



MJC-8 Q400  
ALL EDITIONS  
Version 1.0

# Performance Manual



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## Chapter 1: Performance

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# Chapter 1: Performance

## Quick Reference Landing Data

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### Landing Distance Calculations – Inflight Use Only

Landing Distance Calculations are performed for every landing, normal or abnormal configurations/ conditions. There are 3 ways to calculate actual landing distance: AeroData via ACARS, performance tables, or Takeoff and Landing Report (TLR).

The crew must understand that regardless of the method used to compute landing distance, landing distance calculations provided assume:

- Maximum available braking
- Crossing the runway threshold at 50' AGL at  $V_{REF}$  (or Derived  $V_{REF}$  when applicable)
- ISA temperature
- Landing as performed by a test pilot

Landing distance calculations do not assume:

- Operational factors (differences in piloting technique, floating, speeds greater than  $V_{REF}$  at 50' AGL, excessive power applied to correct descent rate or airspeed trend)
- Reverse thrust (which may be used, commensurate with directional control, to reduce the calculated landing distance)

Data is presented for weights above structural landing limits in case of emergency/return to land situations. The data may be used to assess the balance of risk between a possible hazardous diversion airport that may have the required length (but other factors are less desirable such as available approaches, radar, mountainous terrain, etc.) and a possible landing over-run at an airport that is normally served but has a shorter length given the circumstances.

### Contaminated Runways and Landing Distance for Abnormal Factors

#### **WARNING**

*Landing distance for abnormal factors contained in Abnormal and Emergency checklists are NOT for use on contaminated runways and do not include operational factors. If a landing must be made on a contaminated runway because no other options are available, the crew must be aware of the risk of a landing over-run.*

### Conditional Landing Distance Statement Use:

If all landing conditions within the conditional landing distance statement match the conditions for landing, then the actual landing distance to bring the aircraft to a full stop is equal to or less than the distance provided (with no operational factors). If any condition does not match the conditions for landing, a calculation must be performed using one of the 3 provided methods (AeroData, performance tables, or TLR). **Example:**

Conditional Landing Distance Statement	
Level 1 Ice Protection	Landing Distance = 5100 ft
Wt. less than 64,500 lbs.	
Flap greater than or equal to 10°	
Dry Runway	
Airport Elevation less than 2000 ft	
Tailwind less than or equal to 10 kts.	

If the usable runway length is greater than or equal to the landing distance provided, then no further landing distance calculations are required.

### Calculating Landing Distance for Abnormal Factors in Abnormal and Emergency checklists:

STEP 1 – Find Actual Landing Distance using one of the following methods:

- AeroData (via ACARS)--LD DIST (Note: cannot calculate flaps 0 or 5)
- Actual Landing Distance tables ( Chapter 1)
- Takeoff and Landing Report (TLR)--ACTUAL LDG DIST

#### Example:

Flaps 35 / Level 1 / 58000 lbs / Sea Level / Dry Runway / Wind Calm = Actual Landing Distance 2427 ft

STEP 2 – Calculate Factored Landing Distance:

- Multiply the Actual Landing Distance from [STEP 1] by the Landing Distance Factor found in the applicable Checklist.

#### Example:

[2427 ft] x [ Abnormal Factor] = Required landing Distance  
 2427 ft x 1.4 [Abnormal Factor from Rudder Control Jam  
 Abnormal checklist] = 3397 ft  
 If, wet, 2427 x 1.4 x 1.5 = 5097 ft

### **Calculating Landing Distance for Abnormal Factors using : AeroData:**

- STEP 1 – Request Actual Landing Distance for aircraft weight, landing flap, ICING or EICE (if applicable), Normal NP (NNP), headwind / tailwind, and altimeter setting.
- STEP 2 – LD DIST = Actual Landing Distance. Multiply LD DIST by the abnormal landing distance factor specified in the applicable checklist for appropriate ice protection level.

**NOTE:**

AeroData does NOT calculate speeds or landing distance for landings with less than 10° flap.

### **Calculating Landing Distance for Abnormal Factors using Actual Landing Distance Tables:**

- STEP 1 – Select the Actual Landing Distance table for the landing flap setting and ice protection level from Chapter 1.
- STEP 2 – Select landing weight and airport pressure altitude to find actual landing distance. (Distance may be selected first to find maximum weight and pressure altitude for a given runway landing distance.)
- STEP 3 – Multiply the actual landing distance by the abnormal landing distance factor specified in the checklist for the appropriate ice protection level.

### **Calculating Landing Distance for Abnormal Factors using TLR:**

- STEP 1 – Refer to “ACTUAL LADG DIST” table and select the correct weight (“LDW”), select DRY or WET runway.
- STEP 2 – Apply the appropriate correction for headwind or tailwind component. If landing Level 2 or 3, add the “ICE-ACC” correction. The resultant number is the Actual Landing Distance.
- STEP 3 – Multiply the Actual Landing Distance by the Abnormal Factor specified in the checklist for the appropriate ice protection level.

## Landing Speeds

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### Determining landing speeds for a checklist:

If a  $V_{REF}$  (or Derived  $V_{REF}$ ) table is provided in the checklist, the  $V_{REF}$  (or Derived  $V_{REF}$ ) for planned aircraft weight and ice protection level will be bugged using the solid bug and will be the only bug used. The bug will be flown for approach, landing and go-around to acceleration altitude. Bombardier and AeroData assume that an abnormal/emergency checklist will terminate with a safe landing. This is the reason that no  $V_{GA}$ ,  $V_{FRI}$  or  $V_{CLIMB}$  speed is provided.

**WARNING**

*If a  $V_{REF}$  (or Derived  $V_{REF}$ ) Table is provided in the checklist DO NOT use speeds provided by AeroData, normal Landing / Go-Around speeds (Chapter 1), or speeds provided by the TLR.*

- STEP 1 – Find landing speeds using one of the following:
- Only use  $V_{REF}$  or Derived  $V_{REF}$  Table, if provided by a Checklist
  - AeroData (ACARS)
  - Landing / Go-Around Speeds Tables
  - Takeoff and Landing Report (TLR)
- STEP 2 – Determine landing speeds using estimated landing weight rounded to the nearest 1,000 pound increment. Select the appropriate ice protection level.



