

Piper Archer Flows & Profiles (Rev. 1.3)



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Flows Introduction

General

There are 2 basic philosophies to completing checklists: read-and-do, and flow-and-verify.

Under the “read and do” philosophy, the pilot reads the checklist item, then completes the required action, one at a time.

Under the “flow and verify” philosophy, the pilot does multiple action items in a logical sequence, and then reads the checklist to verify everything has been completed.

Flows are used to standardize operations in the AU fleet and help ensure all checklists are being completed. All flows are to be memorized, and completed **silently**.

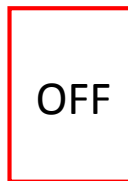
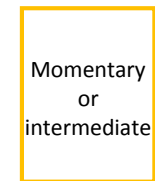
For example, upon entering the aircraft, the pilot will accomplish the Before Starting Engine flow (silently). Upon completion of the flow, he/she will read the Before Starting Engine checklist (aloud). Reading the checklist then becomes a verification that all the items in the flow have been completed.

Structure

For each phase of operation (ex. Before start, before takeoff, after landing, etc), the detail of the flow is given in the slide preceding the picture. The picture shows the flow line of where to start (red dot in most cases), and where to go. Electrical switches are highlighted with either a red, amber, or green box. Green means the switch should be placed in the ON position, and red means the switch should be placed in the OFF position. An Amber box indicates that the switch will be in a momentary or intermediate position (ex: during the ground check, the magnetos are turned OFF, then back ON). A red box over anything other than an electrical switch simply means to check that item.

Ground Check

- Parking Brake – SET
- Throttle – 2000 RPM
- Carb Heat – APPROX. 75 RPM DROP
- Left/Right MAG Check – MAX. DROP 175RPM/MAX. DIFF. 50 RPM
- Fuel Pump – OFF



Checklist Useage

Each pilot will carry a paper “preflight” checklist and a paper “normals” checklist. Electronic checklists will be allowed for the preflight inspection, but only paper checklists will be used after the preflight. This is primarily to reduce the amount of “heads-down” time in the cockpit, increase heads-up time, and decrease the amount of time to complete the checklists. If all flows have been memorized, the amount of time it takes to run through a checklist is decreased as opposed to the “read and do” philosophy.

An example of the paper checklist is shown on the right. Checklists are set up as a hybrid between flows and read-and-do. The “flow” portion of each checklist is indicated by a black bar on the side (ex, from “FUEL selector” to “EMERG BATT switch” is a flow).

Regardless of where the flow appears in the checklist (beginning, middle, or end), the flow is to be completed first, and then the checklist will be read aloud from beginning to end.

Prior to reading any checklist, the pilot will read the name of the checklist. Ex: “*Before start checklist..... Flaps - Retract, Passengers – Board, Passenger briefing - complete.....(etc).....*”

Upon completion of the checklist, the pilot will state “Before starting engine checklist complete”.

Each Student should keep their checklists in their flight bags, but should a replacement be needed, spare checklists may be obtained from dispatch.

Piper Archer Normal Checklist (V. beta3)	
BEFORE STARTING ENGINE	
Flaps.....	RETRACT
Passengers.....	BOARD
Passenger Briefing.....	COMPLETE
Weight & Balance.....	VERIFY IN LIMITS
Door.....	CLOSED & SECURE
Seats.....	ADJUSTED & LOCKED
Seatbelts & Harnesses.....	FASTEN/ADJUST
FUEL Selector.....	DESIRED TANK
ALTN. STATIC SOURCE.....	OFF
PARK BRAKE.....	SET
CARB HEAT.....	FULL COLD
Circuit Breakers.....	CHECK IN
AVION MASTR.....	OFF
DAY/NIGHT Switch.....	SET
All Electrical Switches.....	OFF
BATT MASTR.....	OFF
NOTE	
The EMERG BATT may remain ON after checking for proper bus operation, thereby allowing the displays to remain active prior to engine start. Avoid delays between this check and engine starting to preserve emergency battery power.	
EMERG BATT Switch.....	ARM
Verify Operation of:	
• PFD with no red-x's on:	
o Attitude	
o Airspeed	
o Altitude	
o Vertical Speed	
• Audio Panel	
• Com 1	
• <u>Nav 1</u>	
• Engine Indications	
• Standby Flight Instruments	
E VOLTS Indication.....	23.3 VOLTS
(Minimum for flight)	
FUEL QTY Indications.....	CHECK QTY AND IMBALANCE

Checklist Useage

Engine Start Checklist

The Engine Start checklist is broken into 2 sections: Engine Start to-the-line, and Engine Start below-the-line.

Pilots will complete the “to the line” flow, which ends after priming the engine. Then, they will read the Engine start checklist to the line.

After reading to the line, they will complete the “below the line” flow, and then read the checklist below the line. As with all checklists, upon completing the entire checklist, the pilot will say “engine start checklist complete”.

Descent checklist

In general, the Descent Checklist should be completed within 10 NM from the destination airport. For a VFR local flight, the descent checklist should be completed when leaving the practice area and returning to C20, and for an IFR flight, it should be completed after briefing the instrument approach. For cross-country flights, it should be completed during or prior to commencing the descent from cruise altitude.

