

Table 1: Common Speed & Events (as at 06 August 2020)

SPEED	EVENT & NOTES
V2 +15/20	1. Set MCP to V2 +(6)
60 KIAS	2. Advance Throttle to 40%N1 ¹ and stabilise. Advance throttles to 70-80 %N1 and Press TOGA <ul style="list-style-type: none"> • Throttle mode is offline (3) • FMA – ARM to N1 3. Pilot flying places hand on thrust lever knobs in case of RTO. Slight forward pressure is maintained the control column to maintain tyre adhesion. Pilot not flying places hand behind throttle levers
80 KIAS V1	4. FMA - N1 to THR HOLD <ul style="list-style-type: none"> • Throttle mode is online (2) – 84 KIAS • At V1 Flight crew remove hands from throttles to reinforce the <i>'fly now'</i> rather than RTO. Back pressure on yoke is slowly released
Vr	5. At Vr Rotate at 2-3° until target takeoff pitch at ~8-10°. Begin rotation maneuver 5 KIAS before Vr <ul style="list-style-type: none"> • When vertical speed and altitude show an increase in height, call <i>'Positive Rate'</i>. Pilot not flying raises landing gear • Command bars on FD will be at 15° nose up after lift-off until sufficient climb rate is acquired, then pitch is commanded to maintain V2+15/20 until Acceleration Height (AH) is reached. Try for 2500 fpm as target rate (if manually flying). Trim for no back pressure on yoke. 6. Positive rate call out by pilot not flying – Gear Up
800 FT AGL	7. FMA - THR to ARM <ul style="list-style-type: none"> • System ready to change from T/O to CLB power • Throttle mode is online (2)
1000 - 1500 FT RA	7. Acceleration Height (1000-1500 ft RA). Increase MCP speed bug to flaps UP speed (if manually flying) <ul style="list-style-type: none"> • Select N1 on MCP (if manually flying and desired) • Reduce pitch 10-15° to accelerate aircraft (half vertical speed is a good indication) ~92%N1. Trim for no back pressure on yoke. • If using VNAV⁴ the system will increase the speed bug from V2 to planned climb speed (<i>'bug up'</i>) (V2 +15/20). Engage VNAV (if flying manually) no lower than 400 RA or as per airline policy. 8. Above 1000 feet AGL – retract flaps as per schedule. Gear lever set to OFF
1500 FT	9. Thrust Reduction Altitude (1500 ft RA) <ul style="list-style-type: none"> • FMA – ARM to N1 • Thrust Reduction Altitude (TRA) is automatic thrust reduction from takeoff thrust to climb thrust (maximises engine life) – can alter in CDU. This altitude is <i>usually</i> the same altitude as Acceleration Height • Throttle mode is offline (3) 9. Engage autopilot after flap retraction

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Climb to Cruise Speed	<ol style="list-style-type: none">10. Dial into MCP 250 KIAS if manually flying & no constraints)11. Select either: LVL CHG), LNAV/VNAV or V/S<ul style="list-style-type: none">• FMA - N1 or speed (depends on mode selected)• LVL CHG (speed protected)• VNAV (check FMS software. If flaps extended no speed protection)• V/S (no speed protection)• If LVL CHG selected check MCP speed window for correct speed (MCP speed will alter to current air speed when LVL CHG is selected). If no constraints 250 KIAS• Maintain 250 KIAS to 10,000 feet, then increase MCP speed to 270 KIAS• Maintain 270 KIAS to 12,000 feet, then increase MCP speed to 280 KIAS• Climb to Flight Level and set cruise speed (consult CDU) if not populated automatically
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NOTES

- (1) 40% N1 is common (read main article as FCOMS differ between airline policy/SOP)
- (2) Throttles are online means thrust can be overridden manually
- (3) Throttles are offline means thrust cannot be overridden
- (4) VNAV can be selected on the MCP prior to takeoff (FMS software dependent) or selected after takeoff above 400 feet
- (5) Flaps are very rarely retracted under 1000 feet AGL
- (6) You can fly either +15 or +20 knots (maximum +25 knots) above the V2 command speed

TABLE 1: Common events and timing during takeoff and climb. The 737 aircraft has multiple automation levels, which differ depending upon FMS software used and which automation level is selected. As such, the content in this table is generic.