

TransNorthern Aviation
Beech 99 Maneuvers



Principal Base of Operations:

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EFFECTIVE PAGES

This list shows the current revision and effective date of each page.

<u>PAGE</u>	<u>REVISION</u>	<u>DATE</u>
1	Original	01-10-21
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USE OF THE MANEUVERS GUIDE

The flight maneuvers contained herein are designed to support the flight training curriculum segment. The procedures established for each maneuver are designed to standardize company flight training.

All crewmembers are expected to demonstrate knowledge and proficiency in each maneuver (both ground & flight) listed in the flight training curriculum segment in accordance with the standards set forth in the applicable airman certification standards guide. While TransNorthern LLC recognizes standards for operating the aircraft, we also recognize our diverse operating environment may require the pilot to use judgement in determining the proper operational criteria for a given situation.

Instructors and check airman **will be familiar with** the ATP (FAA-S-ACS-11), Commercial Pilot (FAA-S-ACS-7A), or Instrument Rating (FAA-S-ACS-8B) Airman Certification Standards as applicable, **prior to** conducting training & testing.

These flight training maneuvers do not replace the aircraft performance and operating limitations published in the Beech 99 AFM. **Compliance with the FAA Limitations section is mandatory for all flight operations.**

Training Considerations:

- Flight training sessions should be preceded and followed by an instructor briefing and debriefing.
- Flight training maneuvers should be completed above 3,000' AGL
- Flight training maneuvers should be modified as necessary to comply with ATC instructions.
- For traffic avoidance ADSB and ATC Traffic Advisory services should be used whenever possible.
- Clearing turns should be conducted as necessary prior to initiating the maneuver.
- Instructors should emphasize use of appropriate checklists and single or multi-crewmember resource management.

Beech 99 OPERATIONAL SPEEDS (KCAS)

V _{MC}	78	Minimum Single Engine Control Speed (Red Line)
V _X	100	Two Engine Best Angle of Climb Speed
V _{YSE}	116	Single Engine Best Rate of Climb Speed (Blue Line)
V _Y	120	Two Engine Best Rate of Climb Speed
	150	Icing Conditions Minimum Speed
	150	Cruise Climb Speed to 10,000'

Beech 99 LIMITATION SPEEDS (KCAS)

V _{FE}	155	Approach Flaps (30%) (see note)
	132	Full Down Flaps (100%)
V _{LO}	156	Landing Gear Operating Speed - Extension
V _{LO}	130	Landing Gear Operating Speed - Retraction
V _{LE}	156	Landing Gear Extended Max Speed
V _A	169	Maneuvering Speed
V _{MO}	226	Max Operating Speed

Note - AFM speed for Approach Flaps (30%) is 174 KCAS, however, the company limits this speed to 155 KIAS to prevent rear spar cracking