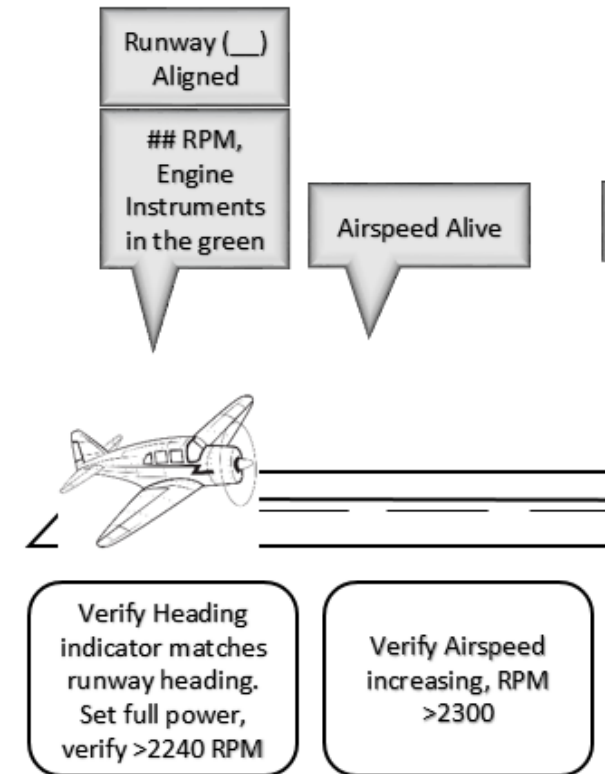
Profiles Introduction

Profiles are mandatory callouts that are to be made during specified times/events during flight. Again, the goal is to standardize the way we fly, and increase awareness of what's happening during the flight. An example of the departure profile is shown on the right.

Verbal callouts are depicted in the gray speech boxes, and supplemental information is given below in the white boxes.

For example, as the pilot lines up on the runway, he/she calls “runway 13 aligned”. He then adds full power, verifies oil pressure and temperature in the green, and verifies RPM is greater than 2240. He then calls out what the RPM is indicating. “2260 RPM, engine instruments in the green”.

For practical reasons, not all information is contained in the profiles. For example, power settings and aircraft limitations (eg flap speeds) are left out as it is expected that the pilot has memorized the power grid, and that he/she knows the aircraft limitations.



General Callouts

These Callouts should be made at all times:

- 200' before reaching the preselected altitude, the pilot will call “(altitude at) for (altitude set)” (ex, “thirty three for thirty five hundred” or “three thousand three hundred for three thousand five hundred”)
 - The altitude alerter is programmed to chime 200' before the preselected altitude, so the pilot should use the chime as his cue to make the callout.
- Anytime an altitude is set in the altitude preselect, the pilot will call “(altitude) set” (ex. “thirty five hundred set” or “three thousand five hundred set”)

Briefings

The following briefings will be completed on every flight:

- Takeoff Briefing
 - For subsequent takeoffs on the same flight, the pilot may say “as previously briefed”. If the aircraft has been shut down since the last takeoff, a new briefing should be performed.
- Approach Briefing
 - Either an instrument approach briefing or a visual approach briefing, as applicable

Takeoff Briefings

A takeoff briefing should be conducted to plan for emergency situations. The following items should be covered:

- Departure Runway
- Type of takeoff (normal, short field, or soft field)
- Action plan if engine fails:
 - On takeoff roll
 - After rotation, below 1000' AGL
 - Above 1000' AGL
- Normal action plan (staying in pattern, departing to practice area, flying an instrument departure, etc)

Briefing Example

“this will be a soft field takeoff from runway 13. If the engine fails on the takeoff roll, we’ll abort and stay on the runway. If the engine fails after rotation and below pattern altitude, we’ll pitch for best glide and land straight ahead. If it fails above 1000’ we’ll pitch for best glide and pull out the emergency checklist if we have enough altitude. Otherwise, we’ll climb to 3500’ and depart to the northeast practice area (or brief instrument departure procedure, if applicable).”

Visual Approach Briefings

A visual approach briefing should cover the following items

- Landing runway
- Pattern direction
- Pattern altitude
- Minimum altitude for final
- Any other applicable considerations

Briefing Example

“This will be a visual approach to runway 13, right pattern. Pattern altitude is 1700’, my minimum altitude before turning final will be 1200.”

Instrument Approach Briefings

Every instrument approach needs to be briefed, *after setting up* the radios and GPS for the approach, and *prior to* completing the descent checklist. (See next page)

Approach setup should include getting the current weather/ATIS, loading the GPS, and tuning the appropriate frequencies and courses.