## Definitions

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$V_1$  – Take-off decision speed. It is the maximum speed in the takeoff which the pilot must take the first action (e.g., apply brakes, reduce thrust, deploy speed brakes) to stop the airplane within the accelerate-stop distance. It is also the minimum speed in the takeoff, following a failure of the critical engine at  $V_{EF}$ , at which the pilot can continue the takeoff and achieve the required height above the takeoff surface within the takeoff distance.

$V_R$  – Rotation speed. Speed at which rotation is initiated during take-off to attain  $V_2$  at or before a height of 35 ft above the runway.

$V_2$  – Take-off safety speed. Target climb speed to be attained at or before a height of 35 ft above the runway during a continued take-off, following an engine failure. It is equal to 13% above the reference stall speed (or  $1.13V_{SR}$ ).

$V_{FRI}$  – Flap retraction initiation speed.

$V_{CLIMB}$  – Single-engine best rate-of-climb speed.

$V_{REF}$  – Approach speed at a height of 50 ft above the runway in the landing configuration and is normally equal to 23% above the reference stall speed (or  $1.23V_{SR}$ ).

**Derived  $V_{REF}$**  – Is the reference speed for landing ( $1.23V_{SR}$ ) corrected for an aircraft system malfunction. This speed is found in a table for any checklist requiring a correction to  $V_{REF}$  and includes corrections for the company defined “Level 1” or “Level 2/3” [meaning 2 or 3] Ice Protection.

$V_{GA}$  – Go-around speed equal to  $V_2$  and is 13% above the reference stall speed (or  $1.13V_{SR}$ ).

$V_{EF}$  – Critical engine failure speed.

$V_{SR}$  – Reference stall speed.

**Abnormal Landing Distance Factor** – Is the factor that the actual landing distance is multiplied by to estimate a landing distance after an aircraft system malfunction and is found in the applicable checklist. This factor should never be used to estimate landing distance on a contaminated runway and is to be used to assess the balance of risk between a hazardous diversion and a possible landing over-run.

**NOTE:**

Landing distance calculations for actual landing distance multiplied by abnormal factor may vary slightly depending on the method used (AeroData, Performance Manual, TLR) and this is acceptable. All data has been compared with the manufacturer's advisory information and is considered to be best guidance for use in an actual emergency.

**Actual Landing Distance** – Is the actual distance it takes to cross the landing threshold at 50 AGL at  $V_{REF}$ ; land on a runway with zero slope; after landing, use maximum braking; and come to a complete stop. No considerations are given for operational factors. No credit is given for the use of reverse thrust but it may reduce the landing distance considerably when used immediately after landing.

**Conditional Landing Distance Statement** – Is a statement that is added to each procedure requiring a landing distance calculation for an abnormal factor. If all landing conditions within the statement are true, then it gives the landing distance required.

**Operational Factor** – Is a factor added for dispatch by airline regulations to compensate for differences in piloting technique, floating, speeds slightly greater than  $V_{REF}$  at 50' AGL, power applied to correct descent rate or airspeed trend, etc. Actual Landing distance data in the manufacturer's airplane flight manuals is based on ideal conditions with a test pilot at the controls.

**Factored Landing Distance** – The actual certified landing distance adjusted for airport and aircraft conditions, and then multiplied by the appropriate operational factor to satisfy a regulatory pre-departure requirement (used for aircraft dispatch).

**WAT Limit** – Weight, Altitude and Temperature limit. Published for each combination of landing weight, flap setting, ice protection level, and pressure altitude. Operating at temperatures colder than the temperature specified assures a minimum climb gradient of 2.4% for takeoff and 2.1% for a go-around as required by regulation.

WIND COMPONENT TABLE

WIND SPEED KNOTS	ANGLE BETWEEN WIND DIRECTION AND HEADING (LEFT OR RIGHT)								CROSS WIND COMPONENT																																																																												
	10	20	30	40	50	60	70	80	100	110	120	130	140	150	160	170	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
	HEAD WIND COMPONENT								TAIL WIND COMPONENT								CROSS WIND COMPONENT																																																																				
5	5	4	4	4	3	3	2	1	1	2	3	3	4	4	5	5	1	2	3	3	4	4	5	5	5	10	15	20	25	30	35	40	45	50	55	60	65	70																																															
10	9	9	8	8	6	5	3	2	2	3	5	6	8	9	9	10	2	3	5	6	8	9	10	10	15	20	25	30	35	40	45	50	55	60	65	70																																																	
15	14	13	11	10	8	5	3	3	3	5	8	10	11	13	14	15	3	5	8	10	11	13	14	15	15	20	25	30	35	40	45	50	55	60	65	70																																																	
20	19	17	15	13	10	7	3	3	3	7	10	13	15	17	19	20	3	7	10	13	15	17	19	20	20	25	30	35	40	45	50	55	60	65	70																																																		
25	23	22	19	16	13	9	4	4	4	9	13	16	19	22	23	25	4	9	13	16	19	22	23	25	25	30	35	40	45	50	55	60	65	70																																																			
30	28	26	23	19	15	10	5	5	5	10	15	19	23	26	28	29	5	10	15	19	23	26	28	29	30	35	40	45	50	55	60	65	70																																																				
35	34	33	30	27	22	18	12	6	6	12	18	22	27	30	33	34	6	12	18	22	27	30	33	34	35	40	45	50	55	60	65	70																																																					
40	38	35	31	26	20	14	7	7	7	14	20	26	31	35	38	39	7	14	20	26	31	35	38	39	40	45	50	55	60	65	70																																																						
45	44	42	39	34	29	23	15	8	8	15	23	29	34	39	42	44	8	15	23	29	34	39	42	44	45	50	55	60	65	70																																																							
50	49	47	43	38	32	25	17	9	9	17	25	32	38	43	47	49	9	17	25	32	38	43	47	49	50	55	60	65	70																																																								
55	54	52	48	42	35	28	19	9	9	19	28	35	42	48	52	54	9	19	28	35	42	48	52	54	55	60	65	70																																																									
60	59	56	52	46	39	30	21	10	10	21	30	39	46	52	56	59	10	21	30	39	46	52	56	59	60	65	70																																																										
65	64	61	56	50	42	33	22	11	11	22	33	42	50	56	61	64	11	22	33	42	50	56	61	64	65	70																																																											
70	69	66	61	54	45	35	24	12	12	24	35	45	54	61	66	69	12	24	35	45	54	61	66	69	70																																																												

