

Takeoff Speeds - Dry Runway

Flaps 10, 15 and 25

V1, VR, V2 for Max Takeoff Thrust

WEIGHT (1000 LB)	FLAPS 10			FLAPS 15			FLAPS 25		
	V1	VR	V2	V1	VR	V2	V1	VR	V2
170	138	140	145	136	136	141			
160	134	135	141	132	132	138	131	131	136
150	129	131	137	128	128	135	126	126	133
140	124	126	133	123	123	131	121	122	129
130	118	121	129	117	118	127	116	117	125
120	112	115	124	111	113	122	109	111	121
110	106	109	119	105	107	117	103	106	116
100	99	103	114	98	101	113	97	100	111
90	92	97	109	91	95	107	90	94	106

Check V1(MCG).

V1, VR, V2 Adjustments*

TEMP		V1						VR						V2					
		PRESSURE ALTITUDE (1000 FT)						PRESSURE ALTITUDE (1000 FT)						PRESSURE ALTITUDE (1000 FT)					
°F	°C	-2	0	2	4	6	8	-2	0	2	4	6	8	-2	0	2	4	6	8
140	60	5	6	7	9			3	4	5	6			-2	-2	-2	-3		
120	49	3	4	5	7	8	10	2	3	4	5	6	6	-1	-1	-2	-2	-3	-3
100	38	1	2	3	5	6	8	1	1	2	3	4	5	0	-1	-1	-2	-2	-3
80	27	0	0	1	3	5	6	0	0	1	2	3	4	0	0	0	-1	-1	-2
60	16	0	0	1	2	3	4	0	0	1	1	2	3	0	0	0	0	-1	-1
-60	-51	0	0	1	2	3	3	0	0	1	1	2	3	0	0	0	0	-1	-1

Slope and Wind V1 Adjustments*

WEIGHT (1000 LB)	SLOPE (%)						WIND (KTS)							
	-2	-1	0	1	2		-15	-10	-5	0	10	20	30	40
170	-3	-1	0	1	1		-1	-1	-1	0	0	1	1	1
160	-3	-1	0	1	2		-1	-1	-1	0	0	1	1	1
150	-3	-1	0	1	2		-1	-1	-1	0	0	1	1	1
140	-2	-1	0	1	2		-2	-1	-1	0	0	1	1	1
130	-2	-1	0	1	2		-2	-1	-1	0	0	1	1	1
120	-2	-1	0	1	2		-2	-1	-1	0	0	1	1	1
110	-2	-1	0	1	2		-2	-1	-1	0	0	1	1	2
100	-2	-1	0	1	2		-2	-1	-1	0	0	1	2	2
90	-1	-1	0	1	1		-2	-1	-1	0	0	1	2	2

Clearway and Stopway V1 Adjustments*

NORMAL V1 (KIAS)	CLEARWAY MINUS STOPWAY (FT)									
	800	600	400	200	0	-200	-400	-600	-800	
140	-3	-3	-3	-2	0	2	2	2	2	2
120	-3	-3	-3	-2	0	2	2	2	2	2
100	-3	-3	-2	-1	0	1	1	1	1	1

*V1 not to exceed VR.

Max Allowable Clearway for V1 Adjustment

FIELD LENGTH (FT)	4000	6000	8000	10000	12000	14000
MAX ALLOWABLE CLEARWAY (FT)	450	650	850	1000	1450	1550

V1(MCG)

Max Takeoff Thrust

TEMP		PRESSURE ALTITUDE (FT)							
°F	°C	-2000	0	2000	4000	6000	8000	10000	
160	71	102							
140	60	102	99	97	96				
120	49	104	102	98	96	94	92	90	
100	38	110	107	103	100	96	92	90	
80	27	112	111	109	105	101	97	93	
60	16	112	112	109	107	104	101	97	
-60	-51	113	113	110	108	105	102	100	

FIGURE 237.—Takeoff Speeds—Dry Runway.

Takeoff Speeds - Wet Runway
Flaps 10, 15 and 25
V1, VR, V2 for Max Takeoff Thrust

WEIGHT (1000 LB)	FLAPS 10			FLAPS 15			FLAPS 25		
	V1	VR	V2	V1	VR	V2	V1	VR	V2
170	133	139	145	133	136	141			
160	128	135	141	128	132	138	126	131	136
150	123	131	137	122	128	135	121	126	133
140	117	126	133	117	123	131	115	122	129
130	111	121	129	111	118	127	109	117	125
120	105	115	124	104	113	122	103	111	121
110	99	109	119	98	107	117	97	106	116
100	92	103	114	92	101	112	91	100	111
90	86	97	109	85	95	107	84	94	106

Check V1(MCG).

V1, VR, V2 Adjustments*

TEMP		V1						VR						V2					
		PRESSURE ALTITUDE (1000 FT)						PRESSURE ALTITUDE (1000 FT)						PRESSURE ALTITUDE (1000 FT)					
°F	°C	-2	0	2	4	6	8	-2	0	2	4	6	8	-2	0	2	4	6	8
140	60	6	7	9	10			3	4	5	6			-2	-2	-2	-3		
120	49	4	4	6	8	9	11	2	3	4	4	5	6	-1	-1	-2	-2	-3	-3
100	38	1	2	3	5	7	9	1	1	2	3	4	5	0	-1	-1	-2	-2	-2
80	27	0	0	1	3	4	6	0	0	1	2	3	4	0	0	0	-1	-1	-2
60	16	0	0	1	2	3	4	0	0	1	1	2	3	0	0	0	0	-1	-1
-60	-51	0	0	1	2	3	4	0	0	1	1	2	3	0	0	0	0	-1	-1

Slope and Wind V1 Adjustments*

WEIGHT (1000 LB)	SLOPE (%)					WIND (KTS)								
	-2	-1	0	1	2	-15	-10	-5	0	10	20	30	40	
170	-4	-2	0	2	4	-3	-2	-1	0	1	1	2	3	
160	-4	-2	0	2	4	-3	-2	-1	0	1	1	2	3	
150	-4	-2	0	2	4	-3	-2	-1	0	1	1	2	3	
140	-4	-2	0	2	3	-4	-2	-1	0	1	1	2	3	
130	-3	-1	0	1	3	-4	-3	-1	0	1	2	2	3	
120	-3	-1	0	1	3	-4	-3	-1	0	1	2	2	3	
110	-2	-1	0	1	2	-4	-3	-1	0	1	2	2	3	
100	-2	-1	0	1	2	-4	-3	-1	0	1	2	2	3	
90	-2	-1	0	1	2	-4	-3	-1	0	1	2	3	3	

Stopway V1 Adjustments*

NORMAL V1 (KIAS)	STOPWAY (FT)				
	0	200	400	600	800
160	0	1	2	2	3
140	0	1	2	2	3
120	0	1	2	3	4
100	0	1	2	3	4

Use of clearway not allowed on wet runways.

*V1 not to exceed VR.

V1(MCG)

Max Takeoff Thrust

TEMP		PRESSURE ALTITUDE (FT)						
°F	°C	-2000	0	2000	4000	6000	8000	10000
160	71	102						
140	60	102	99	97	96			
120	49	104	102	98	96	94	92	90
100	38	110	107	103	100	96	92	90
80	27	112	111	109	105	101	97	93
60	16	112	112	109	107	104	101	97
-60	-51	113	113	110	108	105	102	100

FIGURE 238.—Takeoff Speeds—Wet Runway.