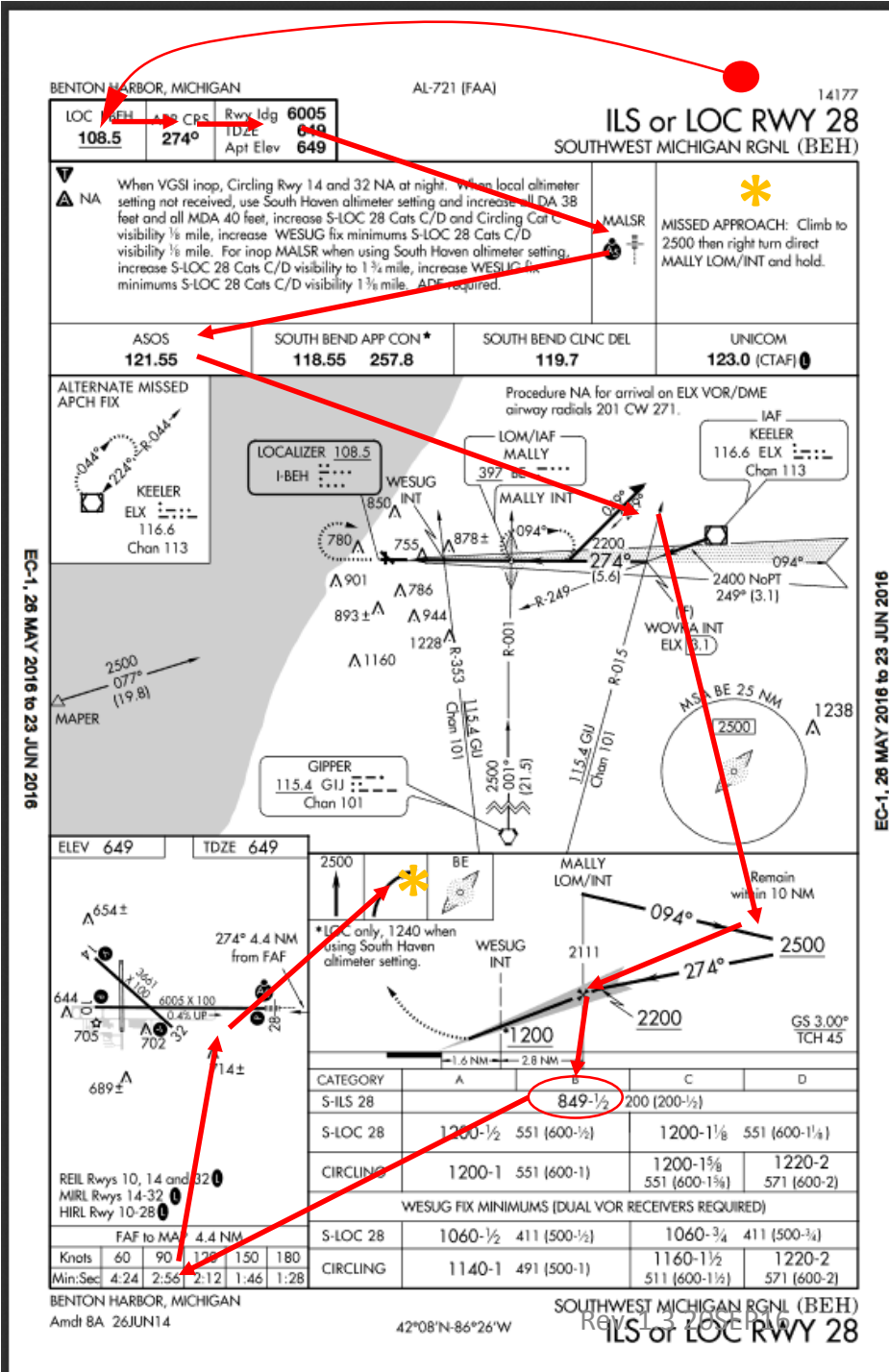
The following items should be covered in every instrument approach briefing:

- Review ATIS and/or reported field conditions and weather.
- Usable landing length, obstructions, braking action reports, etc.
- Landing Distance Required.
- Review of the Planned Approach Procedure.
- Identity of Nav aids to be used and their frequencies.
- Flaps setting.
- Configuration of flight instrumentation. (NAV, GPS, etc)
- Approach Lighting Configuration.
- Missed Approach Procedure
- Planned taxi route for after landing, including runway incursion hot spots and designated hold short areas.
- Any other special considerations or data pertinent to the approach and current weather, aircraft or traffic conditions and any ATC restrictions

Briefing Flow:

- Title
- Frequency
- Course
- Runway info
- Approach lights
- Weather information
- Plan view (where we start the approach from, etc)
- Profile view (brief altitudes, FAF, MAP, etc)
- Minimums and minutes
- Runway plan (left or right turn off)
- Missed approach (* details in top right corner of plate)

(This flow can be modified slightly as needed, but the briefing should always maintain a logical flow. Think of it as telling a story about what you're going to do during the approach.)



Example:

“this will be the ILS 28 approach at Benton Harbor, in green needles (conventional navigation). Localizer frequency is 108.50, and that’s tuned and identified. Final approach course is 274, and that’s dialed in. Runway length is 6005 feet long, touch down zone elevation is 649’. This approach has MALSRL approach lights. We have the current weather, winds are _____, ceiling is _____, altimeter is _____. This approach will be vectors to final (or, “we’ll be starting this approach from ELX as the IAF”). Once we’re on the localizer we can descend to 2200 and intercept the glideslope there (or, “stay at 2500’ and intercept the glideslope”). We’ll cross the outer marker at 2111’ on the glideslope and follow it down to our DA of 849’. 1/2 SM visibility is required for this approach, currently we have _____. If we see the runway, we’ll add full flaps when we break out, and plan on a left turn off the runway. If we don’t see the runway, or for any reason have to go missed, the missed approach procedure is climb to 2500 and right turn direct to MALLY and hold.”

Before Starting Engine

- Fuel Selector (Fullest Tank)
- Alternate Static Source – OFF
- Parking Brake – SET
- Carburetor Heat – OFF
- Circuit Breakers – CHECK IN
- Avionics Master – OFF
- Day/Night Switch – SET
- Master Battery – OFF
- Emergency Battery Switch – ARM
- Verify Operations:
 - PFD with no red-x's on:
 - Attitude
 - Airspeed
 - Altitude
 - Vertical Speed
 - Audio Panel
 - Com 1
 - Nav 1
 - Engine Indications
 - Standby Flight Instruments
 - E Volts Indication – 23.3 VOLTS minimum
 - Fuel QTY Check

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Engine Start “to-the-line”

- Master Battery Switch – ON
- Alternator Switch – ON
- Fuel Pump Switch – ON
- Left Mag Switch – ON
- Fin Strobe Switch – ON
- Mixture – FULL RICH
- Throttle – ¼ IN. OPEN
- CAS Messages – CONSIDER ANY ILLUMINATED
- PFD Annunciations – CONSIDER ANY ILLUMINATED
- Prime Switch – AS NEEDED



