Airbus A320-232 Procedures ▫
(IAE V2527-A5)

Compiled by Matt Zagoren

AUTOFLIGHT
The A320 should normally be flown in fully automatic flight, using the flight management and autoflight systems. However, when traffic/workload is light and the use of the autoflight system is not mandated by other procedures, you are encouraged to hand-fly the airplane. When hand flying, the use of the autothrottles is optional.

ENGINE START
Engine No.1 is started first using the automatic engine start procedure. In order to reduce taxi time and conserve fuel, subsequent engine starts may be initiated when starter cutout is observed. Normal sea level ground idle indications (approximate) are:

- N1 - 25%
- N2 - 60%
- EGT - 400°C
- Fuel Flow - 800 lbs/hour

After start, if the engines have been shut down for more that two hours, they should be operated at or near idle for at least five minutes.

TAXI OUT
When turning, the nose should track to the outside of the centerline to keep the main gear centered over it. The minimum pavement width required for a 180° turn is approximately 80 feet.

Use the ND groundspeed readout to monitor taxi speed. Maximum recommended taxi speeds are:

- Straight - 20 knots
- Turns - 10 knots

Little if any thrust above idle is needed to get the airplane moving. When adding thrust, 40% N1 is the maximum limit without ground clearance of the area behind the airplane. The aircraft can be taxied with idle thrust on both engines.

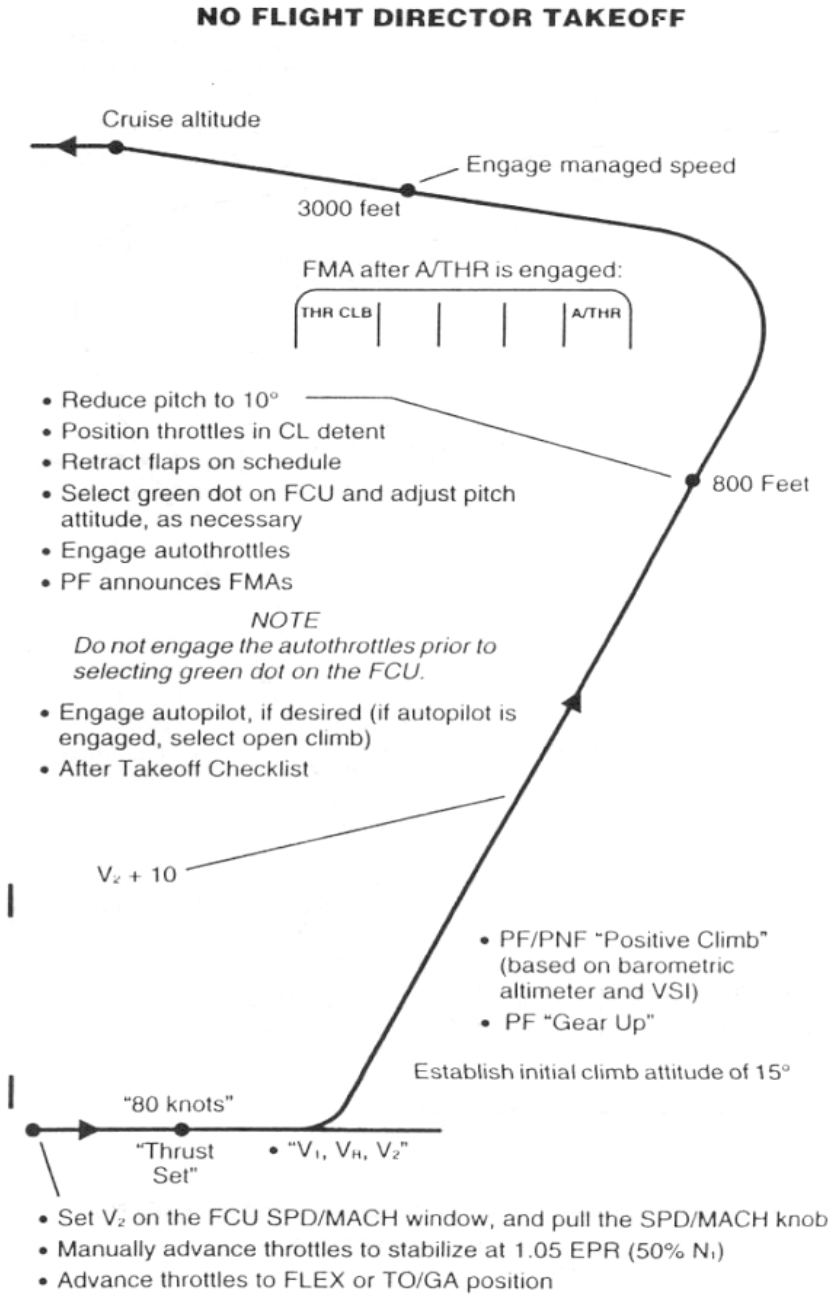
If a long taxi distance is required or an extended delay is expected, consider shutting down the No. 2 engine.