25 KTS Maximum demonstrated crosswind

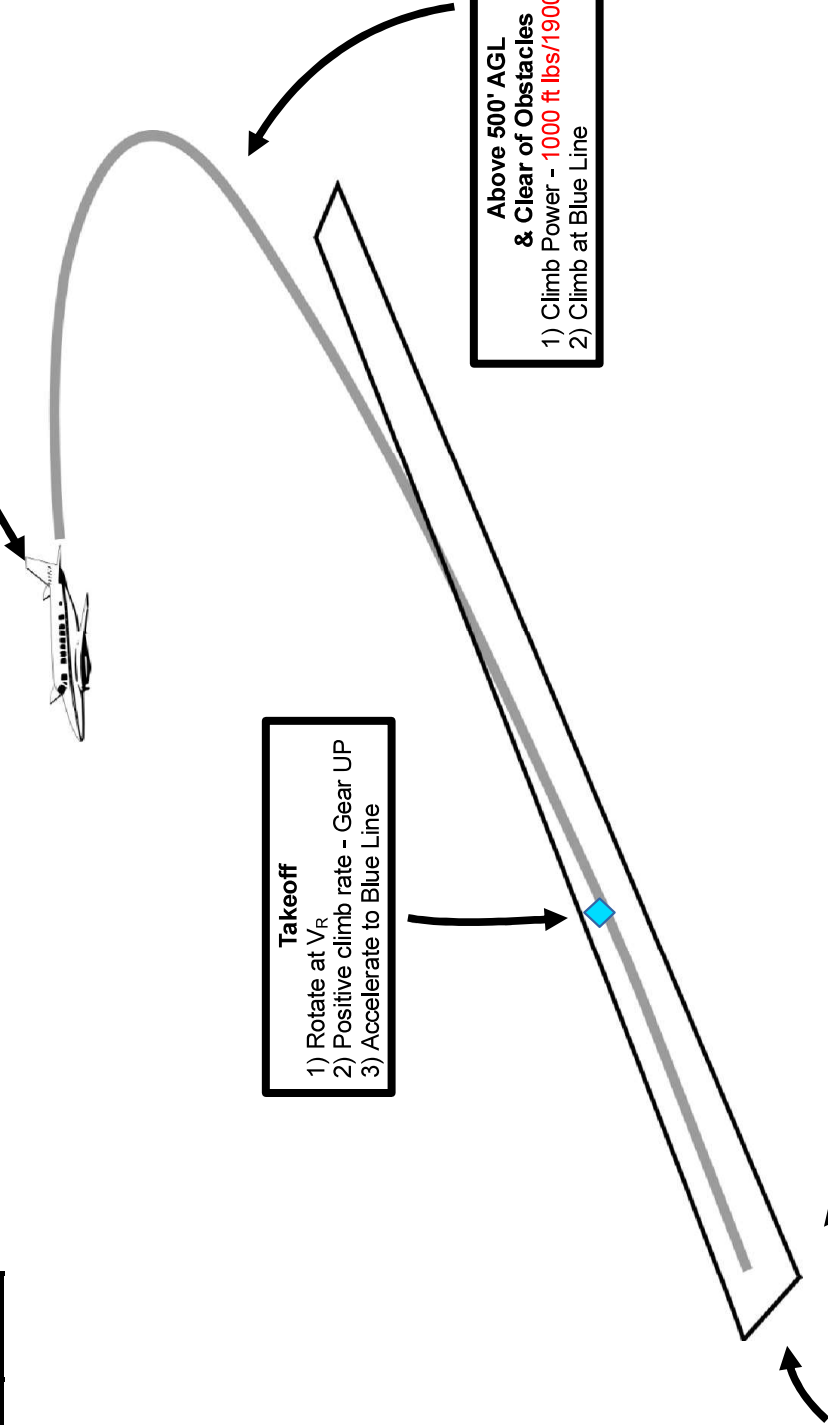
Normal Takeoff and Departure – Flaps 0%

Conditions: Paved, Level, Dry Surface

Weight - Pounds	Take-off speeds KIAS	50 Ft
10,400	90	114
10,000	87	112
9,000	80	106
8,000	73	101

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Above 1,000' AGL
 1) Accelerate to 150 KIAS
 2) Landing/Taxi lights - As required
 3) Climb Checklist - Complete



Takeoff
 1) Rotate at V_R
 2) Positive climb rate - Gear UP
 3) Accelerate to Blue Line

Above 500' AGL & Clear of Obstacles
 1) Climb Power - 1000 ft lbs/1900 RPM
 2) Climb at Blue Line

Before T/O
 1) Before Takeoff Checklist - Complete
 2) Final and Runway - Clear

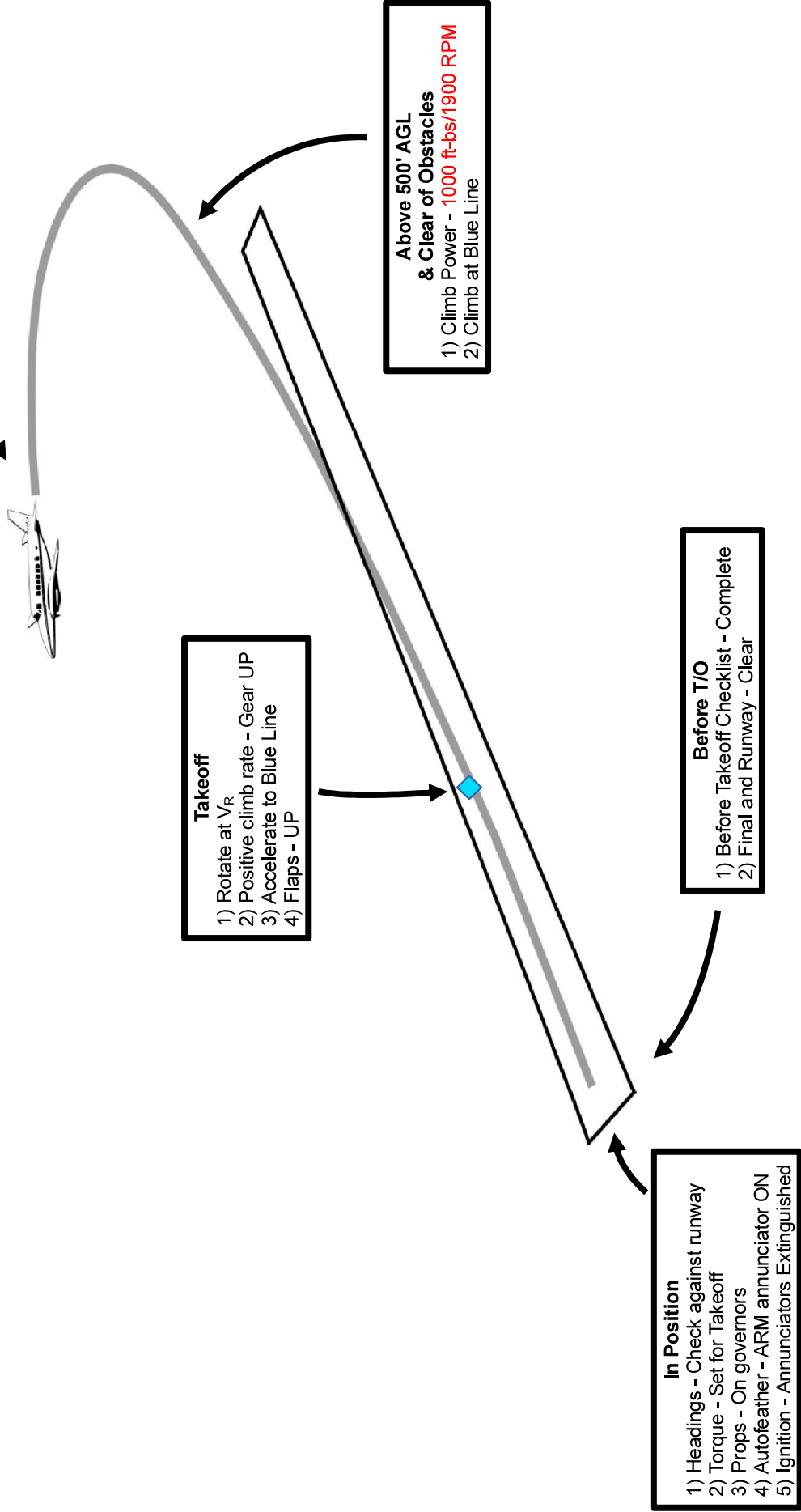
In Position
 1) Headings - Check against runway
 2) Torque - Set for Takeoff
 3) Props - On governors
 4) Autofeather - ARM annunciator ON
 5) Ignition - Annunciators Extinguished