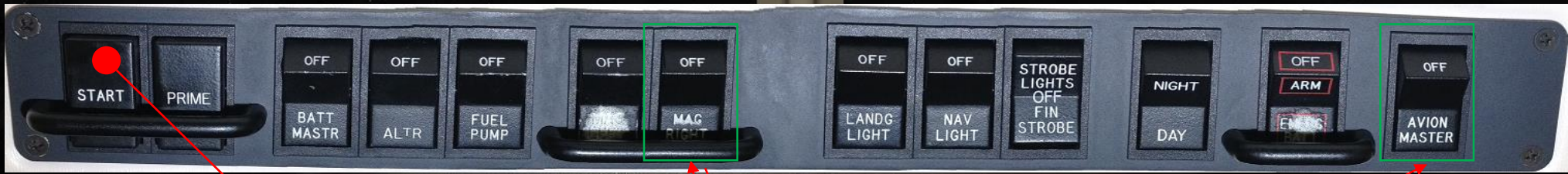
INFORMATION
SEE OWNER'S MANUAL FOR
OPERATING PROCEDURES
AND PRELIMINARY
OPERATIONS
CATEGORY OPERATIONS
BY CATEGORY
I
FOLLOWING

WARNING
OPERATION OF THIS
SYSTEM IN THE
PRESENCE OF
ELECTRICITY
MAY BE DANGEROUS
TO PERSONNEL
AND EQUIPMENT
IF NOT
PERFORMED
CORRECTLY
SEE
OPERATING
MANUAL
FOR
FURTHER
INFORMATION



Engine Start “Below the Line”

- Propeller – CLEAR
- START Switch – ENGAGE
- Throttle – ADJUST
- RIGHT Mag Switch – ON
- Oil Pressure – CHECK
- Avionics Master Switch – ON



INFORMATION
SEE OWNER'S MANUAL FOR
OPERATING PROCEDURES
AND PRE-FLIGHT CHECKS.
WARNING
OPERATING THIS AIRCRAFT
REQUIRES A PILOT LICENSE
AND A TYPE RATING FOR
THIS AIRCRAFT CATEGORY.
SEE THE PILOT'S OPERATING
HANDBOOK FOR COMPLETE
OPERATING PROCEDURES.
PIPER AIRCRAFT COMPANY
1999



Before Taxing

- Emergency Battery Switch – VERIFY ARM
- Lights – AS REQUIRED
- Multi-function display (MFD) – DATABASE CURRENCY
 - Fuel Totalizer – SET
 - CAS messages – CONSIDER ANY ILLUMINATED
 - Master Warn and Master Caution Switches – TEST
 - *MFD-AUX-SYSTEM STATUS-ANN TEST*
 - Standby Flight Instrument – VERIFY ON WITH NO RED X'S/FAILURE ANN
 - Communications and Radios Set
- Altimeter/Standby Altimeter – SET



INFORMATION
SEE...
WARNING
PILOT'S OPERATING HANDBOOK
CATEGORY OPERATIONS
Y
FOLLOWING

ALTERNATE STATIC SOURCE - PULL UP TO OPEN

Taxiing

- LANDING LIGHT – ON
- Park Brake – RELEASE
- CHECK BRAKES



INFORMATION
SEE...
WARNING
FOLLOWING



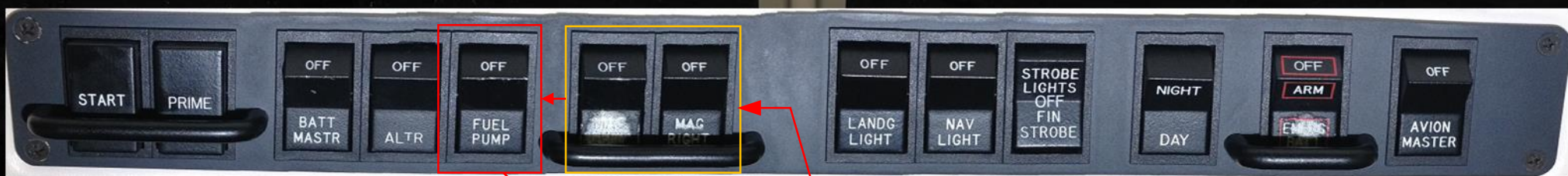
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I.O.C.

Ground Check

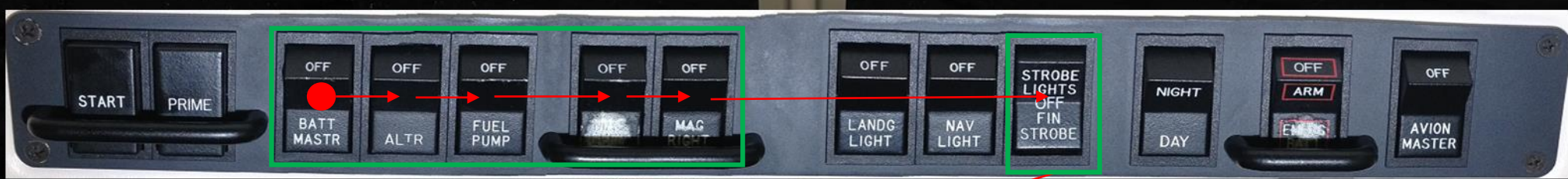
- Parking Brake – SET
- Throttle – 2000 RPM
- Mixture – ADJUST FOR D.A. & ELEVATION
- Carb Heat – APPROX. 75 RPM DROP
- Left/Right MAG Check – MAX. DROP 175RPM/MAX. DIFF. 50 RPM
- Fuel Pump – OFF
- Oil Temperature – CHECK
- Oil Pressure – CHECK
- Volts Indication – CHECK BUS (28+/- 1 VOLT)
- ALTR AMPS Indication – CHECK NORMAL
- Throttle – RETARD

*If E VOLTS indication less than 23.3 VOLTS, refer to checklist



Before Takeoff

- Battery Master Switch – VERIFY ON
- Alternator Switch – VERIFY ON
- Fuel Pump – ON
- Left/Right MAG Switches – VERIFY ON
- **Fin Strobe/Strobe Lights – AS REQUIRED**
- Flight/Standby Instrument – CHECK
 - CAS messages/PFD Annunciation/System messages
- Flight Controls – FREE AND CORRECT
- Fuel Selector – PROPER TANK
- Trim and Flaps – SET/Neutral
- Mixture – SET
- Carburetor Heat – OFF
- Engine Instruments – CHECK