TAKEOFF PROCEDURES

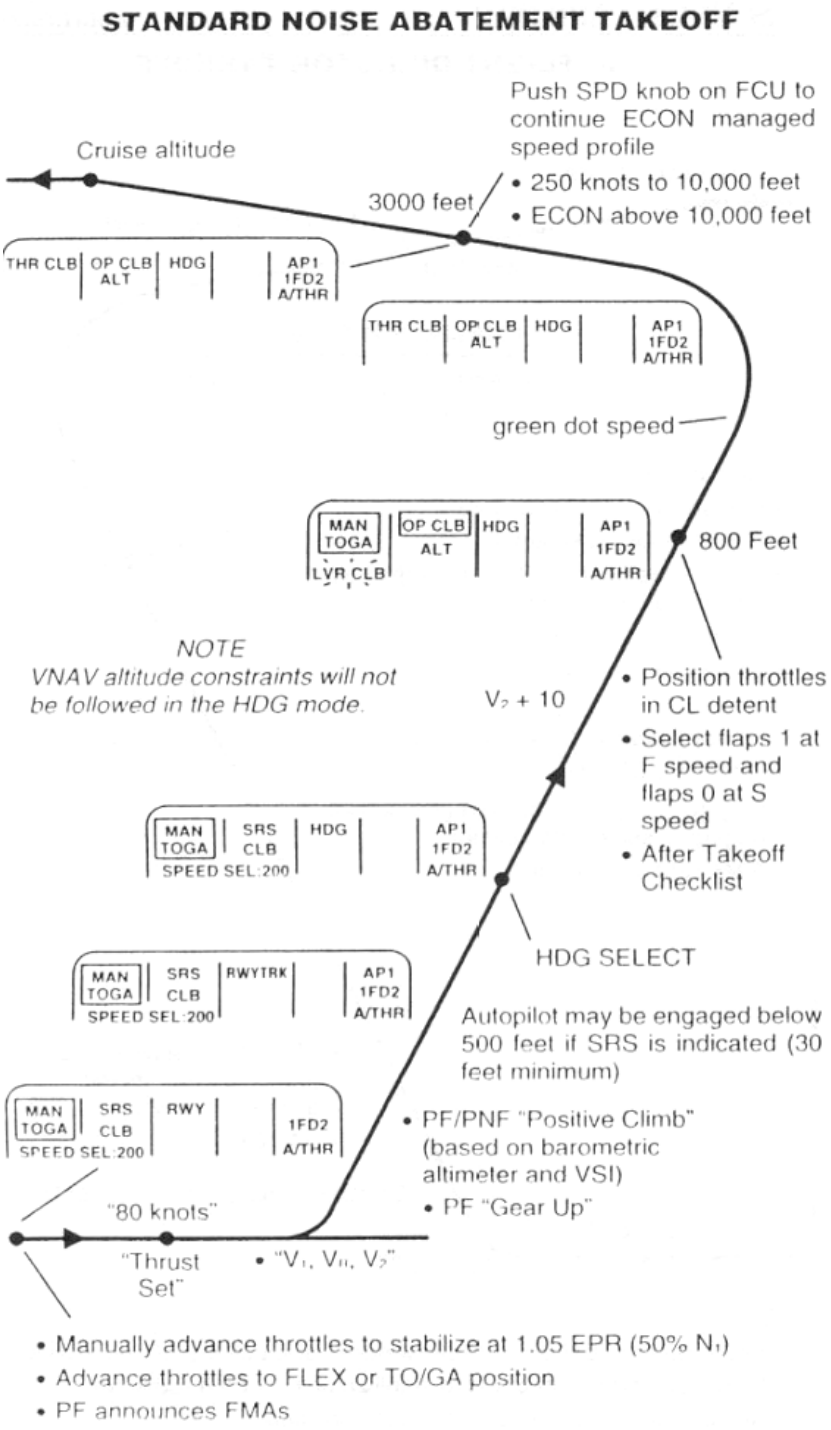
- It is recommended a FLEX power takeoff be performed whenever conditions permit. Advance the throttles and allow the engines to stabilize at approximately 1.05 EPR (50% N1) prior to advancing the throttles to the FLEX or TO/GA detent. When the throttles are advanced to FLEX or TO/GA at takeoff, the autothrottle is armed. Thrust is manual remains manual until the throttles are retarded below the FLEX detent after takeoff.
- Check that takeoff thrust (EPR) is set prior to 80 knots.
- To prevent a pitch-up tendency at the beginning of the takeoff roll, maintain one-half forward stick deflection until 80 knots, and then progressively release stick pressure to reach neutral at 100 knots.

