SECTION 5 PERFORMANCE AND FLIGHT PLANNING

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CAA Approved
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TP.T67M-MkII/FM

5.1 GENERAL

5.1.1 Performance Group

This aircraft is classified in Performance Group E of BCAR. This means that there is no specific provision for performance after engine failure. The performance data has been measured in accordance with both Section K BCAR and FAR Part 23.

5.1.2 Flight Over Water Speed

The declared "flight over water" speed of the aircraft is a true airspeed of 100 kts.

5.1.3 Air Speed Indicator Position Errors

Flaps Retracted

IAS (Kts)	50	60	70	80	90	100	110	120	130	140	150	160	170	180
CAS (Kts)	51	61	71	81	91	100.5	111.5	121.5	131.5	141.5	151	162	172	182

Takeoff Flap

IAS (Kts)	50	60	70	80	90	100	110	120
CAS (Kts)	50	60.5	71	81	91	102	112	122

Landing Flap

IAS (Kts)	50	60	70	80	90	98
CAS (Kts)	51.3	61	70.7	81	91	99

5.1.4 Altimeter Position Errors

The maximum altimeter static error is -30 ft.

5.1.5 Maximum Crosswind Components

The maximum demonstrated crosswind component for takeoff and landing is 25 kts.

5.1.6 Stall Speeds - At Forward C of G

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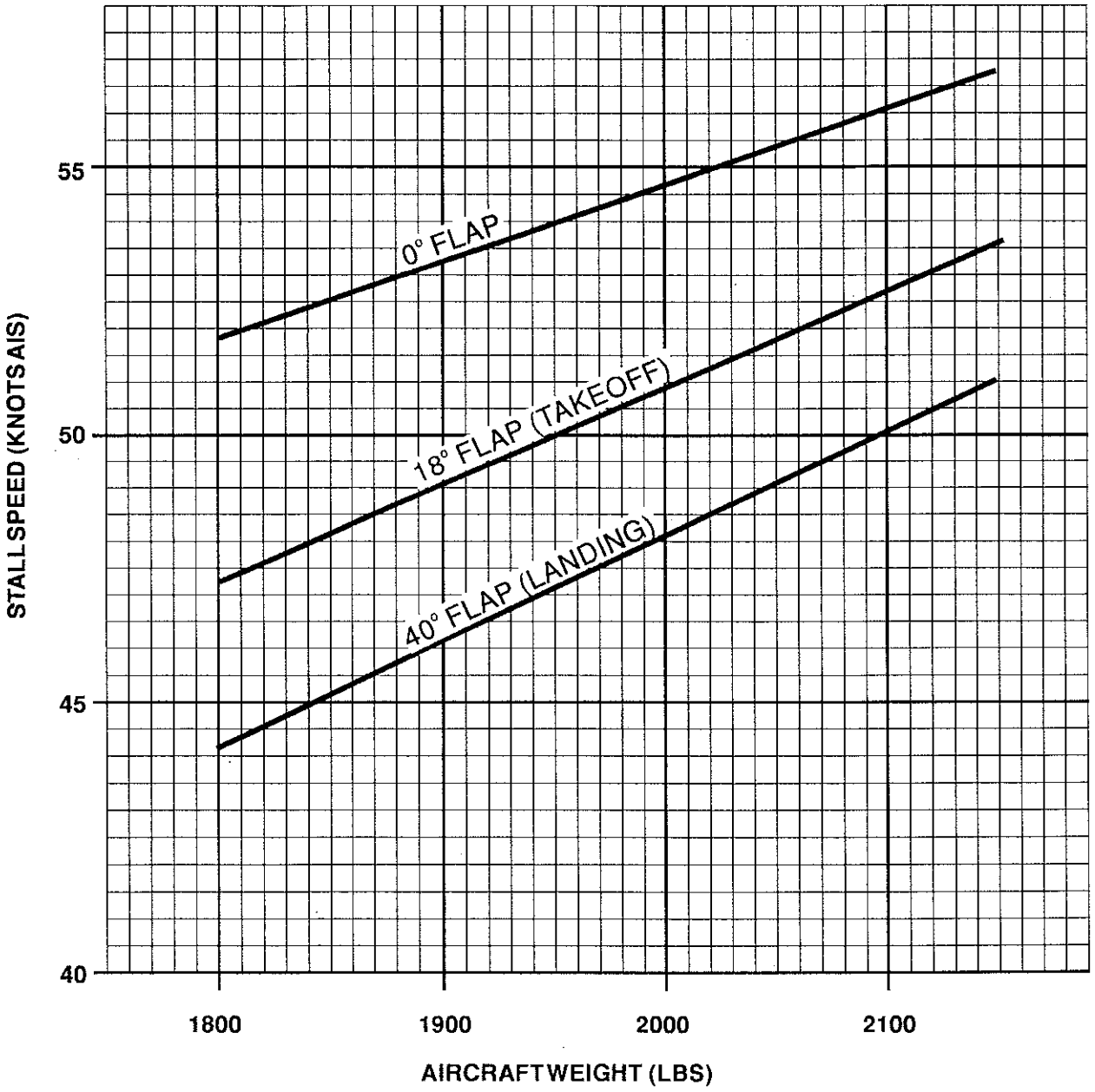

