

Boeing 737-300 Performance □ CFM56-3B1

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ABBREVIATED CHARTS

Use the following charts to quickly determine trip fuel and trip time.

737-300 Abbreviated Flight Planning Chart, CFM56-3B1

ISA Conditions No Wind 250/280/.74					
NM	Altitude	Avg. TAS	Air Time	Air Fuel	Cruise Seed
50	100-110	345	15	1664	300
60	130-140	364	17	1992	300
70	150-160	374	19	2100	300
80	170-180	385	21	2250	300
90	190-200	397	23	2450	300
100	210-220	409	25	2650	300
110	220-230	413	27	2900	300
120	230-240	422	28	3000	300
130	250-260	444	29	3100	.74
140	270-280	441	32	3300	
150	280-290	439	33	3400	
160	290-300	437	35	3600	
170	300-310	435	36	3700	
180	310-320	433	38	3800	
190	330-350	431	39	4000	
200		428	41	4110	
250			45	4450	
300			51	5000	
350			58	5620	
400			65	6200	
450			72	6800	
500			79	7400	
550			86	8000	
600			93	8600	
650			100	9200	
700			107	9800	
750			114	10400	
800			121	10350	
850			128	11000	
900			135	11500	
950			142	12100	
1000	330-350	428	149	12700	.74

TIME AND FUEL CORRECTION FOR WIND

Change in Time = Time x Wind Component/TAS

Change in Fuel = Fuel x Wind Component/TAS

737-300 Abbreviated In-flight Diversion Chart, CFM56-3B1

Based On: 280/.74 Climb .74/250 Descent				
Dist (NM)	Rec. Alt.	TAS (kts)	Time (Min)	Fuel (Lbs)
50	100-110	345	12	1400
60	130-140	361	15	1700
70	150-160	371	17	1800
80			19	1900
90			29	2100
100	150-160	371	22	2200
110	160-170	377	24	2300
120	170-180	382	25	2400
130	180-190	394	27	2550
140	190-200	394	29	2700
150	200-210	400	30	2800
160	210-220	406	31	2900
170	220-230	412	33	3000
180	230-240	418	34	3100
190	240-250	445	35	3200
200	250-260	445	37	3300
220	260-270	443	40	3500
240	280-290	440	43	3700
260			45	3900
280			48	4150
300			51	4350
320			54	4550
340			56	4750
360			59	4950
380			62	5150
400	280-290	440	65	5350

Note: Distance is from point of diversion to alternate.

Additional allowances that must be included to obtain the total fuel required:

- APU Operation - 2.5 lbs/min
- Taxi - 25 lbs/min
- In-Flight Flaps Down Maneuvering: 200 lbs/min
- 45 Minute Reserve, 250 kts below 10,000 ft; Long Range Cruise @ 10,000 ft and above

Pressure Altitude (Ft)	Fuel (Lbs)
30,000	3400
25,000	3550
20,000	3700
15,000	3800
10,000	4000
9,000	3600
5,000	3800

- Holding Fuel

Altitude (Ft)	Fuel Flow (Lbs/Hr)	Fuel Flow (Lbs/Min)
30,000	4420	74
20,000	4520	75
15,000	4620	77
14,000	4652	78
10,000	4780	80

TAKEOFF CHARTS

737-300 Maximum Takeoff %N1, CFM56-3B1

PMC ON										
VALID FOR BLEEDS OFF ENGINE A/I ON OR OFF										
AIRPORT OAT		AIRPORT PRESSURE ALTITUDE FEET								
°C	°F	0	1000	2000	3000	4000	5000	6000	7000	8000
44	112	92.7	93.2	93.6	94.9	95.9	95.8	95.3		
40	104	93.1	93.6	94.0	95.3	96.3	96.3	96.3	95.9	95.3
37	98	93.4	93.9	94.3	95.6	96.7	96.6	96.6	96.0	95.4
31	88	93.7	94.2	94.6	95.9	97.4	97.3	97.2	96.6	95.9
26	78	93.2	93.9	94.6	95.6	97.0	97.3	97.7	97.1	96.5
20	68	92.3	93.1	93.8	94.8	96.1	96.5	96.9	97.0	96.9
14	58	91.4	92.2	92.9	93.9	95.2	95.6	96.0	96.2	96.2
9	48	90.5	91.3	92.0	93.0	94.2	94.7	95.1	95.2	95.4
4	40	89.8	90.6	91.3	92.2	93.5	93.9	94.3	94.4	94.6
-1	30	88.9	89.7	90.4	91.3	92.5	93.0	93.4	93.5	93.7
-12	10	87.1	87.8	88.5	89.4	90.6	91.1	91.5	91.6	91.8
-20	-4	85.8	86.6	87.2	88.1	89.3	89.7	90.1	90.3	90.4
-30	-22	84.1	84.8	85.5	86.4	87.6	88.0	88.4	88.5	88.6
%N1 ADJUSTMENTS										
BLEEDS ON -1.0										

Note: Do not operate engine anti-ice "ON" at airport OAT above 10°C (50°F).