Short Field Takeoff and Departure – Flaps 30%

Conditions: Paved, Level, Dry Surface

Weight - Pounds	Take-off speeds KIAS	
	Lift-Off (V _R)	50 Ft
10,400	94	107
10,000	91	105
9,000	81	99
8,000	79	93

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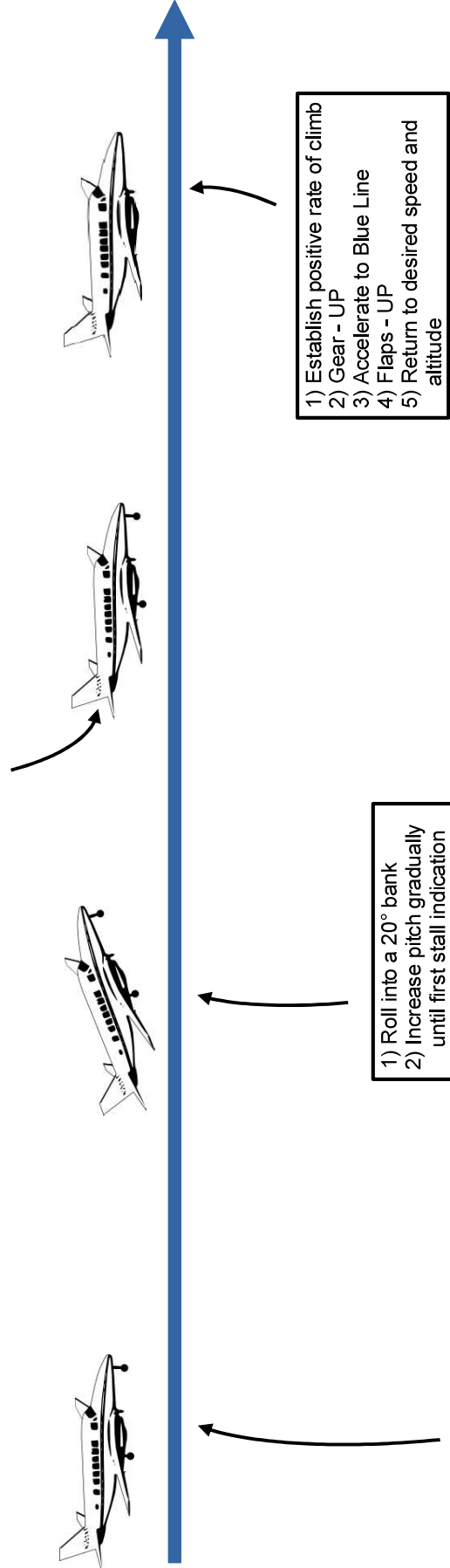


Takeoff Configuration Stall

Notes: Complete maneuver above 3000' AGL

At Stall Indication

- 1) Pitch - Reduce to eliminate stall indication then level wings
- 2) **Max Power - Set**



- 1) Power - As required to establish Blue Line in level flight
- 2) Gear - Down (below 156 KTS)
- 3) Flaps - Approach (30%)
- 4) Set simulated climb power **1000 ft-lbs** (or per instructor)

- 1) Roll into a 20° bank
- 2) Increase pitch gradually until first stall indication

- 1) Establish positive rate of climb
- 2) Gear - UP
- 3) Accelerate to Blue Line
- 4) Flaps - UP
- 5) Return to desired speed and altitude