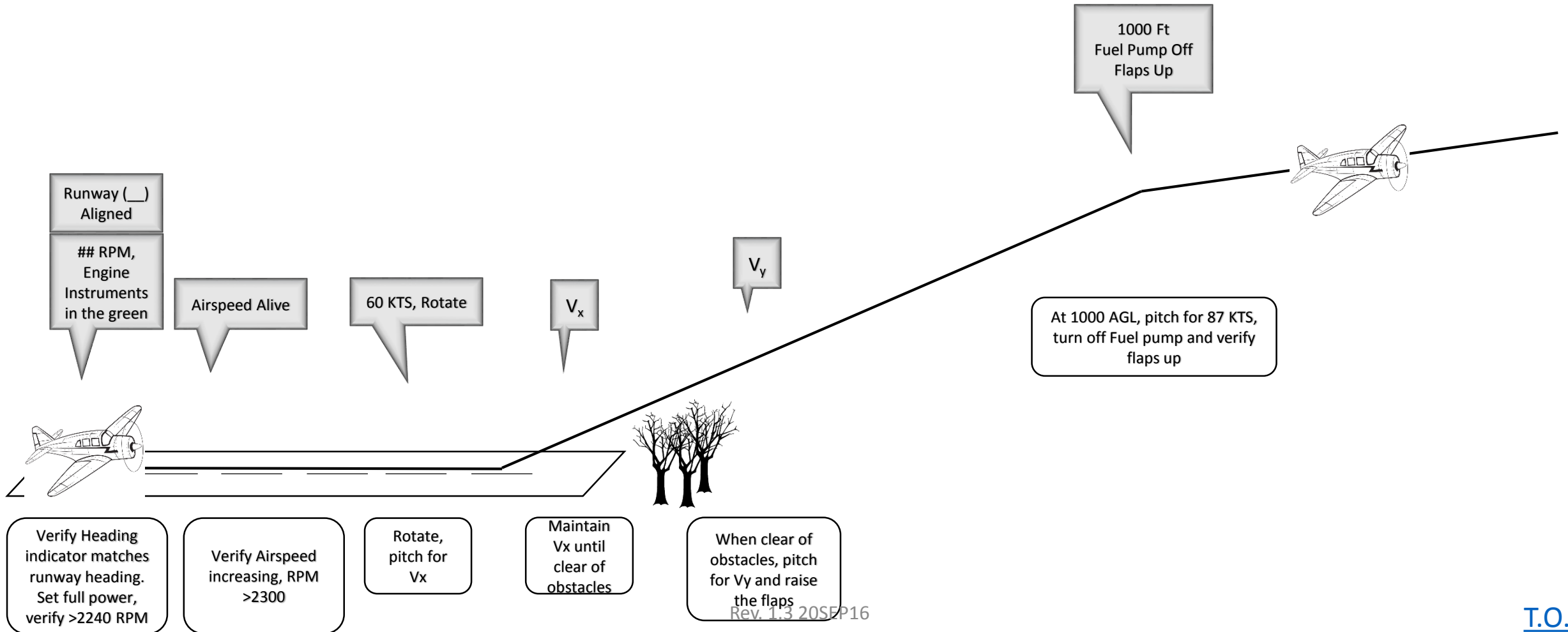


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Trim/Flaps

T.O.C.

Departure Profile



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Descent (within 10 miles)

- COM/NAV Radios & Avionics – CHECK AND SET
- Altimeter/Standby Altimeter – SET
- Parking Brake – VERIFY OFF
- Toe Brakes – DEPRESS TO CHECK
- Seatbelts/harnesses – FASTEN/ADJUSTED
- Seat Backs – ERECT



BEGIN

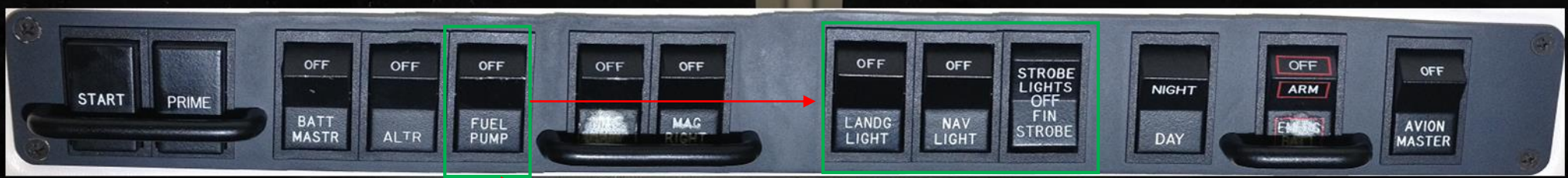


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T.O.C.

Before Landing

- (G) Fuel Selector – PROPER TANK
- (M)ixture – FULL RICH
- (S) Fuel Pump – ON
- (S) Landing Light – AS REQUIRED