737-300 Reduced Takeoff %N1, CFM56-3B1

Takeoff with reduced takeoff thrust is recommended whenever operating circumstances permit. Use of reduced takeoff thrust procedures is not permitted under any of the following conditions:

- Anti-Skid inoperative
- Runway contaminated with water, ice, slush or snow
- Engine anti-ice on
- At pressure altitudes above 3000 ft

The procedure for determining the reduced takeoff thrust setting is as follows:

1. Enter the airport analysis chart (not shown) to determine assumed temperature at actual takeoff weight (climb or runway limit).
2. The assumed temperature determined in "1." must be greater than shown in the Check Assumed Temperature chart (below). Otherwise, use the Max %N1.
3. Enter the Assumed Temperature %N1 chart for the appropriate altitude with the assumed temperature determined in "1." and the actual OAT to obtain the %N1 for reduced takeoff power.

Check Assumed Temperature Chart

Assumed Temp must be greater than shown below to use Reduced %N1 procedure.						
AIRPORT PRESSURE ALTITUDE - FEET						
0	1000	2000	3000			
°F 86	82	79	75			

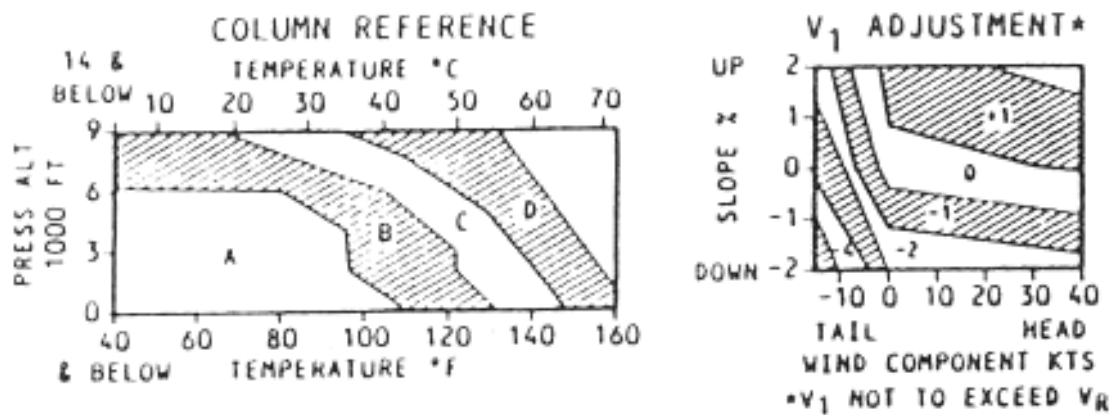
Assumed Temp %N1 Reduced Thrust

Airport Pressure Altitude - Sea Level to 1000 Ft.													
Assumed Temp °F	OUTSIDE AIR TEMPERATURE °F												
	-4	0	10	20	30	40	50	60	70	80	90	100	104
120	81.3	81.5	82.4	83.4	84.2	85.0	86.0	86.9	87.7	88.6	89.4	90.0	90.5
110	82.5	82.8	83.6	84.6	85.6	86.4	87.3	88.2	89.1	89.8	90.6	91.4	91.8
104	83.2	83.5	84.4	85.4	86.4	87.2	88.0	89.0	89.8	90.6	91.4	92.4	92.5
100	83.7	84.0	84.8	85.8	86.8	87.6	88.4	89.4	90.2	91.0	91.8	92.7	93.0
95	84.3	84.5	85.2	86.2	87.2	88.0	89.0	89.8	90.6	91.6	92.4		
90	84.8	85.2	85.6	86.8	87.8	88.7	89.6	90.6	91.4	92.3	93.2		
86	85.2	85.6	86.5	87.4	88.2	89.0	90.0	91.0	91.8	92.7			
82	85.5	85.8	86.8	87.3	88.6	89.6	90.4	91.4	92.2	93.2			