- Maintain directional control throughout the takeoff roll by using the rudder to keep the airplane on the runway centerline. Do not use the nosewheel steering tiller during the takeoff roll.
- During a crosswind takeoff, apply rudder as necessary to maintain runway alignment. If any aileron input is applied on the ground, the side stick must be centered during rotation to ensure that a zero roll rate command exists at liftoff.
- At Vr, rotate the airplane smoothly using a continuous rate of approx 3° per second in order to establish the required pitch attitude as directed by the SRS pitch command bar. Initial pitch attitudes are approximately 15° on two engines and 12.5° on one engine.
- At positive rate, gear up.
- If SRS guidance is available, autopilot 1 or 2 may be engaged at any time above 30 feet AGL. If SRS guidance is not available, the autopilot may not be engaged until above 500 feet AGL.
- After takeoff, the airplane is guided vertically by SRS (Speed Reference System) law and the target speed is V2 + 10.

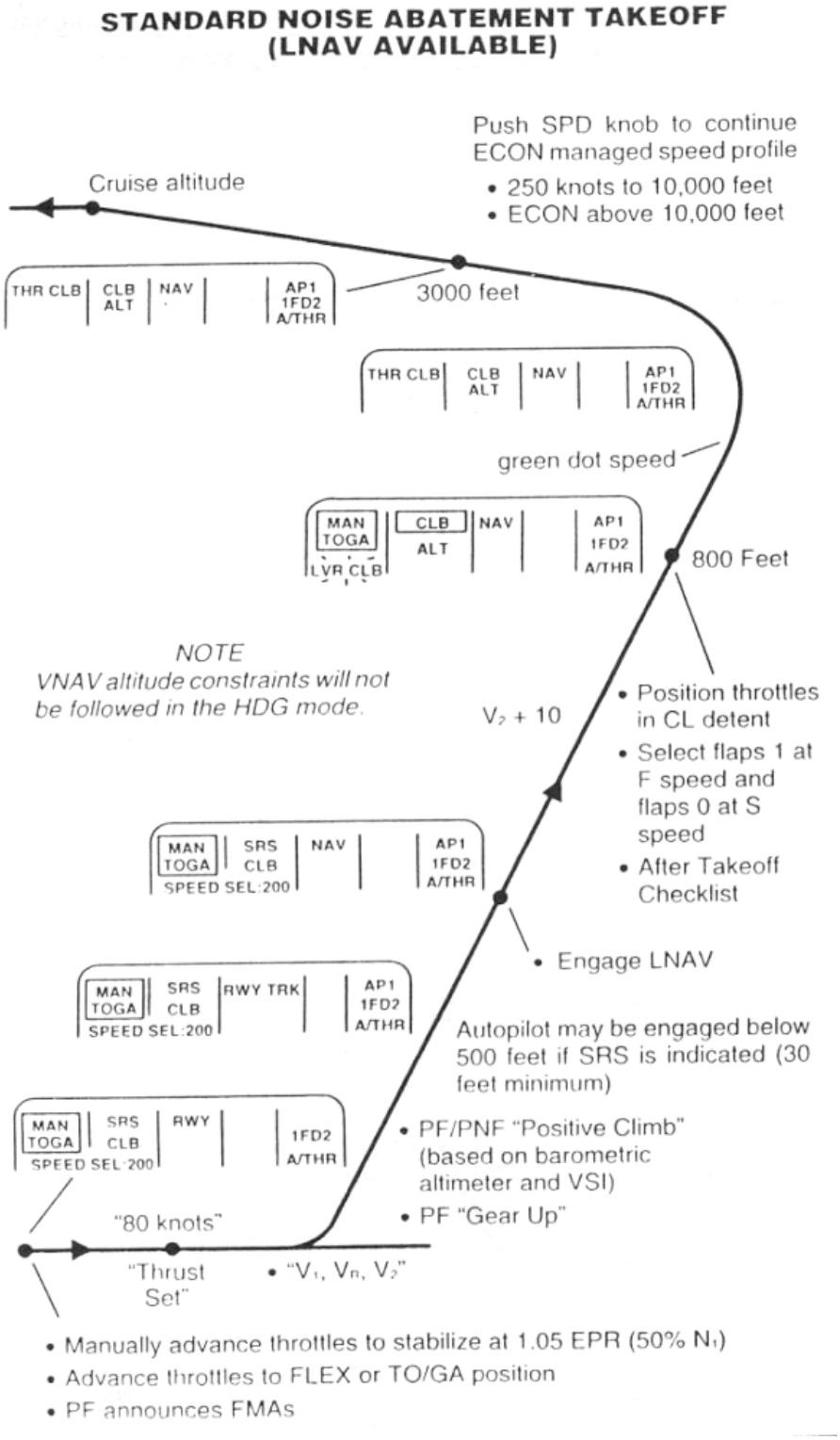
A320 No Flight Director Takeoff



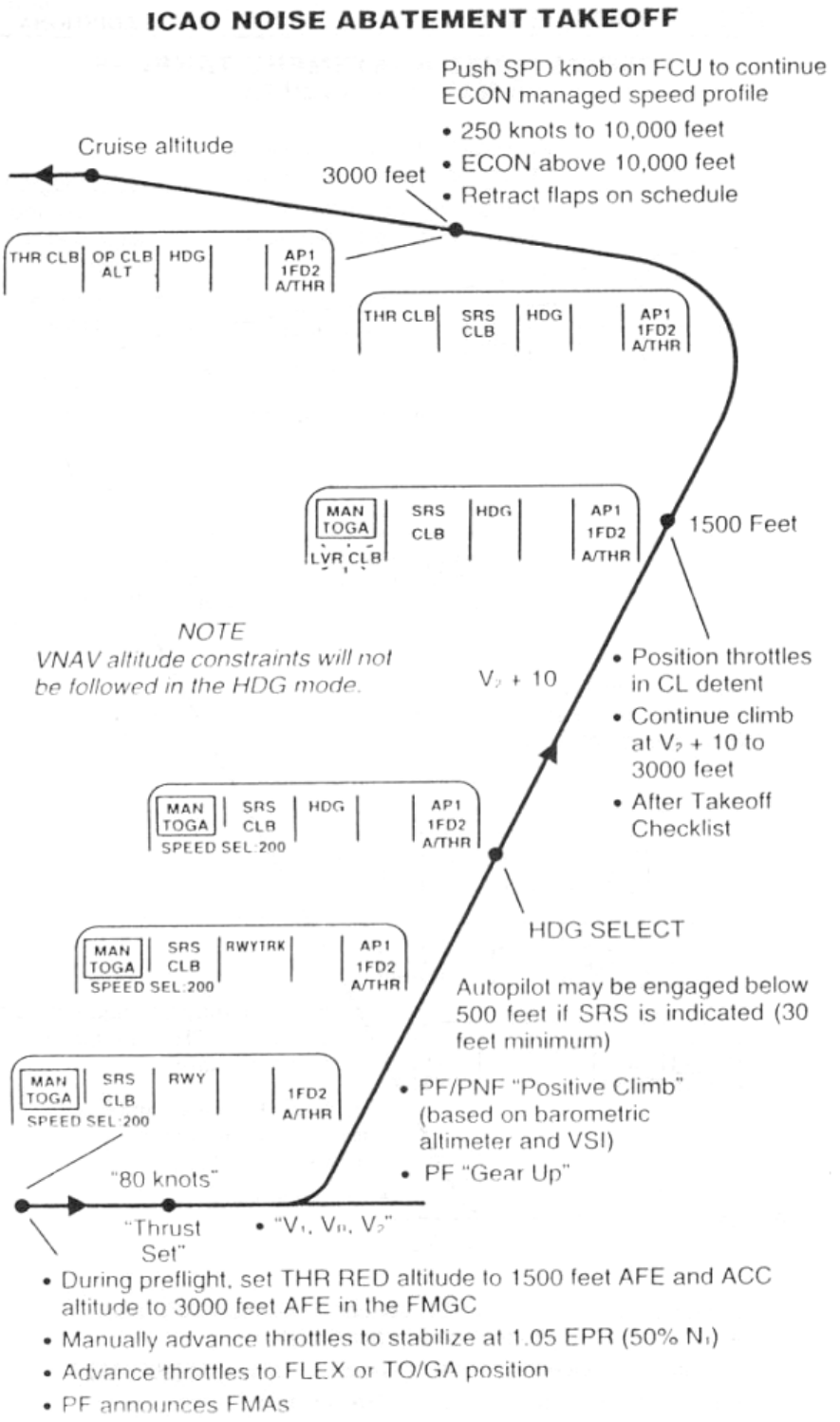
A320 Standard Noise Abatement Takeoff