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5.2 TAKEOFF PERFORMANCE

The information is derived from the table and represents the take off distances required from rest to the 50ft (15m) height point.

Take off Distance (ft)

Conditions: Flaps 18deg / Full Throttle Prior to Brake Release / Paved,Level Runway - Zero Wind

Gross Weight	Takeoff Speed		Pressure Altitude		-5 degC		+5degC		+15degC		+25degC	
	Lift off	At 50 ft	ft	m	Ground Roll	Total to Clear 50 ft	Ground Roll	Total to Clear 50 ft	Ground Roll	Total to Clear 50 ft	Ground Roll	Total to Clear 50 ft
2150 lbs (975 Kg)	55Kts	70 Kts	Sea Level		727	1457	785	1549	846	1660	911	1771
			1000	305	791	1566	851	1668	920	1793	997	1913
			2000	610	876	1722	943	1839	1024	1976	1104	2111
			3000	914	979	1920	1061	2048	1150	2198	1250	2368
			4000	1219	1103	2139	1202	2301	1303	2466	1415	2654
			5000	1524	1248	2402	1363	2593	1483	2776	1607	3002
			6000	1829	1414	2710	1554	2938	1691	3136	1825	3404
			7000	2134	1600	3059	1770	3298	1924	3540	2070	3857
			8000	2438	1806	3447	2010	3697	2183	3990	2341	4362

For operation on grass runways the total Takeoff Distances scheduled for paved runways must be increased as follows :-

(i) Short Dry Grass : 10% of the Total Takeoff Distance

(ii) Short Wet Grass : 15% of the Total Takeoff Distance

Note : Short Grass is here Defined as 3-4" high

For operation in windy conditions the following corrections must be applied :

(i) Headwind : Decrease distances by 10% for each 10 Knots

(ii) Tailwind increase distances by 10% for each 2 Knots

In the event of a flapless takeoff (lift off speed 59Kts IAS, speed at 50ft screen height of 76 Kts IAS) the ground run and total takeoff distance should be increased 35% and 25% respectively

5.3 CLIMB

5.3.1 Climb Speeds

> The best rate of climb speed at maximum AUW 975 kg (2150 lbs) is 77 kts IAS without flap in ISA temperatures. <