### Actual Landing Distance - Flap 0 , Flap 5 Level 1 Ice Protection

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	4018	4164	4320	4488	4666
<b>40000</b>	4018	4166	4322	4490	4668
<b>42000</b>	4026	4172	4330	4498	4676
<b>44000</b>	4056	4206	4364	4534	4716
<b>46000</b>	4170	4326	4492	4668	4858
<b>48000</b>	4286	4448	4620	4802	5000
<b>50000</b>	4400	4568	4746	4936	5142
<b>52000</b>	4514	4688	4872	5070	5284
<b>54000</b>	4628	4808	4998	5204	5424
<b>56000</b>	4742	4926	5124	5338	5566
<b>58000</b>	4854	5046	5250	5472	5706
<b>60000</b>	4966	5164	5376	5604	5848
<b>61750</b>	5066	5268	5486	5720	5972
<b>62500</b>	5106	5312	5532	5770	6024
<b>63500</b>	5162	5372	5594	5836	6094
<b>64500</b>	5218	5430	5658	5902	6166

**Note:** Add 100 ft per 1 knot of tailwind OR subtract 20 ft per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

Actual Landing Distance – Flap 0, Flap 5, Level 1  
Ice Protection

### Actual Landing Distance - Flap 0 , Flap 5 Level 2/3 Ice Protection

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	5023	5205	5400	5610	5833
<b>40000</b>	5023	5208	5403	5613	5835
<b>42000</b>	5033	5215	5413	5623	5845
<b>44000</b>	5070	5258	5455	5668	5895
<b>46000</b>	5213	5408	5615	5835	6073
<b>48000</b>	5358	5560	5775	6003	6250
<b>50000</b>	5500	5710	5933	6170	6428
<b>52000</b>	5643	5860	6090	6338	6605
<b>54000</b>	5785	6010	6248	6505	6780
<b>56000</b>	5928	6158	6405	6673	6958
<b>58000</b>	6068	6308	6563	6840	7133
<b>60000</b>	6208	6455	6720	7005	7310
<b>61750</b>	6333	6585	6858	7150	7465
<b>62500</b>	6383	6640	6915	7213	7530
<b>63500</b>	6453	6715	6993	7295	7618
<b>64500</b>	6523	6788	7073	7378	7708

**Note:** Add 120 ft per 1 knot of tailwind OR subtract 30 ft per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

Actual Landing Distance – Flap 0, Flap 5, Level 2/  
3 Ice Protection

### Actual Landing Distance - Flap 10 Level 1 Ice Protection

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	2203	2287	2376	2472	2575
<b>40000</b>	2206	2290	2379	2475	2578
<b>42000</b>	2256	2343	2436	2535	2641
<b>44000</b>	2327	2418	2514	2617	2729
<b>46000</b>	2397	2491	2592	2700	2817
<b>48000</b>	2467	2565	2670	2783	2904
<b>50000</b>	2536	2638	2747	2866	2992
<b>52000</b>	2605	2712	2825	2948	3081
<b>54000</b>	2675	2785	2904	3031	3169
<b>56000</b>	2744	2859	2982	3114	3258
<b>58000</b>	2814	2932	3060	3197	3346
<b>60000</b>	2883	3005	3138	3281	3435
<b>61750</b>	2944	3070	3206	3354	3513
<b>62500</b>	2969	3097	3236	3385	3547
<b>63500</b>	3004	3134	3275	3427	3592
<b>64500</b>	3039	3171	3314	3469	3637

**Note:** Add 60 ft per 1 knot of tailwind OR subtract 10 ft per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

Actual Landing Distance – Flap 10 Level 1 Ice Protection

### Actual Landing Distance - Flap 10 Level 2/3 Ice Protection

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	2754	2859	2970	3090	3219
<b>40000</b>	2758	2863	2974	3094	3223
<b>42000</b>	2820	2929	3045	3169	3301
<b>44000</b>	2909	3023	3143	3271	3411
<b>46000</b>	2996	3114	3240	3375	3521
<b>48000</b>	3084	3206	3338	3479	3630
<b>50000</b>	3170	3298	3434	3583	3740
<b>52000</b>	3256	3390	3531	3685	3851
<b>54000</b>	3344	3481	3630	3789	3961
<b>56000</b>	3430	3574	3728	3893	4073
<b>58000</b>	3518	3665	3825	3996	4183
<b>60000</b>	3604	3756	3923	4101	4294
<b>61750</b>	3680	3838	4008	4193	4391
<b>62500</b>	3711	3871	4045	4231	4434
<b>63500</b>	3755	3918	4094	4284	4490
<b>64500</b>	3799	3964	4143	4336	4546

**Note:** Add 70 ft per 1 knot of tailwind OR subtract 13 ft per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

### Actual Landing Distance - Flap 15 Level 1 Ice Protection

Landing Weight	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	2135	2215	2301	2393	2491
<b>40000</b>	2136	2216	2302	2394	2492
<b>42000</b>	2142	2222	2309	2401	2499
<b>44000</b>	2177	2259	2348	2442	2543
<b>46000</b>	2241	2326	2419	2517	2623
<b>48000</b>	2305	2394	2490	2592	2703
<b>50000</b>	2368	2461	2561	2667	2782
<b>52000</b>	2431	2528	2632	2743	2862
<b>54000</b>	2495	2595	2703	2818	2942
<b>56000</b>	2558	2662	2703	2893	3021
<b>58000</b>	2621	2729	2844	2968	3101
<b>60000</b>	2684	2795	2915	3043	3182
<b>61750</b>	2739	2854	2977	3109	3252
<b>62500</b>	2763	2879	3003	3137	3282
<b>63500</b>	2794	2912	3038	3175	3322
<b>64500</b>	2826	2945	3074	3212	3363