A320 Standard Noise Abatement Takeoff (LNAV Available)



A320 ICAO Noise Abatement Takeoff



CRUISE

Periodically check the ECAM system pages for the following:

- Check oil pressure, temp and quantity.
- Check bleed parameters.

- Check electrical parameters and generator loads.
- A slight decrease in hydraulic quantity is normal.
- Check fuel distribution.
- Check duct temperature versus zone temperature.

APPROACH DESCENT

The normal method of initiating the descent is to use VNAV or OP DES. The preferred method of increasing descent rate is by increasing indicated airspeed. Speedbrakes may be used to increase the rate of descent. Do not use more than one-half speedbrakes above FL310 when less than .75 Mach.

When using speedbrakes for descent, retract speedbrakes before adding thrust and allow sufficient altitude and airspeed margins to ensure a smooth level off. The use of speedbrakes increases Vls. With full speedbrake extension, Vls may be higher that Vfe for the flap configuration. In this situation, it is necessary to retract the speedbrakes and allow the speed to decrease below Vfe prior to selecting a higher flap setting. The landing gear may be extended out of sequence to aid in deceleration.

Select desired autobrake setting. Use of autobrakes, combined with auto-spoiler operation and the timely and effective use of reverse thrust is the most cost effective way to slow the airplane. Available runway length, exit plan, weather and runway conditions should all be considered when selecting an autobrake deceleration rate:

Use the following as a guide:

- Off - Runway length/exit plan and conditions will allow the use of normal aerodynamic forces and minimal braking to slow or stop the airplane, i.e., planned roll to the end.
- LOW - Provides deceleration rates that are suitable for most routine operations where the runway is dry or braking action is reported as good.
- MED - Use when moderate deceleration rates are required or if the runway is reported wet, slippery, or braking action reported poor.
- MAX - Use for takeoff only.

At 10,000 feet and 250 knots, activate and confirm the approach phase manually on the PERF page. Activating the approach phase affects speed reference only. The approach phase will automatically activate when:

- Descending through 7,200 feet AGL, and
- LNAV is engaged, and
- The DECEL waypoint has been passed

However, manual activation provides a better operational procedure.