5.3.2 Rate of Climb in ISA Temperatures

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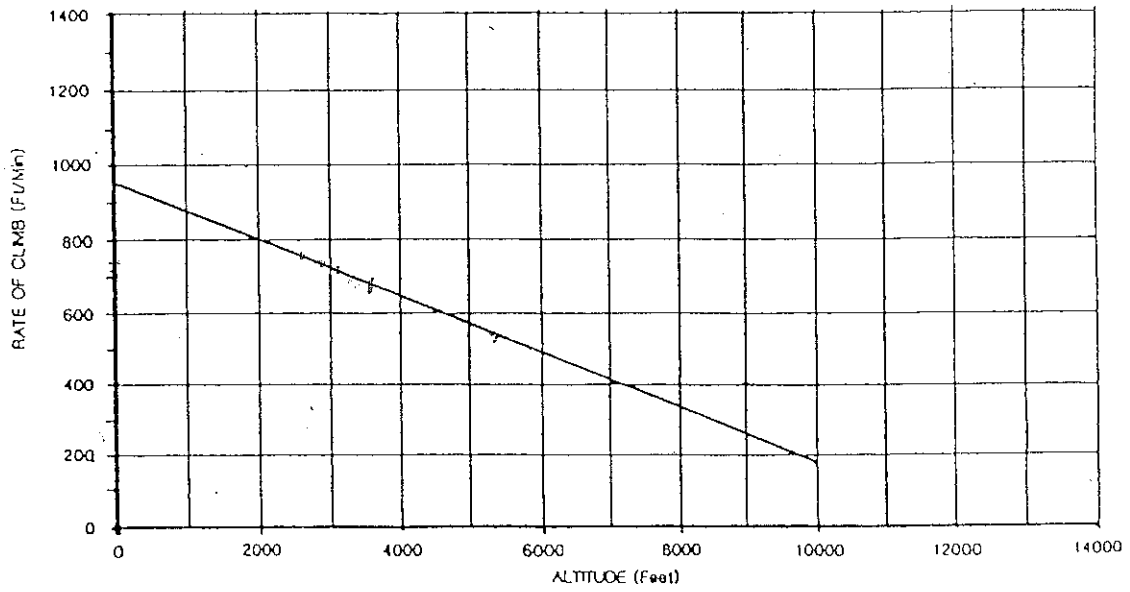

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Note: In hot weather, reduce the rate of climb by 20 feet per minute for every 5°C above the standard temperature at the altitude in question.

5.4 LANDING PERFORMANCE

The information is derived from the table and represents the landing distance required from a height of 50ft (15m) to bring the aircraft to rest.

Landing Distance (ft) (Factored

Conditions: Flaps 40deg / Power Off / Moderate Braking / Hard Dry Runway - Zero Wind

Gross Weight	Indicated Airspeed At 50 feet	Pressure Altitude ft	Pressure Altitude m	-5 degC Ground Roll	-5 degC Total to Clear 50 ft	+5degC Ground Roll	+5degC Total to Clear 50 ft	+15degC Ground Roll	+15degC Total to Clear 50 ft	+25degC Ground Roll	+25degC Total to Clear 50 ft	+35degC Ground Roll	+35degC Total to Clear 50 ft
2150 lbs (975 Kg)	70 Kts	Sea Level		987	1919	1023	1990	1060	2065	1096	2136	1135	2207
		1000	305	1023	1992	1060	2065	1100	2141	1136	2215	1175	2289
		2000	610	1060	2065	1098	2144	1140	2219	1180	2298	1220	2375
		3000	914	1098	2144	1140	2224	1184	2304	1222	2382	1264	2461
		4000	1219	1140	2223	1185	2306	1228	2391	1270	2474	1313	2557
		5000	1524	1186	2308	1229	2395	1275	2482	1319	2566	1362	2653
		6000	1829	1230	2397	1277	2485	1323	2577	1368	2665	1414	2755
		7000	2134	1278	2491	1327	2584	1375	2676	1422	2769	1470	2861
		8000	2438	1328	2586	1379	2682	1427	2779	1477	2874	1525	2972

For operation on grass runways the total Landing Distances scheduled for paved runways must be increased as follows :-

(i) Short Dry Grass : 10% of the Total Landing Distance

(ii) Short Wet Grass : 30% of the Total Landing Distance

Note : Short Grass is here Defined as 3-4" high

For operation in windy conditions the following corrections must be applied :

(i) Headwind : Decrease distances by 10% for each 10 Knots

(ii) Tailwind increase distances by 10% for each 2 Knots

In the event of a flapless landing (approach speed of 76Kts IAS), the ground roll figures should be increased by 55% and the total landing distance by 30%

5.5 GLIDE PERFORMANCE

> At maximum total weight of 975 kg (2150 lbs)

Set speed to 80 kts (IAS) (this gives the maximum glide angle which is 1 in 9.1). <

Engine Off - Propeller Windmilling - Flaps Retracted -- No Wind.