**Note:** Add 60 ft per 1 knot of tailwind OR subtract 10 ft per 1 knot headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

Actual Landing Distance – Flap 15 Level 1 Ice Protection



**Actual Landing Distance - Flap 15  
Level 2/3 Ice Protection**

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	2669	2769	2876	2991	3114
<b>40000</b>	2670	2770	2878	2993	3115
<b>42000</b>	2678	2778	2886	3001	3124
<b>44000</b>	2721	2824	2935	3053	3179
<b>46000</b>	2801	2908	3024	3146	3279
<b>48000</b>	2881	2993	3113	3240	3379
<b>50000</b>	2960	3076	3201	3334	3478
<b>52000</b>	3039	3160	3290	3429	3578
<b>54000</b>	3119	3244	3379	3523	3678
<b>56000</b>	3198	3328	3379	3616	3776
<b>58000</b>	3276	3411	3555	3710	3876
<b>60000</b>	3355	3494	3644	3804	3978
<b>61750</b>	3424	3568	3721	3886	4065
<b>62500</b>	3454	3599	3754	3921	4103
<b>63500</b>	3493	3640	3798	3969	4153
<b>64500</b>	3533	3681	3843	4015	4204

**Note:** Add 70 ft per 1 knot of tailwind OR subtract 15 ft per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

### Actual Landing Distance - Flap 35 Level 1 Ice Protection

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	2009	2082	2160	2244	2333
<b>40000</b>	2009	2083	2161	2245	2334
<b>42000</b>	2013	2086	2165	2249	2338
<b>44000</b>	2028	2103	2182	2267	2358
<b>46000</b>	2085	2163	2246	2334	2429
<b>48000</b>	2143	2224	2310	2401	2500
<b>50000</b>	2200	2284	2373	2468	2571
<b>52000</b>	2257	2344	2436	2535	2642
<b>54000</b>	2314	2404	2499	2602	2712
<b>56000</b>	2371	2463	2562	2669	2783
<b>58000</b>	2427	2523	2625	2736	2853
<b>60000</b>	2483	2582	2688	2802	2924
<b>61750</b>	2533	2634	2743	2860	2986
<b>62500</b>	2553	2656	2766	2885	3012
<b>63500</b>	2581	2686	2797	2918	3047
<b>64500</b>	2609	2715	2829	2951	3083

**Note:** Add 50 ft per 1 knot of tailwind OR subtract 10 feet per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

**Actual Landing Distance – Flap 35 Level 1 Ice Protection**

### Actual Landing Distance - Flap 35 Level 2/3 Ice Protection

Landing Weight (lbs)	Pressure Altitude				
	SL	2000 ft	4000 ft	6000 ft	8000 ft
<b>39683</b>	2411	2498	2592	2693	2800
<b>40000</b>	2411	2500	2593	2694	2801
<b>42000</b>	2416	2503	2598	2699	2806
<b>44000</b>	2434	2524	2618	2720	2830
<b>46000</b>	2502	2596	2695	2801	2915
<b>48000</b>	2572	2669	2772	2881	3000
<b>50000</b>	2640	2741	2848	2962	3085
<b>52000</b>	2708	2813	2923	3042	3170
<b>54000</b>	2777	2885	2999	3122	3254
<b>56000</b>	2845	2956	3074	3203	3340
<b>58000</b>	2912	3028	3150	3283	3424
<b>60000</b>	2980	3098	3226	3362	3509
<b>61750</b>	3040	3161	3292	3432	3583
<b>62500</b>	3064	3187	3319	3462	3614
<b>63500</b>	3097	3223	3356	3502	3656
<b>64500</b>	3131	3258	3395	3541	3700

**Note:** Add 60 ft per 1 knot of tailwind OR subtract 10 feet per 1 knot of headwind; THEN if runway is wet, multiply distance by 1.15 or for ANY procedure 1.5.

## 65000 LBS / 29500 KG

### LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	123	138	129	149	136	156	145	170	158	183
<b>V<sub>GA</sub></b>	119	139	125	145	134	154	134	154	158	183
<b>V<sub>FRI</sub></b>	133	153	137	157	144	164	144	164	158	183
<b>V<sub>CLIMB</sub></b>	158	178	158	178	158	178	158	178	158	178
<b>Landing WAT</b>										
<b>@6000'</b>	18 C		26 C		32 C		32 C			
<b>@2000'</b>	38 C		44 C							

## 64000 LBS / 29000 KG

### LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	123	138	128	148	135	155	144	164	157	182
<b>V<sub>GA</sub></b>	119	139	124	144	132	152	132	152	157	182
<b>V<sub>FRI</sub></b>	132	142	136	156	145	165	145	165	157	182
<b>V<sub>CLIMB</sub></b>	157	177	157	177	157	177	157	177	157	177
<b>Landing WAT</b>										
<b>@6000'</b>	18 C		26 C		32 C		32 C			
<b>@2000'</b>	38 C		44 C							

**63000 LBS / 28500 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	122	137	127	147	133	153	143	163	156	181
<b>V<sub>GA</sub></b>	117	137	123	143	134	154	134	154	156	181
<b>V<sub>FRI</sub></b>	131	151	135	155	143	163	143	163	156	181
<b>V<sub>CLIMB</sub></b>	155	175	155	175	155	175	155	175	155	175
<b>Landing WAT</b>										
<b>@6000'</b>	20 C		28 C		34 C		34 C			
<b>@2000'</b>	40 C									

**62000 LBS / 28000 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	121	136	126	146	133	153	155	175	155	180
<b>V<sub>GA</sub></b>	116	136	122	142	130	150	130	150	155	180
<b>V<sub>FRI</sub></b>	130	150	134	154	142	162	142	162	155	180
<b>V<sub>CLIMB</sub></b>	154	174	154	174	154	174	154	174	154	174
<b>Landing WAT</b>										
<b>@6000'</b>	24 C		30 C		36 C		36 C			
<b>@2000'</b>	42 C		42 C							