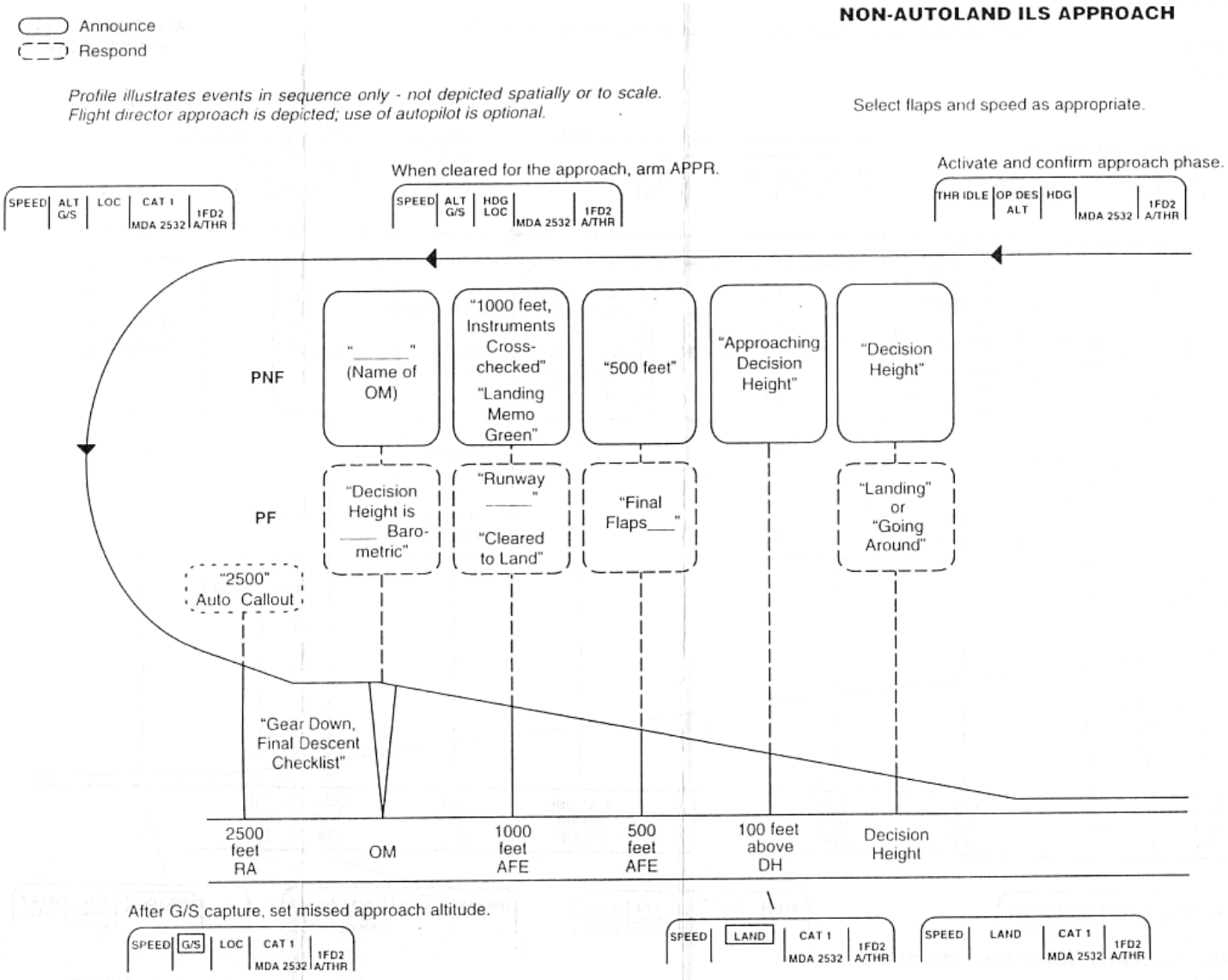
FINAL DESCENT
Retract the speed brakes prior to selecting flaps FULL to avoid an unexpected pitch down when automatic speed brake retraction occurs.

ILS APPROACH
It takes a minimum of three seconds after arming for the LOC and/or G/S to engage in the capture mode. Managed speed is used unless a specific speed is required by ATC.