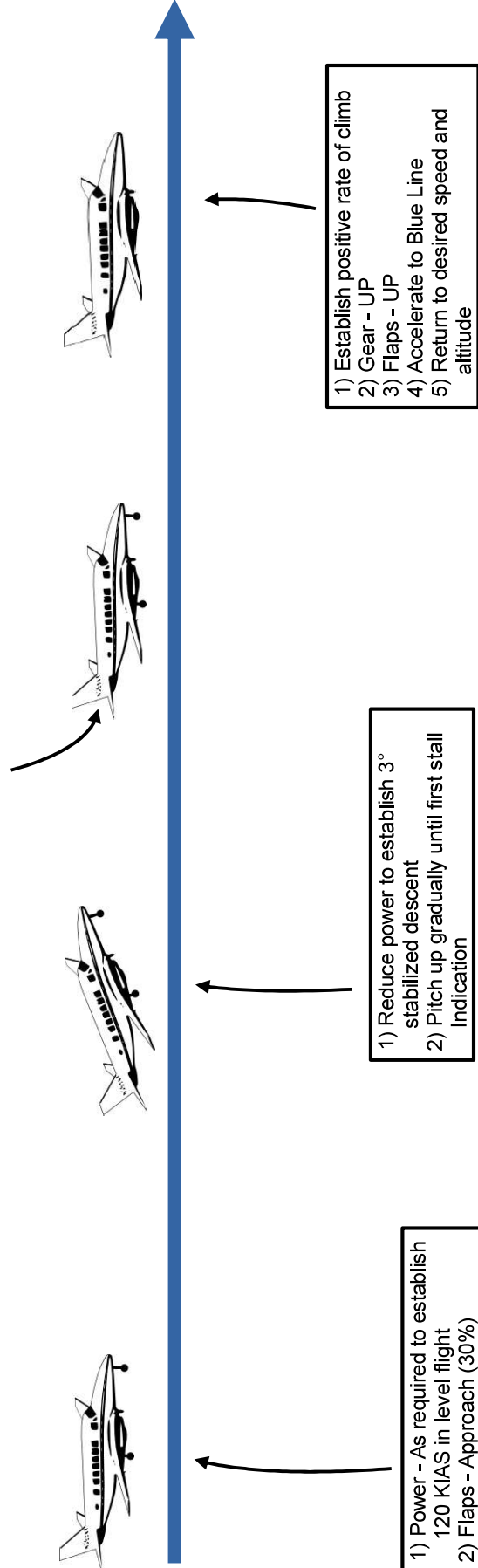
Landing Configuration Stall

Note: Complete maneuver above 3000' AGL

At Stall Indication

- 1) Pitch - Reduce to eliminate stall indication and simultaneously level wings
- 2) **Max Power - Set**
- 3) Flaps - Retract to Approach (30%)

Caution:
To prevent secondary stall use care when retracting flaps to Approach (30%)



- 1) Power - As required to establish 120 KIAS in level flight
- 2) Flaps - Approach (30%)
- 3) Gear - Down (below 156 KTS)
- 4) Flaps - Down (100%)
- 5) Establish Blue Line

- 1) Reduce power to establish 3° stabilized descent
- 2) Pitch up gradually until first stall Indication

- 1) Establish positive rate of climb
- 2) Gear - UP
- 3) Flaps - UP
- 4) Accelerate to Blue Line
- 5) Return to desired speed and altitude

Clean Configuration Stall – Autopilot On

Notes:
 Complete maneuver above 3000' AGL
 Aircraft will not stall with autopilot engaged but will descend at speed above stall when autopilot pitch servo reaches travel limit. Disengage autopilot and initiate recovery at first indication of altitude loss.

At Stall Indication (See Notes)
 1) Autopilot - OFF with red Autopilot Disengage button
 2) Pitch - Reduce to eliminate stall indication
 3) **Max Power - Set**



1) Power - As required to establish cruise in level flight
 2) Auto pilot - ON

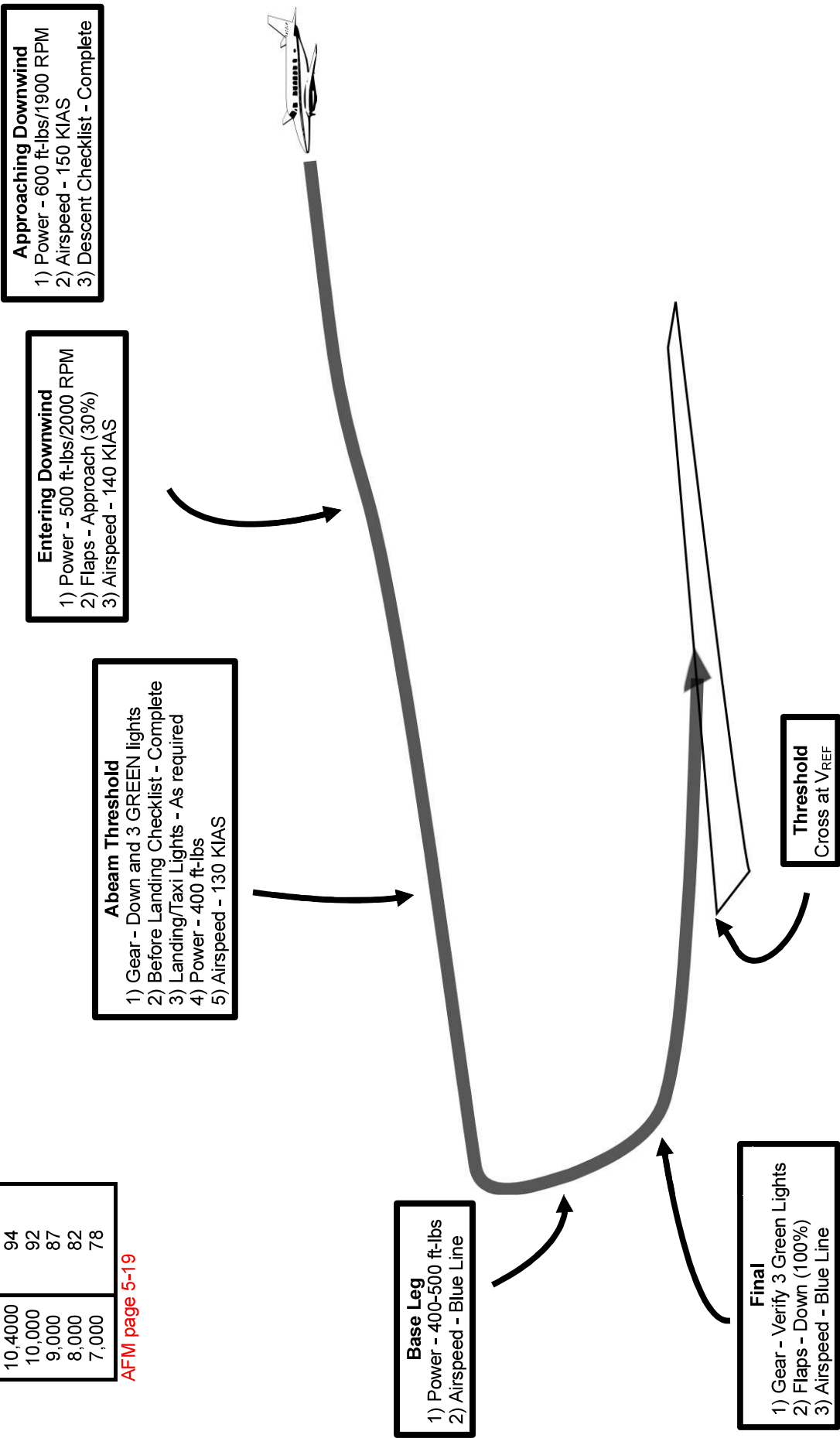
1) Power - Set 400 ft-lbs (above gear horn)