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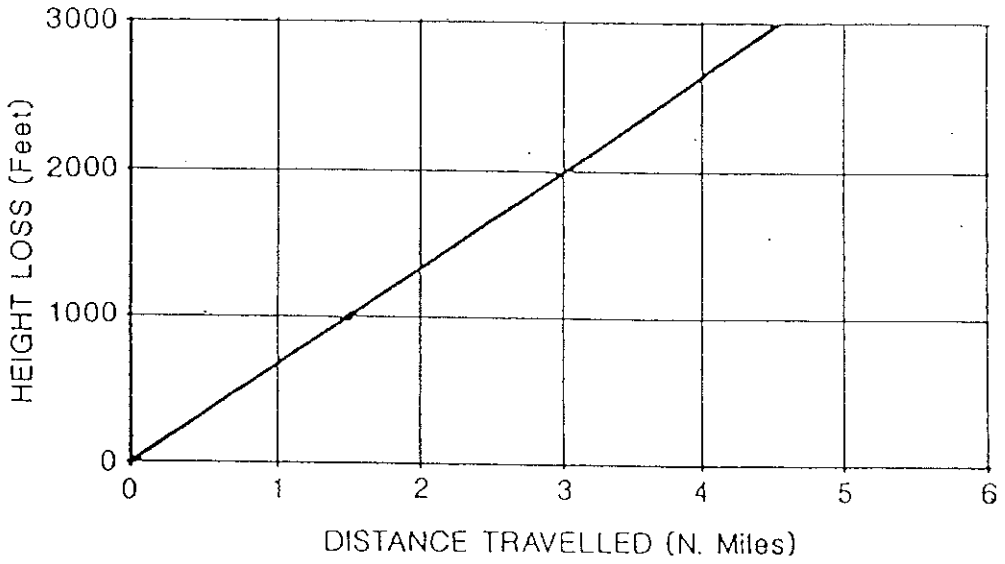

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5.6 ENDURANCE PERFORMANCE - MAX FUEL 34.62 Imp Gal (41.58 US Gal) (157.4 litres)

CONDITIONS - 2100 lbs (953 kg) POST MOD 321
STANDARD TEMPERATURE - NO WIND

At mixture setting, "BEST ECONOMY", 45% power at 2000 ft (610m) and 2100 RPM the expected endurance would be 6.16 HOURS.

NOTES:

1. This figure includes 45 min reserve at 45% Power = 3.6 Imp Gal (4.3 US Gal) (16.4 litres) BEST ECONOMY

2. This figure includes allowance for engine start, taxy and take-off = 0.9 Imp Gal (1.1 US Gal) (4.1 litres)

3. This figure includes allowance for time to climb, ref. Table 5.9.

5.7 CRUISE PERFORMANCE

CONDITIONS : 2000 lbs (907 kg)									
PRESSURE ALTITUDE : 2000 FT (610M)									
MIXTURE SETTING	MANIFOLD PRESSURE (Ins Hg)	FUEL PRESSURE (psig)	% POWER	RPM	STANDARD TEMPERATURE				
					TRUE AIRSPEED		FUEL USED		
					km/h	Kts	UK gal/h	litres /h	US gal/h
Best Economy	27.1	4.0	94	2700	250	135	10.0	45.5	12.0
	25.0	2.7	85	2700	226	122	8.1	36.8	9.7
	22.0	1.9	71	2700	209	113	6.8	30.9	8.2
	20.0	1.4	61	2700	193	104	5.8	26.4	7.0
	27.1	4.0	89	2500	243	131	10.0	45.5	12.0
	25.0	2.4	79	2500	224	121	7.8	35.5	9.4
	22.0	1.6	66	2500	206	111	6.2	28.2	7.4
	20.0	1.3	57	2500	198	107	5.6	25.5	6.7
	18.0	1.2	48	2500	183	99	5.3	24.1	6.4
	27.1	3.0	83	2300	235	127	8.7	39.6	10.4
	25.0	1.6	74	2300	200	108	6.2	28.2	7.4
	22.0	1.2	61	2300	195	105	5.3	24.1	6.4
	19.0	1.0	48	2300	183	99	4.8	21.8	5.8
	25.0	1.8	66	2100	217	117	6.7	30.5	8.1
	22.0	1.3	55	2100	198	107	5.6	25.5	6.7
	20.0	1.0	46	2100	187	101	4.8	21.8	5.8