# 61000 LBS / 27750 KG

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
$V_{REF}$	120	135	125	145	131	151	141	161	154	179
$V_{GA}$	115	135	121	141	129	149	129	149	154	179
$V_{FRI}$	129	149	133	153	141	161	141	161	154	179
$V_{CLIMB}$	153	173	153	173	153	173	153	173	153	173
	<b>Landing WAT</b>									
@6000'	26 C		32 C		36 C		36 C			
@2000'	44 C		44 C							

# 60000 LBS / 27250 KG

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
$V_{REF}$	119	134	124	144	130	150	140	160	153	178
$V_{GA}$	114	124	120	140	128	148	128	148	153	178
$V_{FRI}$	128	148	132	152	140	160	140	160	153	178
$V_{CLIMB}$	152	172	152	172	152	172	152	172	152	172
	<b>Landing WAT</b>									
@6000'	34 C		28 C							
@2000'										

**59000 LBS / 26750 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	118	133	123	143	129	149	139	159	151	176
<b>V<sub>GA</sub></b>	113	133	119	139	127	147	127	147	151	176
<b>V<sub>FRI</sub></b>	127	147	130	150	138	158	138	158	151	176
<b>V<sub>CLIMB</sub></b>	150	170	150	170	150	170	150	170	150	170
	<b>Landing WAT</b>									
<b>@6000'</b>	30 C		36 C							
<b>@2000'</b>										

**58000 LBS / 26250 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
	117	132	122	142	128	148	137	157	150	175
	112	132	118	138	126	146	126	146	150	175
	126	146	129	149	137	157	137	157	150	175
	149	169	149	169	149	169	149	169	149	169
	<b>Landing WAT</b>									
	30 C		36 C							

## 57000 LBS / 25750 KG

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	116	131	121	141	127	147	136	156	149	174
<b>V<sub>GA</sub></b>	111	131	117	137	125	145	125	145	149	174
<b>V<sub>FRI</sub></b>	125	145	128	148	136	156	136	156	149	174
<b>V<sub>CLIMB</sub></b>	148	168	148	168	148	168	148	168	148	168
<b>Landing WAT</b>										
<b>@6000'</b>	32 C									
<b>@2000'</b>										

## 56000 LBS / 25250 KG

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	115	130	120	140	126	146	135	155	147	172
<b>V<sub>GA</sub></b>	110	130	116	136	124	144	124	144	147	172
<b>V<sub>FRI</sub></b>	123	143	127	147	135	155	135	155	147	172
<b>V<sub>CLIMB</sub></b>	147	167	147	167	147	167	147	167	147	167
<b>Landing WAT</b>										
<b>@6000'</b>	34 C									
<b>@2000'</b>										



**55000 LBS / 25000 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	114	129	119	139	125	145	134	154	146	171
<b>V<sub>GA</sub></b>	109	129	115	135	123	143	123	143	146	171
<b>V<sub>FRI</sub></b>	122	142	126	146	134	154	134	154	146	171
<b>V<sub>CLIMB</sub></b>	146	166	146	166	146	166	146	166	146	166
	<b>Landing WAT</b>									
<b>@6000'</b>	36 C									
<b>@2000'</b>										

**54000 LBS / 24500 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
	113	128	118	138	124	144	133	153	145	170
	108	128	113	133	122	142	122	142	145	170
	121	141	125	145	133	153	133	153	145	170
	144	164	144	164	144	164	144	164	144	164
	<b>Landing WAT</b>									

## 53000 LBS / 24000 KG

LANDING

		35		15		10		5		0	
		Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>		112	127	117	137	123	143	132	152	144	169
<b>V<sub>GA</sub></b>		107	127	112	132	121	141	121	141	144	169
<b>V<sub>FRI</sub></b>		120	140	124	144	132	152	132	152	144	169
<b>V<sub>CLIMB</sub></b>		143	163	143	163	143	163	143	163	143	163
<b>Landing WAT</b>											
<b>@6000'</b>											
<b>@2000'</b>											

## 52000 LBS / 23500 KG

LANDING

		35		15		10		5		0	
		Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>		110	125	116	136	121	141	130	150	142	167
<b>V<sub>GA</sub></b>		106	126	111	131	120	140	120	140	142	167
<b>V<sub>FRI</sub></b>		119	139	122	142	130	150	130	150	142	167
<b>V<sub>CLIMB</sub></b>		141	161	141	161	141	161	141	161	141	161
<b>Landing WAT</b>											
<b>@6000'</b>											
<b>@2000'</b>											

**51000 LBS / 23250 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	109	124	115	135	120	140	129	149	141	166
<b>V<sub>GA</sub></b>	105	125	110	130	118	138	118	138	141	166
<b>V<sub>FRI</sub></b>	117	137	120	140	129	149	129	149	141	166
<b>V<sub>CLIMB</sub></b>	141	161	141	161	141	161	141	161	141	161
<b>Landing WAT</b>										
<b>@6000'</b>										
<b>@2000'</b>										

**50000 LBS / 22750 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	108	123	113	133	119	139	128	148	139	164
<b>V<sub>GA</sub></b>	105	125	109	129	117	137	117	137	139	164
<b>V<sub>FRI</sub></b>	116	136	120	140	128	148	128	148	139	164
<b>V<sub>CLIMB</sub></b>	139	159	139	159	139	159	139	159	139	159
<b>Landing WAT</b>										
<b>@6000'</b>										
<b>@2000'</b>										

## 49000 LBS / 22250 KG

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	107	122	112	132	118	138	127	147	138	163
<b>V<sub>GA</sub></b>	105	125	108	128	116	136	116	136	138	163
<b>V<sub>FRI</sub></b>	115	135	118	138	126	146	126	146	138	163
<b>V<sub>CLIMB</sub></b>	138	158	138	158	138	158	138	158	138	158
	<b>Landing WAT</b>									
<b>@6000'</b>										
<b>@2000'</b>										