1) Recover to initial altitude
 2) Power - Reduce to maintain desired airspeed

Normal Visual Approach

Weight - Pounds	V _{REF} KIAS	Flaps 100%
10,400	94	
10,000	92	
9,000	87	
8,000	82	
7,000	78	

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Base Leg
 1) Power - 400-500 ft-lbs
 2) Airspeed - Blue Line

Final
 1) Gear - Verify 3 Green Lights
 2) Flaps - Down (100%)
 3) Airspeed - Blue Line

Abeam Threshold
 1) Gear - Down and 3 GREEN lights
 2) Before Landing Checklist - Complete
 3) Landing/Taxi Lights - As required
 4) Power - 400 ft-lbs
 5) Airspeed - 130 KIAS

Entering Downwind
 1) Power - 500 ft-lbs/2000 RPM
 2) Flaps - Approach (30%)
 3) Airspeed - 140 KIAS

Approaching Downwind
 1) Power - 600 ft-lbs/1900 RPM
 2) Airspeed - 150 KIAS
 3) Descent Checklist - Complete

Threshold
 Cross at V_{REF}

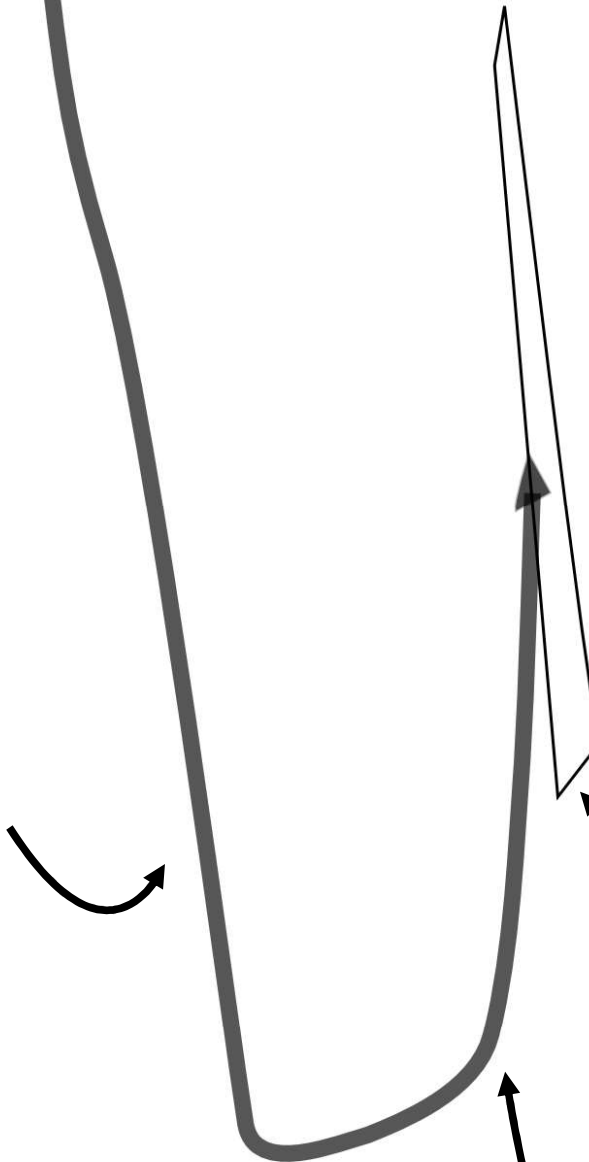
Visual Approach – One Engine Inoperative

Weight - Pounds	V _{REF} KIAS	Flaps 100%
11,4000		109
10,000		107
9,000		102
8,000		97
7,000		93

Note: Speeds derived by adding 15 Kts to normal two engine approach speeds per AFM page 3-2

- Abeam Threshold**
- 1) Flaps - Approach (30%)
 - 2) Gear - Down and 3 GREEN lights
 - 3) Before Landing Checklist - Complete
 - 4) Propeller - FULL FORWARD
 - 5) Airspeed - Above Blue Line