Airport Pressure Altitude - 1000 Ft to 2000 Ft													
Assumed Temp °F	OUTSIDE AIR TEMPERATURE °F												
	-4	0	10	20	30	40	50	60	70	80	90	100	104
120	82.0	82.3	83.2	84.4	84.9	85.7	86.6	87.5	88.3	89.2	90.0	90.9	91.3
110	83.0	83.3	84.2	85.1	85.9	86.8	87.7	88.6	89.5	90.3	91.2	92.1	92.5
104	83.6	83.9	84.8	85.7	86.6	87.5	88.5	89.3	90.1	91.0	91.8	92.7	93.0
100	84.0	84.3	85.2	86.1	87.0	87.9	88.9	89.7	90.5	91.4	92.2	93.2	

95	84.6	84.9	85.8	86.7	87.6	88.5	89.5	90.2	90.9	91.6	92.3		
90	85.2	85.4	86.3	87.4	88.2	89.1	90.1	91.0	91.8	92.6	93.5		
86	85.5	85.8	86.5	87.6	88.6	89.4	90.4	91.4	92.4	93.2			
82	85.9	86.2	87.2	88.2	89.0	89.8	90.9	91.8	92.6	93.4			
78	86.3	86.6	87.6	88.6	89.3	90.2	91.2	92.2	93.0	93.8			
Airport Pressure Altitude - 2000 Ft to 3000 Ft													
Assumed Temp °F	OUTSIDE AIR TEMPERATURE °F												
	-4	0	10	20	30	40	50	60	70	80	90	100	104
120	83.0	83.6	84.4	85.2	86.2	86.8	87.8	88.8	89.6	90.4	91.0	92.1	92.4
110	84.0	84.4	85.4	86.2	87.2	87.6	88.8	89.8	90.6	91.4	92.2	93.2	93.5
104	84.6	84.8	85.8	86.8	87.8	88.5	89.5	90.4	91.3	92.3	93.0	93.8	94.2
100	85.2	85.4	86.6	87.4	88.2	89.2	90.1	91.0	91.8	92.6	93.5	94.4	
95	85.8	86.0	87.0	87.8	88.9	89.6	90.8	91.6	92.4	93.3	94.2		
90	86.5	86.7	87.8	88.7	89.6	90.4	91.4	92.2	93.2	94.0	94.8		
86	86.9	87.2	88.2	88.9	90.0	90.8	91.8	92.6	93.6	94.4			
82	87.0	87.4	88.4	89.2	90.2	90.9	91.9	92.8	93.7	94.5			
78	87.1	87.5	88.5	89.3	90.3	91.0	92.0	92.9	93.8	94.6			

737-300 Takeoff Speeds Column Reference/Adjustments



737-300 Takeoff Speeds, CFM56-3B1

FLAPS	WT 1000 LB	A			B			C			D		
		V1	VR	V2	V1	VR	V2	V1	VR	V2	V1	VR	V2
1	140	158	161	165	159	162	165						
	130	151	153	158	153	155	158	154	156	158			
	120	144	145	152	146	147	152	147	148	152			
	110	136	137	144	138	139	144	140	141	144			
	100	128	128	137	129	130	137	131	132	137	133	134	137
	90	120	120	131	121	122	130	123	123	130	125	125	129
	80	111	111	124	113	113	124	114	114	123	116	116	122
	75	107	107	121	109	109	120	110	110	120	112	112	119
5	140	151	153	158	153	154	158						
	130	146	146	152	146	148	152	147	149	152			
	120	138	139	145	139	140	145	141	142	145			
	110	130	131	139	132	132	139	133	134	139	136	136	139
	100	123	123	133	124	124	132	125	126	131	128	129	132
	90	115	116	126	117	117	126	118	118	125	120	120	125
	80	107	107	120	108	108	120	110	110	119	111	111	118
	75	103	103	117	104	104	116	106	106	115	107	107	115
15	140	144	145	149	145	146	149						
	130	138	139	144	139	140	144						
	120	131	132	138	133	133	138	134	135	138			
	110	124	124	132	125	126	132	127	128	132			
	100	117	117	126	118	118	126	120	120	125	122	122	125
	90	110	110	120	111	111	120	112	112	119	114	114	119
	80	108	108	114	109	103	114	104	104	113	106	106	112
	75	98	98	111	99	99	110	100	100	110	102	102	109

Check Minimum V1 (Mcg) in red area.