INFORMATION
PLEASE TO BE
CATEGORY OPERATIONS
WARNING
FOLLOWING



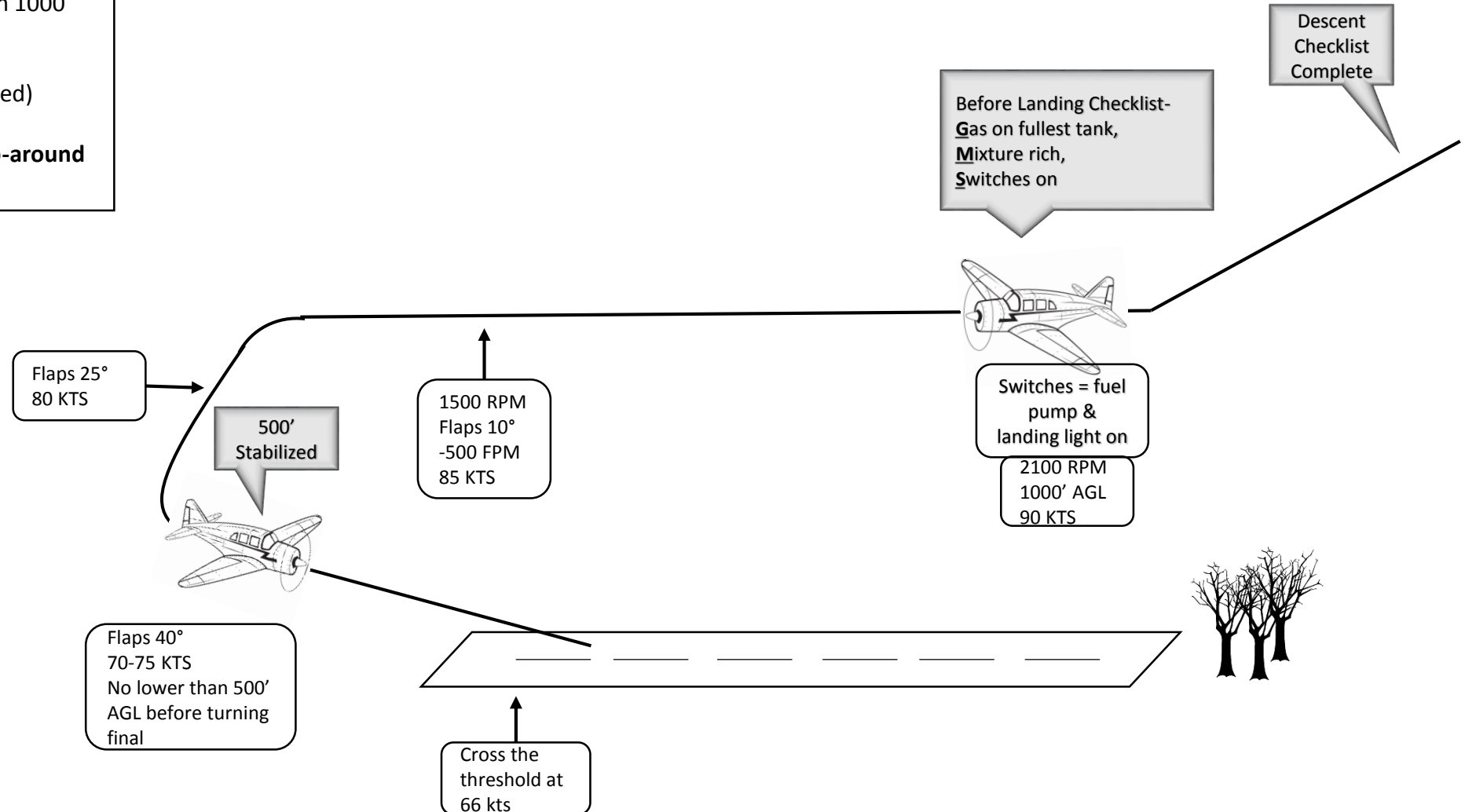
Stabilized Approach Criteria

By no lower than 500' AGL on a visual approach

- Airspeed 70-75
- Descent Rate no greater than 1000 FPM
- Fully Configured to land
 - Flaps 40 (or as required)
 - Gear Down

If not stabilized by 500' AGL, a go-around should be performed

Visual Approach



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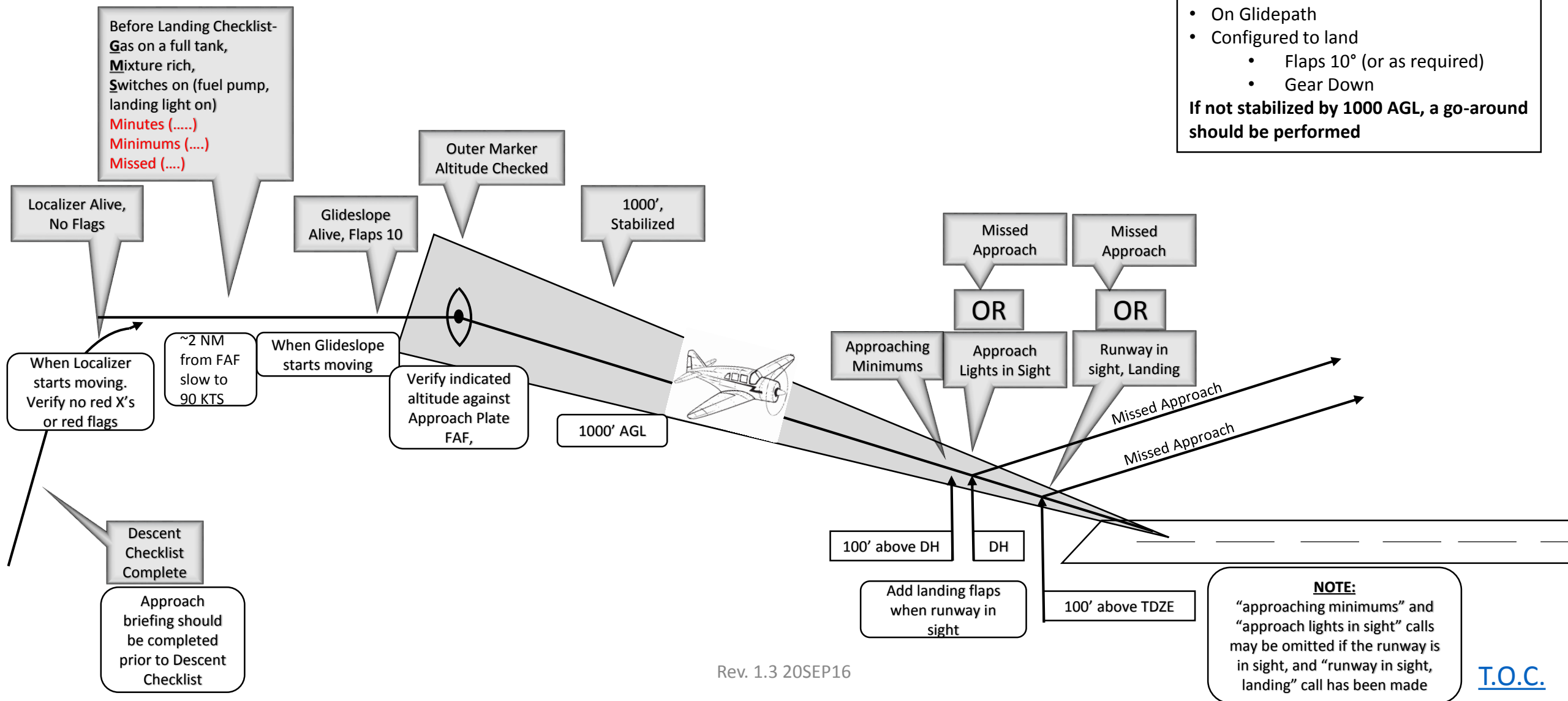
Precision Approach