## 48000 LBS / 21750 KG

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	106	121	111	131	116	136	125	145	137	162
<b>V<sub>GA</sub></b>	105	125	108	128	115	125	115	125	137	162
<b>V<sub>FRI</sub></b>	114	134	117	137	125	145	125	145	137	162
<b>V<sub>CLIMB</sub></b>	136	156	136	156	136	156	136	156	136	156
	<b>Landing WAT</b>									
<b>@6000'</b>										
<b>@2000'</b>										

**47000 LBS / 21250 KG**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	105	120	110	130	115	135	124	144	135	160
<b>V<sub>GA</sub></b>	105	125	108	128	114	124	114	124	135	160
<b>V<sub>FRI</sub></b>	113	133	116	136	124	144	124	144	135	160
<b>V<sub>CLIMB</sub></b>	135	155	135	155	135	155	135	155	135	155
	<b>Landing WAT</b>									
<b>@6000'</b>										
<b>@2000'</b>										

**45000 LBS / 20500 KG or Less**

LANDING

	35		15		10		5		0	
	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3	Level 1	Level 2/3
<b>V<sub>REF</sub></b>	103	118	108	128	113	133	121	141	132	157
<b>V<sub>GA</sub></b>	105	125	108	128	108	128	111	131	132	157
<b>V<sub>FRI</sub></b>	110	130	113	133	121	141	121	141	132	157
<b>V<sub>CLIMB</sub></b>	132	152	132	152	132	152	132	152	132	152
	<b>Landing WAT</b>									
<b>@6000'</b>										
<b>@2000'</b>										

65200 LBS / 29500 KG

FL	ISA -10						ISA						ISA +10																
	Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed				Long Range			Intermediate			High Speed			
	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr		KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS
60	237	46.1	2250	238	48.3	2314	245	49.4	2346	237	46.8	2291	239	49.3	2361	245	50.2	2391	235	47.1	2322	238	49.7	2401	245	51.1	2440	60	
100	237	48.9	2187	257	59.9	2475	282	72.7	2840	235	48.7	2207	257	60.8	2527	282	74.1	2917	233	48.7	2231	255	61.0	2564	282	75.6	2995	100	
140	233	50.0	2076	257	63.0	2452	284	78.8	2924	232	50.7	2119	257	64.2	2516	284	80.5	3017	232	51.4	2165	250	61.9	2475	274	75.0	2878	140	
180	221	47.9	1913	250	62.6	2342	281	82.0	2998	219	48.2	1944	243	60.2	2304	269	74.9	2779	218	49.0	1991	235	57.4	2250	254	66.9	2536	180	
220	214	48.8	1860	237	59.3	2182	260	72.3	2639	214	49.7	1911	231	57.4	2144	249	66.7	2465	213	50.4	1959	224	55.4	2108	235	60.5	2276	220	
250	211	49.9	1840	226	56.5	2069	242	64.4	2350	209	50.4	1884	219	54.9	2036	230	59.4	2194	209	51.6	1946	212	53.1	1998	215	53.9	2027	250	

62000 LBS / 28000 KG

FL	ISA -10						ISA						ISA +10																
	Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed				Long Range			Intermediate			High Speed			
	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr		KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS
60	245	48.6	2323	237	46.7	2267	245	48.6	2323	233	44.5	2225	237	47.6	2315	245	49.4	2365	232	44.8	2253	237	48.3	2361	245	50.2	2414	60	
100	282	72.0	2820	254	57.6	2412	282	72.0	2820	230	45.7	2125	254	58.4	2464	282	73.4	2897	227	45.4	2141	253	59.2	2513	282	74.9	2974	100	
140	284	78.1	2902	256	61.5	2406	284	78.1	2902	230	48.6	2063	255	62.4	2462	284	79.7	2991	229	48.9	2098	249	60.4	2428	275	75.1	2881	140	
180	282	82.2	3003	249	60.8	2294	282	82.2	3003	217	46.4	1888	243	59.0	2268	270	75.0	2783	217	47.4	1940	235	56.1	2212	256	67.0	2540	180	
220	262	72.5	2646	235	57.1	2107	262	72.5	2646	207	45.8	1795	228	55.0	2069	251	66.8	2471	207	46.8	1850	222	53.2	2042	238	60.6	2279	220	
250	244	64.7	2357	227	55.5	2029	244	64.7	2357	208	48.2	1815	220	53.8	1994	233	59.7	2204	207	49.0	1863	213	51.8	1953	219	54.3	2035	250	

58000 LBS / 26250 KG

FL	ISA -10						ISA						ISA +10																
	Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed				Long Range			Intermediate			High Speed			
	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr		KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS
60	232	42.3	2139	236	45.5	2234	245	47.6	2294	231	42.7	2169	236	46.1	2272	245	48.4	2338	229	42.5	2184	236	46.8	2313	245	49.2	2385	60	
100	225	41.8	1993	251	55.1	2346	282	71.3	2797	225	42.6	2034	251	56.1	2403	282	72.7	2874	224	43.0	2065	251	56.9	2451	282	74.1	2950	100	
140	226	44.8	1938	253	58.8	2326	284	77.3	2875	224	44.7	1959	253	59.7	2380	284	78.9	2962	224	45.5	2006	248	58.1	2358	277	75.2	2883	140	
180	216	43.6	1790	249	59.6	2260	283	82.3	3006	217	44.7	1839	243	57.7	2230	272	75.1	2785	216	45.3	1879	236	55.2	2181	258	67.1	2542	180	
220	205	42.1	1668	234	55.1	2044	264	73.2	2670	204	42.8	1704	228	53.4	2020	253	67.0	2477	203	43.5	1745	221	51.3	1984	241	60.8	2283	220	
250	203	43.6	1657	225	52.9	1941	247	65.0	2366	203	44.5	1704	219	51.5	1914	236	60.0	2212	201	45.0	1741	213	49.8	1887	224	54.6	2047	250	