737-300 Minimum V1 (Mcg)

OAT		PRESS ALT FT				
°F	°C	0	2000	4000	6000	8000
130	54	102	99			
120	49	104	102	100	96	
100	38	109	106	106	102	96
80	27	112	110	110	107	100
60	19	112	111	110	107	103
-60	-51	114	112	111	108	106

CLIMB CHARTS

737-300 Max Climb %N1 250/280/.74M, CFM56-3B1

VALID FOR 2 PACKS ON (AUTO) ENGINE A/I OFF										
TAT °C		PRESSURE ALTITUDE 1000 FEET								
		0	5	10	15	20	25	30	35	37
50		88.9	89.0	89.2						
40		89.8	90.0	90.2	90.7					
30		89.9	90.9	91.1	91.6	91.9	92.1			
20		88.4	90.5	91.8	92.5	92.8	93.0	93.2		
10		86.8	88.9	91.0	92.7	93.5	93.8	94.0	94.0	94.0
0		85.3	87.4	89.4	91.1	93.1	94.4	94.6	94.6	94.6
-10		83.7	85.7	87.7	89.4	91.3	93.1	94.6	95.2	95.2
-20		82.1	84.1	86.0	87.7	89.6	91.3	92.8	95.7	96.0
-30		80.5	82.4	84.3	82.9	87.8	89.5	90.9	93.8	94.5
-40		78.8	80.7	82.6	84.1	86.0	87.6	89.0	91.9	92.5
-50		77.1	79.0	80.8	82.3	84.1	85.7	87.1	89.9	90.5
%N1 CORR	A/C PACKS OFF	+5	+5	+6	+7	+8	+9	+9	+8	+7
	A/C PACKS HIGH	-.2	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.6
	ENGINE A/I ON	-.7	-.8	-.9	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
	WING A/I ON	-1.2	-1.2	-1.3	-1.4	-1.6	-1.9	-1.8	-1.9	-1.9