CRUISE PERFORMANCE (continued)

MIXTURE SETTING	MANIFOLD PRESSURE (Ins Hg)	FUEL PRESSURE (psig)	% POWER	RPM	STANDARD TEMPERATURE				
					TRUE AIRSPEED		FUEL USED		
					km/h	Kts	UK gal/h	litres /h	US gal/h
PRESSURE ALTITUDE : 4000 FT (1219 M)									
Best Economy	25.1	4.3	88	2700	248	134	10.4	47.3	12.5
	23.0	2.7	78	2700	235	127	8.1	36.8	9.7
	21.0	2.1	69	2700	129	120	7.2	32.7	8.6
	18.0	1.3	55	2700	123	115	5.6	25.5	6.7
	25.1	3.8	83	2500	139	130	9.7	44.1	11.6
	23.0	2.2	74	2500	130	121	7.3	33.2	8.8
	21.0	1.7	65	2500	122	114	6.4	29.1	7.7
	19.0	1.3	56	2500	114	106	5.6	25.5	6.7
	25.1	3.3	77	2300	235	127	9.1	41.4	10.9
	23.0	1.7	68	2300	127	118	6.4	29.1	7.7
	20.0	1.2	55	2300	118	110	5.3	24.1	6.4
	25.1	2.8	69	2100	131	122	8.4	38.2	10.1
	23.0	1.7	61	2100	118	110	6.4	29.1	7.7
	20.0	1.2	50	2100	113	105	5.3	24.1	6.4
PRESSURE ALTITUDE . 6000 FT (1829 M)									
Best Economy	23.2	4.3	82	2700	241	130	10.4	47.3	12.5
	21.0	2.7	72	2700	230	124	8.1	36.8	9.7
	17.0	1.5	53	2700	196	106	6.0	27.3	7.2
	23.2	3.8	77	2500	239	129	9.7	44.1	11.6
	21.0	2.2	67	2500	219	118	7.3	33.2	8.8
	19.0	1.7	58	2500	211	114	6.4	29.1	7.7
	17.0	1.4	49	2500	200	108	5.8	26.4	7.0
	23.3	3.4	73	2300	228	123	9.3	42.3	11.2
	21.0	1.8	63	2300	215	116	6.7	30.5	8.0
	19.0	1.4	54	2300	196	106	5.8	26.4	7.0
	23.5	3.2	66	2100	219	118	8.9	40.5	10.7
	21.0	1.8	56	2100	208	112	6.7	30.5	8.0
	19.0	1.3	49	2100	195	105	5.6	25.5	6.7

CRUISE PERFORMANCE (continued)