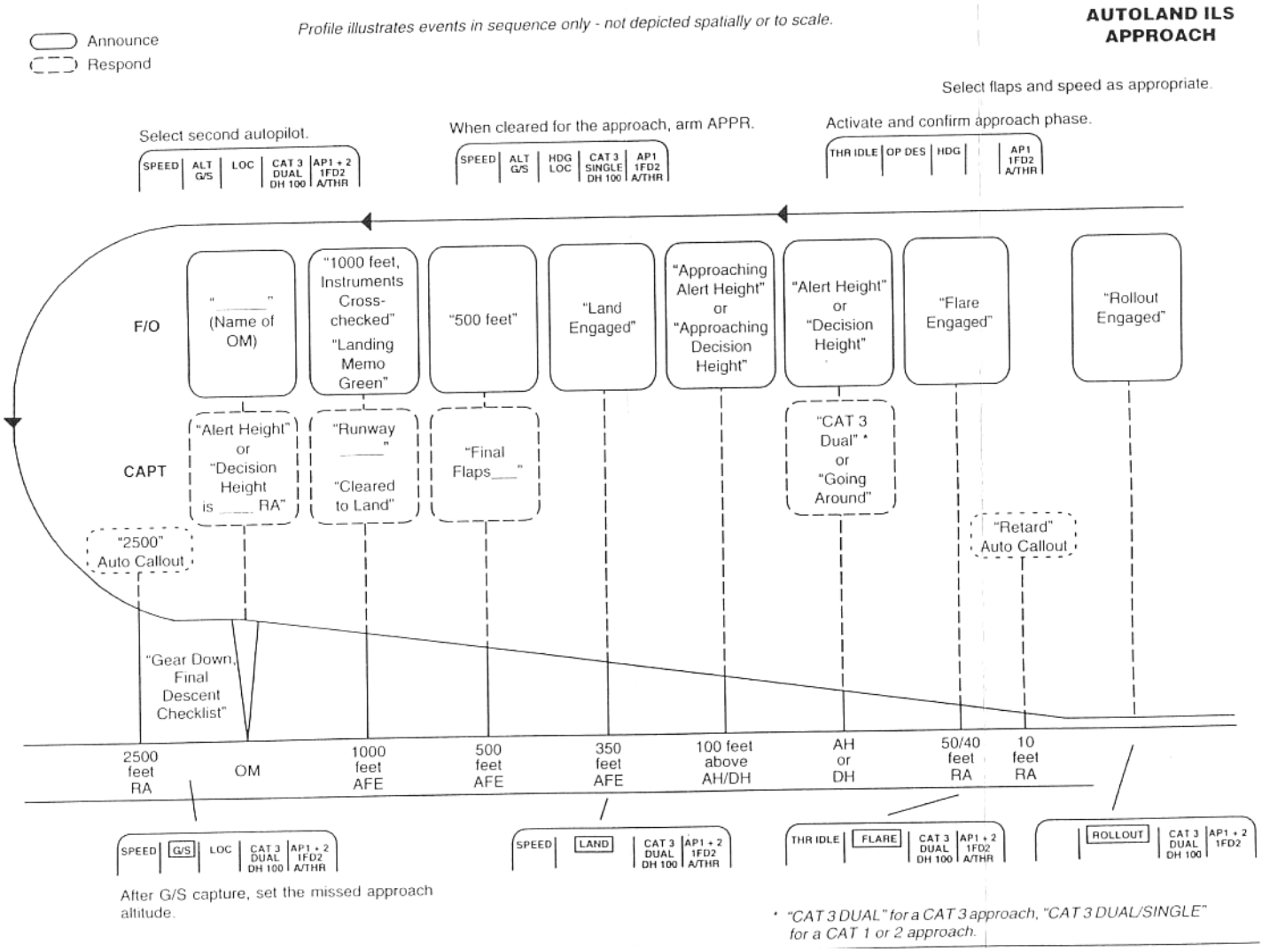
Do not arm ILS APPR mode above 8200' AGL. Radio altimeter signals are not available above this altitude and with the APPR switch armed, the autopilot disengages at glideslope capture and the flight directors revert to HDG-V/S or TRK-FPA mode.

ILS raw data must be displayed on the PFDs by selecting the ILS switch on.