Stabilized Approach Criteria

By no lower than 1000' AGL on an instrument approach

- Airspeed 90
- Descent Rate no greater than 1000 FPM
- On Glideslope
- Configured to land
 - Flaps 10° (or as required)
 - Gear Down

If not stabilized by 1000' AGL, a go-around should be performed



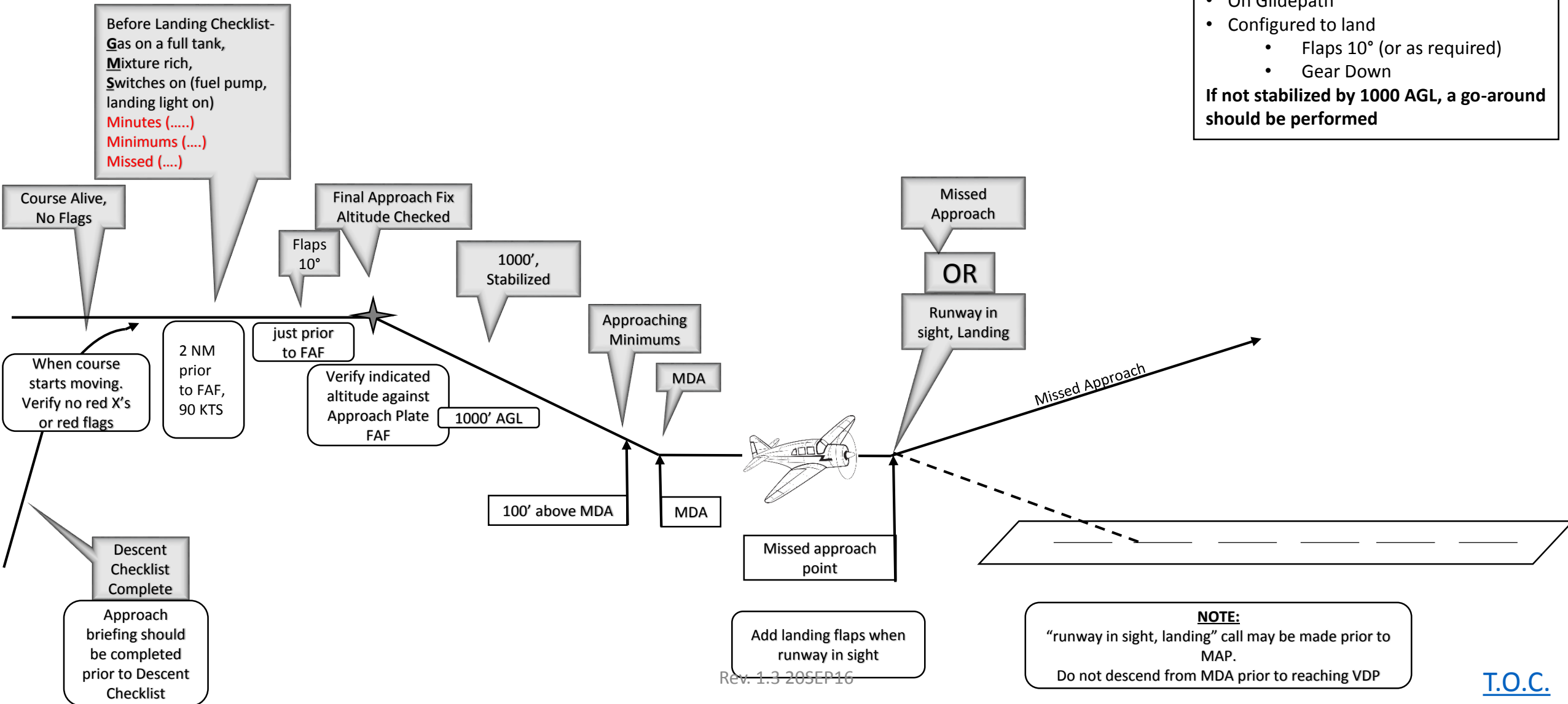
Non-Precision Approach

Stabilized Approach Criteria

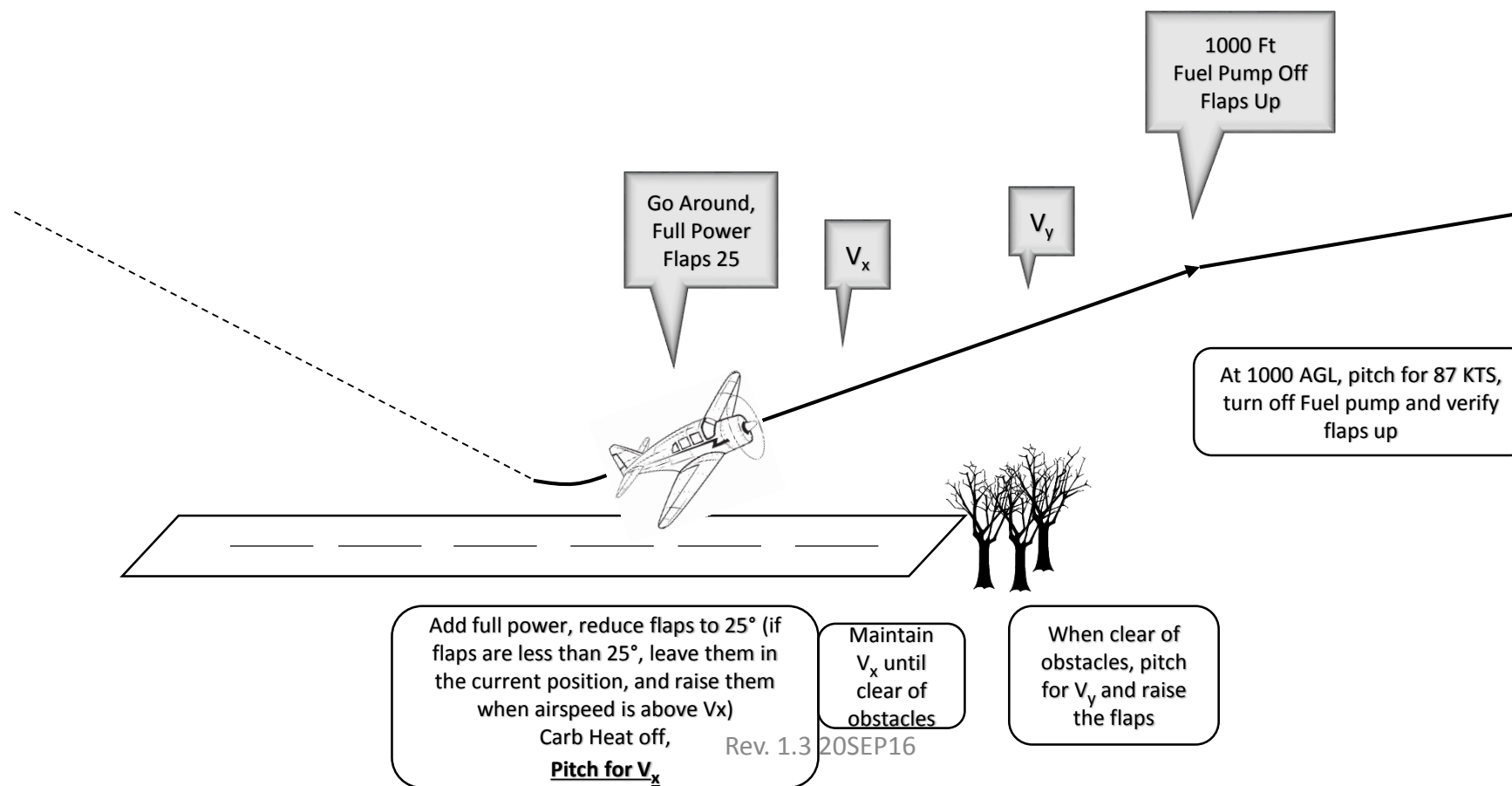
By no lower than 1000' AGL on an instrument approach

- Airspeed 90
- Descent Rate no greater than 1000 FPM
- On Glidepath
- Configured to land
 - Flaps 10° (or as required)
 - Gear Down

If not stabilized by 1000' AGL, a go-around should be performed

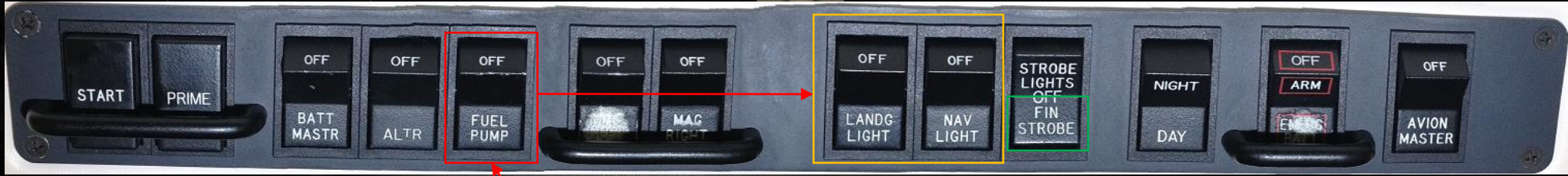


Go Around/Missed Approach



After Landing Checklist

- Clear Runway
- Trim/Flaps – SET NEUTRAL/RETRACTED
- Mixture - LEAN 1 inch
- Fuel Pump – OFF
- Strobe Light Switch – AS REQUIRED
- Landing Light Switch – AS REQUIRED



INFORMATION
SEE OWNER'S
MANUAL FOR
OPERATING
INSTRUCTIONS
CATEGORY OPERATIONS
BY CATEGORY
PIPER

WARNING
SEE OWNER'S
MANUAL FOR
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BY CATEGORY
PIPER



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● Trim/Flaps

I.O.C.

Stopping Engine

(Part 1)

- Parking Brake – SET
 - Electrical Switches – OFF
 - Hobbs Time - CHECK
 - Fuel Pump - OFF
 - Emergency Battery Switch – OFF
 - Avionics Master Switch – OFF
 - Alternator Switch – OFF
-

(Part 2)

- Throttle – Closed
- Left/Right MAG Ground Check
- Mixture – IDLE CUT-OFF
- Exterior Lights – OFF
- Left/Right MAG Switches – OFF
- Battery Master Switch – OFF

Part 1



*Hobbs time