CRUISE CHARTS

737-300 Optimum Altitude, CFM56-3B1

WEIGHT 1000 LB	OPTIMUM ALTITUDE FEET
140	31000
135	31800
130	32600
125	33500
120	34400
115	35300
110	36200
105	37000

737-300 Mach .74 Cruise Chart, CFM56-3B1

ALL ENGINES A/C AUTO																
PRESS ALT 1000 FEET	IAS STD TAT TAS	GROSS WEIGHT 1000 LB														
		140	135	130	125	120	115	110	105	100	95	90	85	80	75	
37	238 -33 424				90.8 -20 2723	89.0 -12 2566	87.4 -5 2436	86.1 2326	85.0 2230	83.9 2147	83.0 2073	82.1 2005	81.3 1942	80.5 1885	79.8 1833	
36	244 -33 425			90.3 -18 2806	88.6 -10 2656	87.2 -4 2528	86.0 2420	84.9 2325	83.9 2242	83.0 2167	82.2 2099	81.4 2035	80.6 1977	79.9 1923	79.3 1876	
35	250 -30 426		90.2 -15 2902	88.6 -8 2758	87.3 -2 2634	86.2 2528	85.1 2433	84.2 2349	83.4 2274	82.5 2206	81.8 2141	81.0 2081	80.3 2027	79.7 1977	79.1 1933	
34	255 -28 428	90.0 -13 3000	88.6 -6 2860	87.2 -1 2740	86.3 2636	85.4 2542	84.5 2459	83.7 2384	82.9 2315	82.1 2249	81.4 2188	80.8 2133	80.2 2082	79.6 2036	79.1 1995	
33	261 -26 430	88.6 -4 2964	87.5 1 2848	86.5 6 2745	85.5 2653	84.7 2570	83.9 2495	83.2 2426	82.5 2360	81.8 2298	81.1 2242	80.6 2190	80.0 2143	79.5 2100	79.0 2061	
32	267 -24 432	87.5 2 2957	86.6 7 2856	85.7 2765	84.9 2684	84.2 2609	83.5 2539	82.8 2473	82.1 2411	81.5 2354	80.9 2301	80.4 2253	79.9 2208	79.4 2168	79.0 2132	
31	273 -22 434	86.7 8 2969	85.9 2880	85.1 2800	84.4 2725	83.7 2655	83.0 2588	82.4 2526	81.8 2468	81.3 2415	80.8 2366	80.3 2320	79.8 2279	79.4 2242	79.0 2208	
30	279 -19 436	86.0 2997	85.3 2918	84.6 2844	83.9 2773	83.3 2706	82.7 2644	82.1 2586	81.6 2531	81.1 2482	80.6 2436	80.2 2393	79.8 2355	79.4 2320	79.1 2289	
29	285 -17 438	85.4 3038	84.8 2964	84.1 2894	83.5 2827	83.0 2764	82.4 2706	81.9 2651	81.4 2601	81.0 2554	80.5 2511	80.1 2472	79.8 2436	79.4 2403	79.1 2374	
28	291 -15 440	84.9 3067	84.3 3017	83.8 2950	83.2 2888	82.7 2830	82.2 2775	81.7 2724	81.3 2677	80.9 2633	80.5 2592	80.1 2555	79.8 2522	79.5 2492	79.2 2465	
27	298 -13 442	84.5 3143	84.0 3077	83.4 3015	82.9 2956	82.5 2901	82.0 2850	81.6 2802	81.2 2758	80.8 2717	80.5 2679	80.1 2645	79.9 2614	79.6 2585	79.4 2560	
26	304 -11 443	84.1 3207	83.6 3144	83.2 3086	82.7 3031	82.3 2980	81.9 2932	81.5 2887	81.1 2845	80.8 2807	80.5 2772	80.2 2740	79.9 2710	79.7 2684	79.5 2661	
25	310 -8 445	83.8 3278	83.4 3220	83.0 3165	82.5 3113	82.1 3065	81.8 3020	81.4 2978	81.1 2939	80.8 2903	80.5 2870	80.3 2840	80.0 2813	79.8 2789	79.7 2768	
24	317 -6 447	83.6 3356	83.2 3301	82.8 3250	82.4 3202	82.0 3156	81.7 3114	81.4 3075	81.1 3038	80.8 3005	80.6 2974	80.4 2946	80.2 2921	80.0 2899	79.8 2880	
23	323 -4 449	83.4 3442	83.0 3391	82.6 3342	82.3 3297	82.0 3254	81.7 3215	81.4 3178	81.1 3144	80.9 3112	80.7 3084	80.5 3058	80.3 3034	80.1 3015	80.0 2998	
22	330 -2 451	83.2 3535	82.9 3487	82.5 3441	82.2 3399	81.9 3359	81.7 3321	81.4 3287	81.2 3255	81.0 3226	80.8 3199	80.6 3175	80.4 3154	80.3 3137	80.2 3122	
21	337 0 453	83.1 3635	82.8 3590	82.5 3547	82.2 3507	81.9 3470	81.7 3435	81.5 3403	81.3 3373	81.1 3346	80.9 3321	80.7 3299	80.6 3281	80.5 3265	80.4 3253	
20	343 3 454	83.0 3743	82.7 3701	82.4 3661	82.2 3623	82.0 3588	81.7 3556	81.5 3525	81.4 3498	81.2 3472	81.0 3449	80.9 3430	80.8 3413	80.7 3400	80.6 3391	

ISA AVERAGE %N1 REQUIRED
MAX TAT FOR THRUST RATING
ISA FUEL FLOW LB/HR/ENG

MAX TAT NOT SHOWN FOR HOTTER THAN ISA + 30°C CONDITIONS.
INCREASE/DECREASE TARGET %N1 BY 1% PER 5°C ABOVE/BELOW STD TAT
INCREASE/DECREASE FUEL FLOW 1% PER 5°C ABOVE/BELOW STD TAT
INCREASE/DECREASE TAS BY 1 KT PER 1°C ABOVE/BELOW STD TAT