A320 Non-Autoland ILS Approach

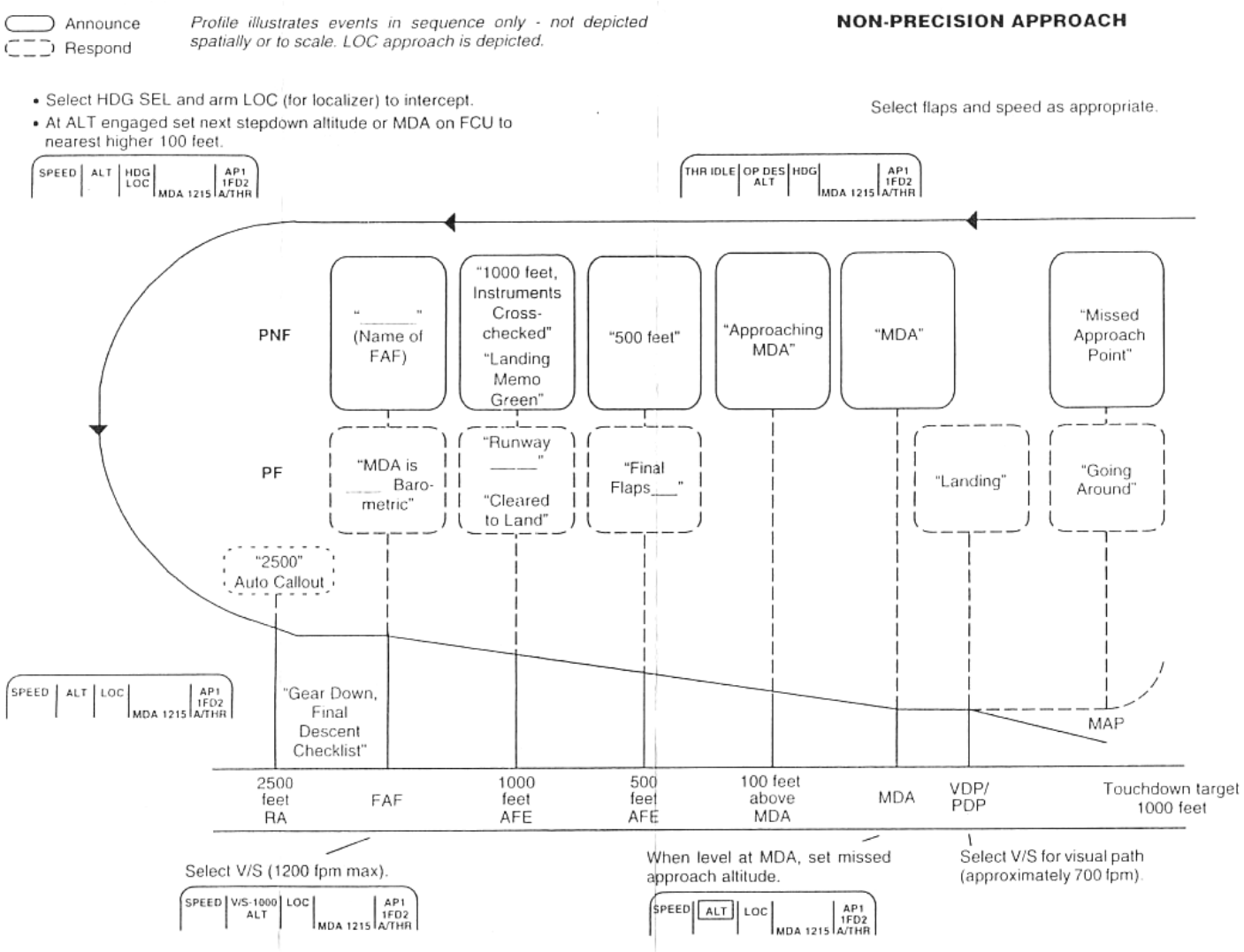


A320 Autoland ILS Approach



NON-PRECISION APPROACH

A320 Non-Precision Approach



VISUAL APPROACH

A visual approach should be flown in the same manner as an ILS, with an approximate 3° vertical path on the final approach. Visual approaches may be flown with or without the flight director, and with either the standard display or the flight path vector. If flight director guidance is not being followed, it is recommended to select both flight directors off.

LANDING ROLL

The flare begins at approximately 20 feet. Do not delay the touchdown with a prolonged float. Tail strike occurs at approximately 12° degrees of pitch with the landing gear compressed. The "de-crag" technique should be used for crosswind landings.

After touchdown, lower the nosewheel smoothly onto the runway. Rudder and aileron input is effective down to approx 60 knots. Avoid using the nosewheel tiller above normal taxi speeds since abrupt inputs may cause nosewheel skidding.

Select reverse thrust after main gear touchdown. A slight pitch up may occur when the thrust reversers are deployed before nose gear touchdown. Do not attempt to go-around after initiating reverse thrust. Select REV IDLE when groundspeed approaches 80 knots. Select FWD IDLE prior to reaching 60 knots and before leaving the runway.

When using autobrakes, manual braking is normally not required until the groundspeed approaches 80 knots. When autobrakes are no longer required, apply manual brakes as necessary to control deceleration and to deactivate the autobrakes.

TAXI IN

If an extended taxi or delay is required, consider shutting down the #2 engine. After operation at thrust levels above 1.3 EPR, it is recommended the engine be operated at or near idle for five minutes.