- Approaching Downwind**
- 1) Simulate inoperative engine - Slowly retard one engine to 120 ft-lbs/1800 RPM
 - 2) Engine Failure Checklist - Complete
 - 3) Airspeed - 150 KIAS or as desired
 - 4) Power - As Required



- Final**
- 1) Verify Gear Down & 3 Green Lights
 - 2) Airspeed - Blue Line
 - 3) Flaps - Down (100%) when landing assured

Threshold
Cross at V_{REF}

Visual Approach – Flap Malfunction (no flaps)

Weight - Pounds	V _{REF} KIAS	Flaps 0%
10,4000		116
10,000		114
9,000		108
8,000		101
7,000		96

See Note

Approaching Downwind
 1) Power - 600 ft-lbs
 2) Propellers - 1900 RPM
 3) Airspeed - 150 KIAS
 4) Descent Checklist - Complete

Entering Downwind
 1) Power - 600 ft-lbs
 2) Propellers - 2000 RPM
 3) Flaps - UP
 4) Airspeed - 140 KIAS

Abeam Threshold
 1) Gear - Down and 3 GREEN lights
 2) Before Landing Checklist - Complete
 3) Landing/Taxi Lights as required
 4) Power - 400 ft-lbs
 5) Airspeed - 130 KIAS

Extend downwind to ensure adequate time for stabilized approach

Final
 1) Gear - Verify Down & 3 Green lights
 2) Airspeed - Blue Line

Threshold
 Cross at V_{REF}

Note:
 Beech 99 Flaps Up V_{REF} derived from AFM page 5-20 Stall Speed Chart by multiplying Power Off, Gear Up, Flaps Up speed by 1.3



ILS / LPV / VNAV Approach with Missed Approach

Weight - Pounds	V _{REF} KIAS	Flaps 100%
10,4000	94	
10,000	92	
9,000	87	
8,000	82	
7,000	78	

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Prior to IAF or Vectors

- 1) ATIS - Obtain
- 2) Approach - Review, load, tune, identify
- 3) Descent checklist - Complete
- 4) Power - 800 ft-lbs/1900 RPM
- 5) Airspeed - 150 KIAS

IAF outbound or Vectors

- 1) Flaps - Approach (30%)
- 2) Airspeed - 140 KIAS

Prior to Glideslope Intercept
Slow to 130 KIAS

Above 500' AGL & Clear of Obstacles

- 1) Climb Power - 1000 ft-lbs/1900 RPM
- 2) Accelerate to 150 KIAS
- 3) Autopilot - As required
- 4) Climb Checklist - Complete

Above 1000' AGL

1 Dot below Glideslope Intercept

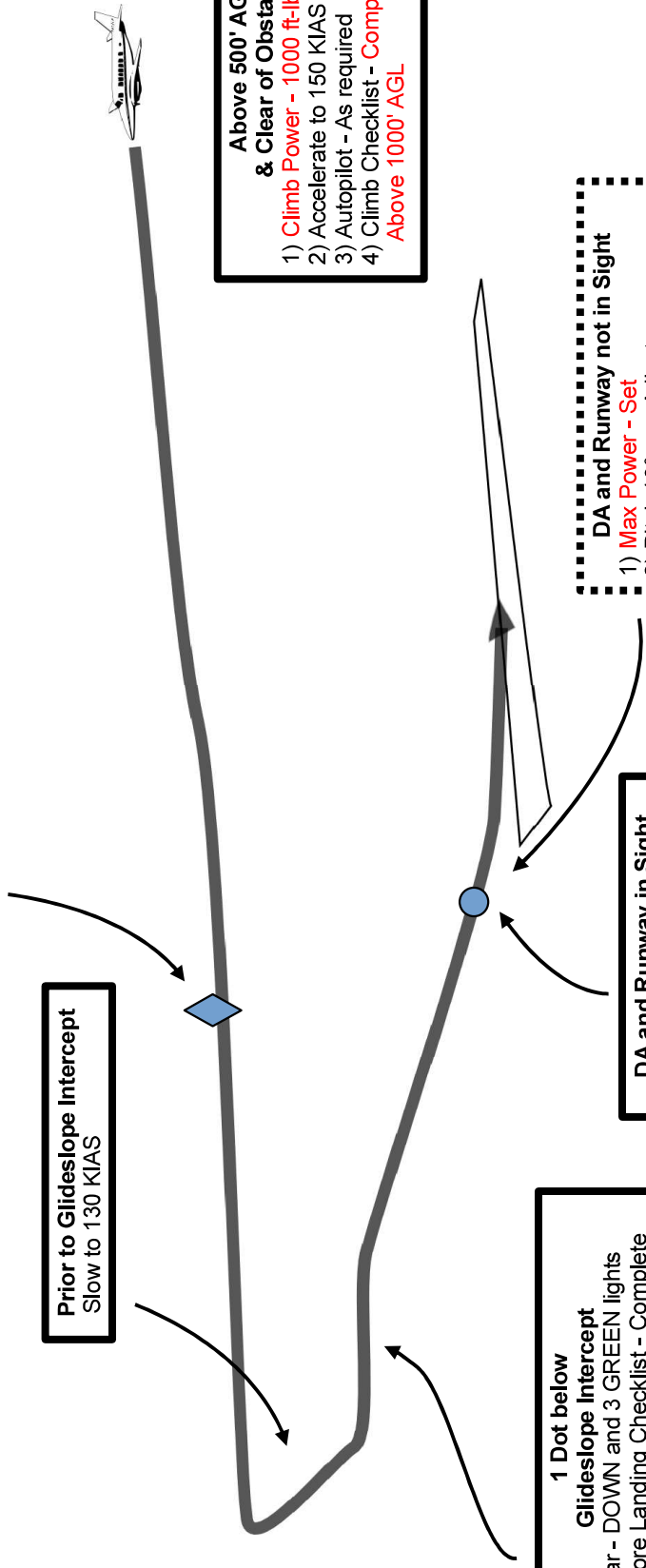
- 1) Gear - DOWN and 3 GREEN lights
- 2) Before Landing Checklist - Complete
- 3) Check FAF crossing altitude
- 4) Airspeed - Blue Line
- 5) Power - As required