737-300 300 KIAS Cruise Chart, CFM56-3B1

ALL ENGINES A/C AUTO																
PRESS ALT 1000 FEET	IAS STD TAT TAS	GROSS WEIGHT 1000 LB														
		140	135	130	125	120	115	110	105	100	95	90	85	80	75	
24	300	82.3	81.8	81.3	80.9	80.5	80.1	79.7	79.3	79.0	78.6	78.3	78.0	77.7	77.5	
	-9 425	3138	3079	3024	2971	2921	2874	2830	2788	2750	2714	2682	2653	2626	2603	
23	300	81.5	81.1	80.6	80.2	79.8	79.3	78.9	78.5	78.2	77.8	77.5	77.2	77.0	76.8	
	-7 418	3137	3079	3023	2971	2922	2876	2832	2791	2753	2718	2687	2658	2632	2609	
22	300	80.8	80.3	79.9	79.4	79.0	78.5	78.1	77.7	77.4	77.1	76.8	76.5	76.3	76.0	
	-6 412	3137	3080	3026	2974	2926	2880	2837	2796	2759	2724	2693	2664	2638	2616	
21	300	80.0	79.6	79.1	78.6	78.2	77.8	77.4	77.0	76.7	76.4	76.1	75.8	75.6	75.4	
	-5 406	3139	3083	3029	2978	2930	2885	2843	2803	2766	2732	2700	2672	2647	2625	
20	300	79.2	78.8	78.3	77.8	77.4	77.0	76.6	76.3	76.0	75.7	75.4	75.1	74.9	74.6	
	-4 400	3142	3086	3033	2983	2935	2891	2849	2809	2773	2739	2708	2681	2656	2634	
19	300	78.5	78.8	77.5	77.1	76.7	76.3	76.0	75.6	75.3	75.0	74.7	74.4	74.1	73.9	
	-2 394	3148	3093	3040	2990	2944	2899	2858	2819	2783	2750	2720	2692	2668	2646	
18	300	77.7	77.3	76.8	76.4	76.0	75.7	75.3	74.9	74.6	74.2	74.0	73.7	73.5	73.3	
	-1 388	3156	3102	3050	3000	2954	2910	2869	2831	2796	2763	2733	2707	2682	2661	
17	300	77.0	76.6	76.2	75.8	75.3	74.9	74.6	74.2	73.9	73.6	73.3	73.0	72.8	72.6	
	1 382	3168	3114	3063	3014	2968	2925	2884	2847	2812	2779	2750	2723	2700	2679	
16	300	76.3	75.9	75.5	75.0	74.6	74.2	73.9	73.5	73.2	72.9	72.6	72.3	72.1	71.9	
	2 377	3184	3130	3080	3032	2986	2943	2903	2866	2831	2799	2770	2744	2720	2700	
15	300	75.6	75.2	74.7	74.3	73.9	73.5	73.2	72.8	72.5	72.1	71.9	71.6	71.4	71.2	
	3 371	3203	3150	3100	3053	3007	2965	2925	2888	2854	2822	2793	2767	2744	2723	
14	300	74.9	74.4	74.0	73.6	73.2	72.8	72.4	72.1	71.7	71.4	71.1	70.9	70.7	70.5	
	5 366	3218	3165	3116	3069	3024	2982	2942	2906	2872	2840	2812	2786	2763	2742	
13	300	74.2	73.7	73.3	72.9	72.4	72.0	71.7	71.3	71.0	70.7	70.4	70.2	69.9	69.7	
	6 361	3232	3180	3131	3085	3040	2999	2960	2923	2889	2858	2830	2805	2782	2761	
12	300	73.4	73.0	72.5	72.1	71.7	71.3	70.9	70.6	70.3	70.0	69.7	69.4	69.2	69.0	
	8 355	3247	3195	3147	3100	3057	3015	2977	2941	2907	2876	2849	2823	2800	2780	
11	300	72.7	72.2	71.8	71.3	70.9	70.6	70.2	69.8	69.5	69.2	68.9	68.7	68.4	68.2	
	9 350	3261	3210	3162	3116	3073	3032	2994	2958	2925	2894	2867	2841	2818	2798	
10	300	71.9	71.4	71.0	70.6	70.2	69.8	69.4	69.1	68.7	68.4	68.2	67.9	67.7	67.5	
	11 345	3275	3225	3178	3132	3089	3048	3010	2975	2942	2912	2884	2859	2837	2816	

ISA AVERAGE %N1 REQUIRED
 MAX TAT FOR THRUST RATING
 ISA FUEL FLOW LB/HR/ENG

MAX TAT NOT SHOWN FOR HOTTER THAN ISA + 30°C CONDITIONS.
 INCREASE/DECREASE TARGET %N1 BY 1% PER 5°C ABOVE/BELOW STD TAT
 INCREASE/DECREASE FUEL FLOW 1% PER 5°C ABOVE/BELOW STD TAT
 INCREASE/DECREASE TAS BY 1 KT PER 1°C ABOVE/BELOW STD TAT

LANDING CHARTS

737-300 Landing Speeds

LANDING SPEEDS			
WEIGHT 1000 LBS	FLAPS 40 VREF	FLAPS 30 VREF	FLAPS 15 VREF
140	150	151	163
130	144	146	157
120	137	140	151
110	131	134	144
100	123	127	137
90	116	120	129
80	109	113	121
75	106	110	117