MIXTURE SETTING	MANIFOLD PRESSURE (Ins Hg)	FUEL PRESSURE (psig)	% POWER	RPM	STANDARD TEMPERATURE				
					TRUE AIRSPEED		FUEL USED		
					km/h	Kts	UK gal/h	Litres /h	US gal/h
PRESSURE ALTITUDE : 8000 FT (2438 M)									
Best Economy	21.7	3.9	78	2700	237	128	9.8	44.6	11.8
	20.0	2.0	69	2700	219	118	7.0	31.8	8.4
	18.0	1.6	60	2700	211	114	6.2	28.2	7.4
	16.0	1.2	-	2700	196	106	5.3	24.1	6.4
	21.6	2.9	73	2500	224	121	8.5	38.6	10.2
	20.0	1.7	65	2500	217	117	6.4	29.1	7.7
	18.0	1.4	56	2500	204	110	5.8	26.4	7.0
	16.0	1.1	-	2500	191	103	5.1	23.2	6.1
	21.7	2.8	68	2300	217	117	8.4	38.2	10.1
	20.0	1.5	60	2300	211	114	6.0	27.3	7.2
	18.0	1.2	52	2300	200	108	5.3	24.1	6.4
	16.0	1.0	-	2300	185	100	4.8	21.8	5.8
	21.8	2.2	62	2100	213	115	7.3	33.2	8.8
	20.0	1.2	54	2100	200	108	5.3	24.1	6.4
	18.0	1.0	-	2100	191	103	4.8	21.8	5.8
	16.0	0.7	-	2100	176	95	4.0	18.2	4.8
PRESSURE ALTITUDE . 10,000 FT (3048 M)									
Best Economy	20.0	3.0	72	2700	230	124	8.7	39.6	10.4
	18.0	1.9	63	2700	221	119	6.8	30.9	8.2
	16.0	1.4	-	2700	202	109	5.8	26.3	7.0
	20.0	2.6	67	2500	222	120	7.9	35.9	9.5
	18.0	1.4	59	2500	208	112	5.8	26.4	7.0
	16.0	1.0	-	2500	195	105	4.8	21.8	5.8
	20.1	2.1	63	2300	222	120	7.2	32.7	8.6
	18.0	1.2	55	2300	211	114	5.3	24.1	6.4
	16.0	0.9	-	2300	200	108	4.6	20.9	5.5
	20.1	1.9	58	2100	208	112	6.8	30.9	8.2
	18.0	1.0	49	2100	196	106	4.8	21.8	5.8
	16.0	0.7	-	2100	182	98	4.0	18.2	4.8

5.8 TIME, FUEL AND DISTANCE TO CLIMB MAXIMUM RATE OF CLIMB

CONDITIONS : CLEAN FLAP - FULL THROTTLE - FULL RICH - STANDARD TEMPERATURE - ZERO WIND

WEIGHT LBS (Kg)	PRESSURE ALTITUDE		TEMPER-ATURE	INDICATED CLIMB SPEED IAS		RATE OF CLIMB		FROM SEA LEVEL					
								TIME MIN.	FUEL USED			DISTANCE	
	FT	m	°C	Km/h	Kts	FT/MIN	m/s		Imp Gal	litres	US Gal	NM	Km
2100 (953)	Sea	Level	15	143	77	1000	5.1	0.0	0.0	0.0	0.0	0.0	0.0
	1000	305	13	143	77	922	4.7	1.1	0.2	0.9	0.2	1.4	2.5
	2000	610	11	143	77	844	4.3	2.2	0.4	1.8	0.5	2.9	5.3
	3000	914	9	143	77	766	3.9	3.4	0.6	2.7	0.7	4.5	8.3
	4000	1219	7	143	77	688	3.5	4.7	0.8	3.7	1.0	6.3	11.7
	5000	1524	5	143	77	610	3.1	6.2	1.1	4.8	1.3	8.4	15.5
	6000	1829	3	143	77	531	2.7	7.8	1.3	5.9	1.6	10.6	19.7
	7000	2134	1	143	77	453	2.3	9.6	1.6	7.2	1.9	13.2	24.4
	8000	2438	-1	143	77	375	1.9	11.6	1.9	8.6	2.3	16.1	29.7
	9000	2743	-3	143	77	297	1.5	13.9	2.2	10.0	2.6	19.3	35.8
	10000	3048	-5	143	77	219	1.1	16.4	2.6	11.7	3.1	23.0	42.7

NOTES:

1. Add 0.9 Imp Gal (1.1 US Gal) (4.1 litres) of fuel for engine start, taxy and take-off allowance
2. Increase time, fuel and distance by 10% for each 10°C above standard temperature

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