distances.
5. Use of maximum reverse thrust after touchdown reduces ground roll by approximately 10%.
6. Distances are provided above the outside temperature limits for interpolation only.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	20° C GRD ROLL FT	20° C TOTAL FEET TO CLEAR 50 FT OBS	30° C GRD ROLL FT	30° C TOTAL FEET TO CLEAR 50 FT OBS	40° C GRD ROLL FT	40° C TOTAL FEET TO CLEAR 50 FT OBS
9000	80	SL	780	1615	805	1645	830	1690
		2000	825	1695	850	1720	875	1765
		4000	870	1755	900	1800	925	1850
		6000	925	1850	955	1890	985	1935
		8000	985	1940	1015	1985	1045	2035
		10000	1045	2035	1080	2090	- - - -	- - - -
		12000	1115	2155	- - - -	- - - -	- - - -	- - - -
8500	78	SL	755	1580	780	1610	800	1650
		2000	795	1650	820	1685	845	1725
		4000	840	1720	870	1760	895	1810
		6000	895	1805	920	1850	950	1890
		8000	950	1895	980	1940	1005	1985
		12000	995	1965	1025	2015	- - - -	- - - -

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DATE: Oct 03, 2012

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- Mean Daily Max Temp: $74^0F/23^0C$
- Airport Elevation: 24 feet
- Max Landing Weight: 9000 lbs
- Flap Setting: Normal Landing
- 0.3% runway gradient
- Zero wind

Mean High Temp @ S43 $=74^0F/23^0C$. Interpolating between 20^0C and 30^0C (blue ovals) yields a required **Take Off Distance of 1625'.**