54000 LBS / 24500 KG

FL	ISA -10									ISA									ISA +10								
	Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed		
	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr
60	230	40.5	2082	236	44.6	2209	245	46.8	2270	229	42.0	2116	235	44.7	2230	245	47.6	2314	228	41.0	2139	234	45.2	2267	245	48.3	2360
100	220	38.9	1907	249	53.0	2291	282	70.6	2778	218	39.1	1933	248	53.5	2335	282	72.0	2851	218	39.7	1969	248	54.4	2383	282	73.4	2929
140	219	40.8	1838	250	56.0	2244	284	76.5	2853	218	41.1	1867	249	56.8	2292	284	78.2	2940	216	41.2	1890	245	55.5	2279	278	75.3	2886
180	215	41.6	1736	249	58.5	2227	285	82.4	3009	215	42.5	1778	242	56.2	2186	273	75.2	2787	213	42.7	1807	235	53.3	2124	260	67.2	2547
220	201	39.3	1582	232	52.8	1975	264	72.2	2630	201	39.9	1619	228	51.9	1974	255	67.2	2481	200	40.5	1652	221	49.8	1937	243	60.9	2286
250	195	38.9	1523	221	49.5	1826	248	64.6	2350	194	39.6	1559	217	48.8	1828	239	60.2	2219	194	40.3	1602	210	46.9	1797	227	54.9	2053

50000 LBS / 22750 KG

FL	ISA -10									ISA									ISA +10								
	Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed		
	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr
60	228	39.0	2039	235	43.5	2174	245	46.1	2251	226	38.9	2054	234	43.5	2195	245	46.8	2292	225	39.1	2081	233	44.0	2228	245	47.6	2335
100	216	36.6	1840	248	51.7	2260	282	70.1	2218	214	36.5	1857	246	51.9	2291	282	71.4	2833	214	36.9	1984	246	52.5	2333	282	72.8	2911
140	211	37.0	1734	246	53.2	2163	284	75.9	2834	210	37.3	1764	246	54.0	2211	284	77.6	2918	209	36.6	1789	241	52.8	2201	279	75.4	2889
180	211	39.0	1667	246	56.3	2162	285	82.5	3011	209	39.2	1693	240	54.1	2120	274	75.3	2789	208	38.6	1719	233	51.1	2054	261	67.3	2549
220	199	37.0	1517	231	51.0	1923	264	71.3	2598	200	37.9	1559	227	50.4	1929	257	67.3	2484	199	39.2	1596	222	48.7	1901	245	61.0	2289
250	191	36.1	1437	219	47.5	1766	248	63.5	2309	191	36.9	1476	216	47.1	1778	241	60.4	2225	192	37.5	1504	210	45.3	1748	230	55.3	2059

46000 LBS / 20750 KG

FL	ISA -10									ISA									ISA +10								
	Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed			Long Range			Intermediate			High Speed		
	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr	KIAS	TRQ %	FF lb/hr
60	225	37.0	1982	234	42.1	2132	245	45.4	2232	222	36.6	1989	233	42.3	2157	245	46.2	2273	219	35.1	1962	232	42.5	2184	245	46.9	2317
100	214	35.1	1796	247	50.5	2230	282	69.6	2744	212	34.8	1806	246	50.9	2266	282	70.9	2819	209	33.4	1780	245	51.4	2306	282	72.3	2893
140	205	33.5	1639	243	50.8	2097	284	75.4	2815	202	33.4	1652	241	51.2	2132	284	77.0	2901	196	30.8	1594	238	50.3	2136	280	75.4	2890
180	205	35.5	1580	243	53.8	2088	286	82.4	3009	203	35.8	1605	237	51.7	2048	275	75.4	2791	194	31.9	1523	231	49.1	1992	262	67.4	2551
220	199	35.5	1473	230	49.8	1764	264	70.6	2568	198	35.9	1503	227	49.1	1891	258	67.4	2487	191	33.1	1447	221	46.9	1849	247	61.1	2292
250	188	33.6	1361	218	45.4	1707	248	62.6	2274	188	34.2	1396	215	45.5	1731	243	60.6	2230	186	32.7	1368	210	44.0	1709	232	55.3	2065

## Landing Gear Down Cruise Charts

LANDING GEAR DOWN CRUISE										
ALL WEIGHTS										
FL	ISA -20		ISA -10		ISA		ISA +10		ISA +20	
	KIAS	F/F (lb/hr)	KIAS	F/F (lb/hr)	KIAS	F/F (lb/hr)	KIAS	F/F (lb/hr)	KIAS	F/F (lb/hr)
40	215	2686	215	2748	215	2816	215	2879	215	2947
80	215	2615	215	2682	215	2751	215	2824	215	2900
120	215	2604	215	2682	215	2761	215	2843	215	2919
160	215	2648	215	2737	215	2829	213	2867	198	2589
200	215	2771	215	2866	208	2799	196	2586	179	2321
Ice Protection Systems "OFF" and Bleeds "ON"										

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### **CAUTION:**

*Enroute climb ceiling one-engine inoperative is reduced by 8,500 ft.  
Avoid flight over mountainous terrain.*

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# Maximum Continuous Power (%)

MAXIMUM CONTINUOUS POWER (%)

IN-FLIGHT 150 KIAS

PRESS ALT FEET	SAT °C = OAT °C									
	-50	-40	-30	-20	-10	0	10	20	30	40
25,000	63.0	60	56	52	48	44	-	-	-	-
24,000	66.1	62	59	55	51	46	-	-	-	-
23,000	69.0	65	61	57	53	49	-	-	-	-
22,000	70.0	68	64	60	56	51	-	-	-	-
21,000	-	71.9	67	63	59	54	-	-	-	-
20,000	-	75.0	71	66	62	57	52	-	-	-
19,000	-	78.8	74	69	65	60	55	-	-	-
18,000	-	81.9	77	72	68	63	58	-	-	-
17,000	-	83.0	80	75	71	66	60	-	-	-
16,000		-	84.0	79	74	69	63	-	-	-
15,000		-	87.5	82	77	72	66	59	-	-
14,000		-	91.0	86	81	75	69	62	-	-
13,000		-	95.0	89	84	79	73	65	-	-
12,000			100	93	87	82	76	68	-	-
11,000			100	98	92	86	80	72	-	-
10,000				100	96	90	84	76	67	-
9,000					100	94	87	79	70	-
8,000					100	98	91	83	74	-
7,000						100	95	87	77	-
6,000						100	99	90	81	-
5,000							100	94	85	74
4,000							100	98	89	78
3,000								100	93	82
2,000								100	97	86
1,000									100	90
SL									100	94

CONDITIONS: ICE PROTECTION SYSTEMS ON OR OFF

BLEED AIR ON

N<sub>P</sub> 1020

+ + + Denotes ISA Line

- Dashes indicate numbers outside charted values.