DA and Runway in Sight

- 1) Flaps - Down (100%)
- 2) Threshold - Cross at V_{REF}

DA and Runway not in Sight

- 1) Max Power - Set
- 2) Pitch 10° up - Adjust as necessary
- 3) Positive climb rate - Gear Up
- 4) Flaps - UP
- 5) Climb at Blue Line
- 6) Follow missed approach procedure and advise ATC



ILS / LPV / VNAV Approach with Missed Approach
One Engine Inoperative

Weight - Pounds	V _{REF} Flaps 100% KIAS
10,400	109
10,000	107
9,000	102
8,000	97
7,000	93

Note: Speeds derived by adding 15 Kts to normal two engine approach speeds per AFM page 3-2

Prior to IAF or Vectors

- 1) ATIS - Obtain
- 2) Approach - Review, load, tune, identify
- 3) Descent checklist - Complete
- 4) Airspeed - 150 KIAS or as desired

IAF outbound or Vectors
Airspeed - Above Blue Line

Prior to Glideslope Intercept

- (1) Flaps - Approach (30%)
- (2) Slow to Blue Line

Above 500' AGL & Clear of Obstacles

- 1) Power - As required greater
- 2) Airspeed - Blue Line or greater
- 3) Autopilot - As required
- 4) Climb Checklist - Complete Above 1000' AGL

1 Dot below Glideslope

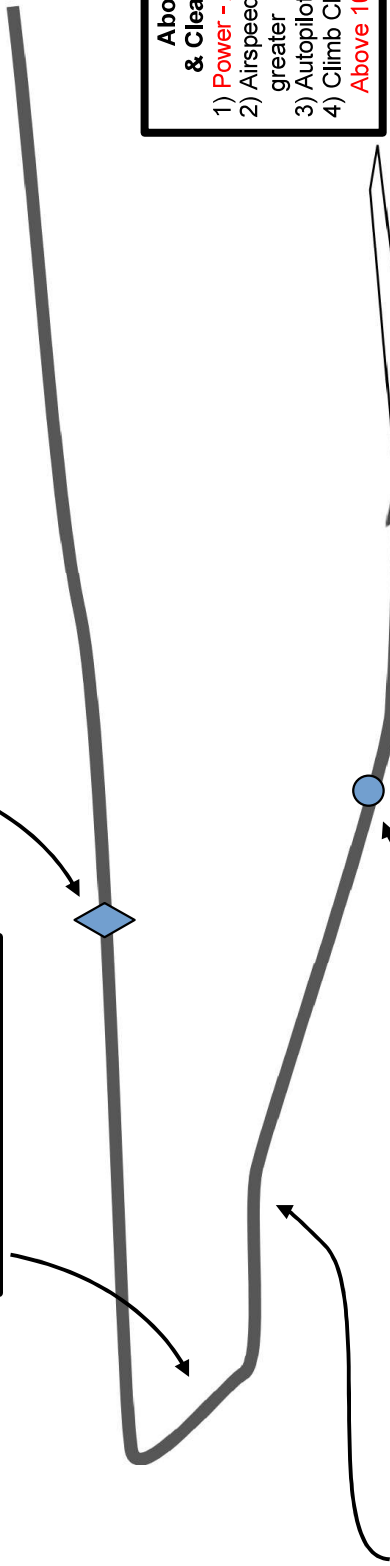
- 1) Gear - DOWN and 3 GREEN lights
- 2) Before Landing Checklist - Complete
- 3) Check FAF crossing altitude
- 4) Airspeed - Blue Line
- 5) Power - As required

DA and Runway in sight

- 1) Flaps - Down (100%) when landing assured
- 2) Threshold - Cross at V_{REF}

DA and Runway not in Sight

- 1) Max Power - Set
- 2) Maintain Heading - with 5° bank toward good engine (trim as required)
- 3) Positive climb rate - Gear Up
- 4) Flaps - UP
- 5) Climb at Blue Line
- 6) Follow missed approach procedure and advise ATC



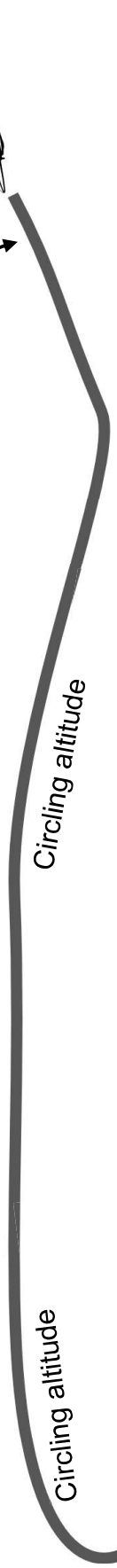
Circling Approach

Weight - Pounds	V _{REF} KIAS	Flaps 100%
10,400	94	
10,000	92	
9,000	87	
8,000	82	
7,000	78	

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Abeam Threshold
 1) Maintain visual reference
 2) Before Landing Checklist - Complete

Prior to FAF
 1) Gear - Down
 2) Flaps - Approach (30%)
 3) Airspeed - Blue Line



Final
 1) Gear - Verify 3 Green Lights
 2) Flaps - Down (100%)
 3) Airspeed - Blue Line

Threshold
 Cross at V_{REF}

Approach Speed Category
 Cat B: 91-120 KIAS (for approach flaps 30%)
 Cat C: 121-140 KIAS (for no flaps)

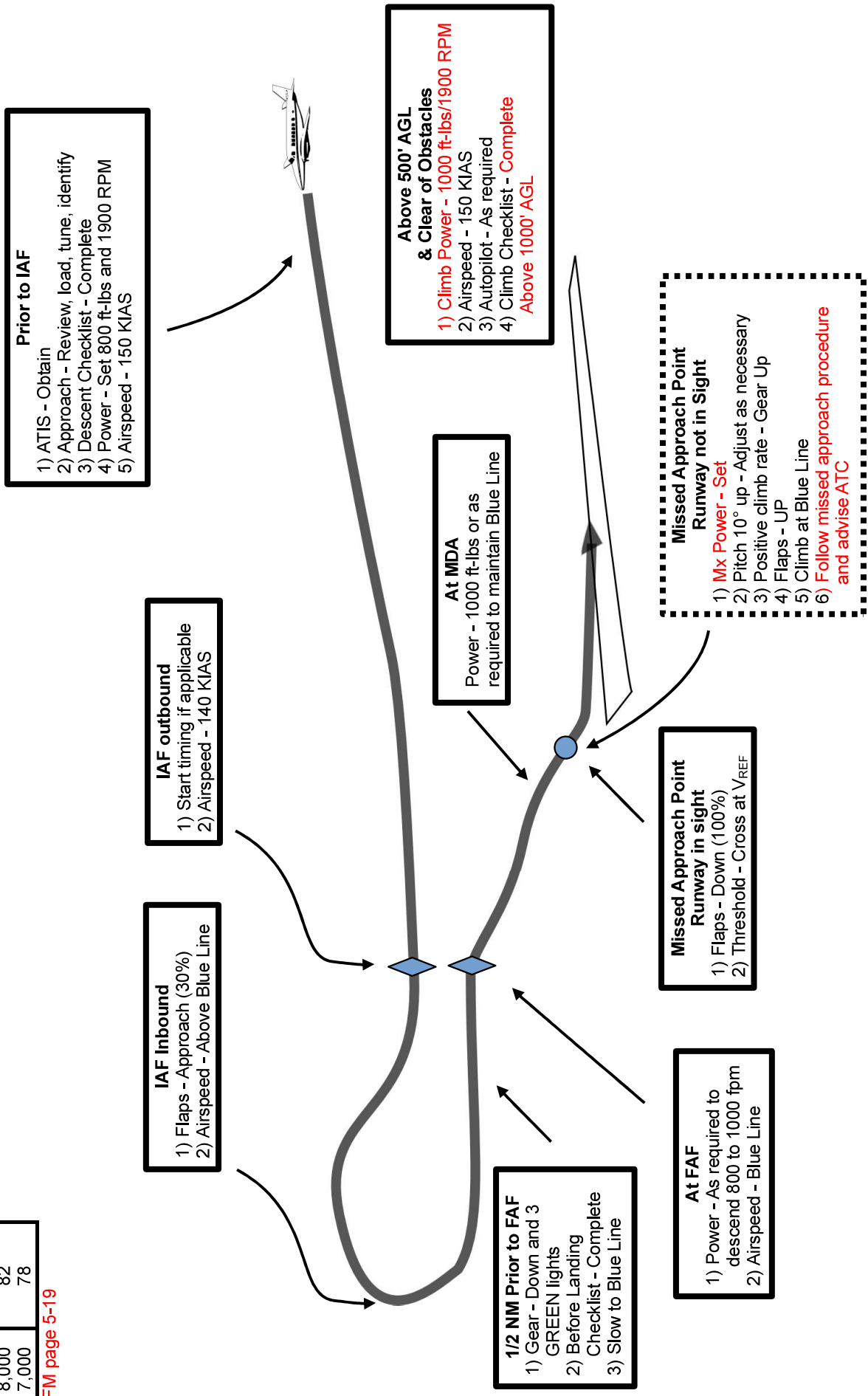
Note

- Circling altitude must be the minimum maintained during the entire maneuver.
- Runway must be in sight during entire maneuver.
- No more than 30° bank angle.
- Missed approach procedure according to type of approach.
- Obstacle clearance is 300' at circling minimum altitude.

Weight - Pounds	V _{REF} KIAS	Flaps 100%
10,400	94	
10,000	92	
9,000	87	
8,000	82	
7,000	78	

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Non-Precision Approach with Missed Approach



Non-Precision Approach with Missed Approach One Engine Inoperative

Weight - Pounds	V _{REF} KIAS	Flaps 100%
10,4000		109
10,000		107
9,000		102
8,000		97
7,000		93

Note: Speeds derived by adding 15 Kts to normal two engine approach speeds per AFM page 3-2