FOR 180 KIAS ADD ~4%.

FOR 120 KIAS SUBTRACT ~2%.

# Type II Climb Torque (%) – 900 RPM

## TYPE II CLIMB TORQUE (%)

900 RPM

PRESS ALT FEET	TYPE II	SAT °C = OAT °C									
		-50	-40	-30	-20	-10	0	10	20	30	40
25,000	160	66	62	58	54	48	43	-	-	-	-
24,000	165	69	65	61	56	51	45	-	-	-	-
23,000	170	72	68	64	59	54	48	-	-	-	-
22,000	175	-	71	67	63	57	51	-	-	-	-
21,000	180	-	75	70	66	60	54	-	-	-	-
20,000	185	-	79	74	70	64	57	50	-	-	-
19,000	185	-	82	78	73	67	60	52	-	-	-
18,000	185	-	85	81	76	70	62	54	-	-	-
17,000	185		89.0	84	79	73	65	57	-	-	-
16,000	185		90.7	87	82	76	68	60	-	-	-
15,000	185			90.7	85	79	71	63	55	-	-
14,000	185			90.7	88	83	75	66	57	-	-
13,000	185				90.7	87	79	70	61	-	-
12,000	185					90.7	82	74	64	-	-
11,000	185					90.7	86	77	67	-	-
10,000	185						90.7	80	70	60	-
9,000	185						90.7	83	74	63	-
8,000	185						90.7	86	78	66	-
7,000	185							90.7	82	69	-
6,000	185							90.7	86	72	-
5,000	185								90.7	76	65
4,000	185								90.7	79	68
3,000	185								90.7	83	71
2,000	185								90.7	88	75
1,000	185									90.7	78
SL	185									90.7	82

CONDITIONS: ICE PROTECTION SYSTEMS ON OR OFF  
 BLEED AIR ON  
 BOTH ENGINES AT MAXIMUM CLIMB POWER  
 + + + Denotes ISA Line  
 - Dashes indicate numbers outside charted values.

NOTE: Climb speeds and torque apply to all weights.

# Type II Climb Torque (%) – 850 RPM

## TYPE II CLIMB TORQUE (%)

850 RPM

PRESS ALT FEET	TYPE II	SAT °C = OAT °C									
		-50	-40	-30	-20	-10	0	10	20	30	40
25,000	160	68	64	60	56	51	45	—	—	—	—
24,000	165	71	67	63	59	54	47	—	—	—	—
23,000	170	75	71	67	62	57	50	—	—	—	—
22,000	175	—	74	70	66	60	53	—	—	—	—
21,000	180	—	78	74	69	63	56	—	—	—	—
20,000	185	—	82	78	73	67	60	52	—	—	—
19,000	185	—	86	81	76	70	63	55	—	—	—
18,000	185	—	89	84	79	73	66	58	—	—	—
17,000	185		93	88	82	76	69	61	—	—	—
16,000	185		95.9	91	86	79	72	64	—	—	—
15,000	185		95.9	95	90	83	75	67	58	—	—
14,000	185			95.9	93	86	79	70	61	—	—
13,000	185				95.9	91	83	74	65	—	—
12,000	185				95.9	94	87	78	68	—	—
11,000	185					95.9	90	81	72	—	—
10,000	185					95.9	94	85	75	65	—
9,000	185						95.9	88	78	68	—
8,000	185						95.9	91	82	71	—
7,000	185						95.9	94	85	74	—
6,000	185							95.9	89	78	—
5,000	185							95.9	92	82	70
4,000	185							95.9	94	86	73
3,000	185								95.9	89	77
2,000	185								95.9	93	81
1,000	185									95.9	85
SL	185									95.9	90

CONDITIONS: ICE PROTECTION SYSTEMS ON OR OFF  
 BLEED AIR ON  
 BOTH ENGINES AT MAXIMUM CLIMB POWER  
 + + + Denotes ISA Line  
 - Dashes indicate numbers outside charted values.

NOTE: Climb speeds and torque apply to all weights.

# High Speed Cruise Power Torque (%)

## HIGH SPEED CRUISE POWER TORQUE (%)

850 RPM

PRESS ALT FEET	SAT °C									
	-50	-40	-30	-20	-10	0	10	20	30	40
25,000	70.8	67	63	59	54	48	-	-	-	-
24,000	73.5	70	65	61	56	50	-	-	-	-
23,000	77.0	72	68	64	59	52	-	-	-	-
22,000	-	75.0	71	66	61	55	-	-	-	-
21,000	-	78.5	74	69	64	57	-	-	-	-
20,000	-	82.0	77	73	67	60	53	-	-	-
19,000	-	85.0	80	75	70	63	55	-	-	-
18,000	-	88.0	83	78	73	66	58	-	-	-
17,000		90.0	86	81	76	68	61	-	-	-
16,000			90.0	85	78	71	63	-	-	-
15,000			90.0	88	81	74	66	58	-	-
14,000				90.0	85	77	69	61	-	-
13,000				90.0	88	81	72	63	-	-
12,000					90.0	84	76	66	-	-
11,000					90.0	87	79	70	-	-
10,000						90.0	83	73	63	-
9,000						90.0	86	76	66	-
8,000						90.0	90	79	69	-
7,000							90.0	82	72	-
6,000							90.0	86	75	-
5,000							-	-	-	-
4,000							-	-	-	-
3,000							-	-	-	-
2,000							-	-	-	-
1,000							-	-	-	-
SL							-	-	-	-

CONDITIONS: ICE PROTECTION SYSTEMS ON – Increase torque by 1%

BLEED AIR

ON

FLAPS

0°

+ + + Denotes ISA Line

- Dashes indicate numbers outside charted values.