



**Piper Cherokee Flows & Profiles (Rev. 1.0)**

# 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**.

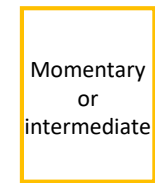
For example, upon entering the aircraft, the pilot will accomplish the Before Starting Engine flow (silently). Upon completion of the flow, he/she will read the Before Starting Engine checklist (aloud). Reading the checklist then becomes a verification that all the items in the flow have been completed.

## 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 Usage

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)	
<b>BEFORE STARTING ENGINE</b>	
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
<b>NOTE</b>	
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:	
<ul style="list-style-type: none"><li>• PFD with no red-x's on:<ul style="list-style-type: none"><li>○ Attitude</li><li>○ Airspeed</li><li>○ Altitude</li><li>○ Vertical Speed</li></ul></li><li>• Audio Panel</li><li>• Com 1</li><li>• <u>Nav 1</u></li><li>• Engine Indications</li><li>• Standby Flight Instruments</li></ul>	
E VOLTS Indication.....	23.3 VOLTS (Minimum for flight)
FUEL QTY Indications.....	CHECK QTY AND IMBALANCE

# Checklist Usage

## 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.

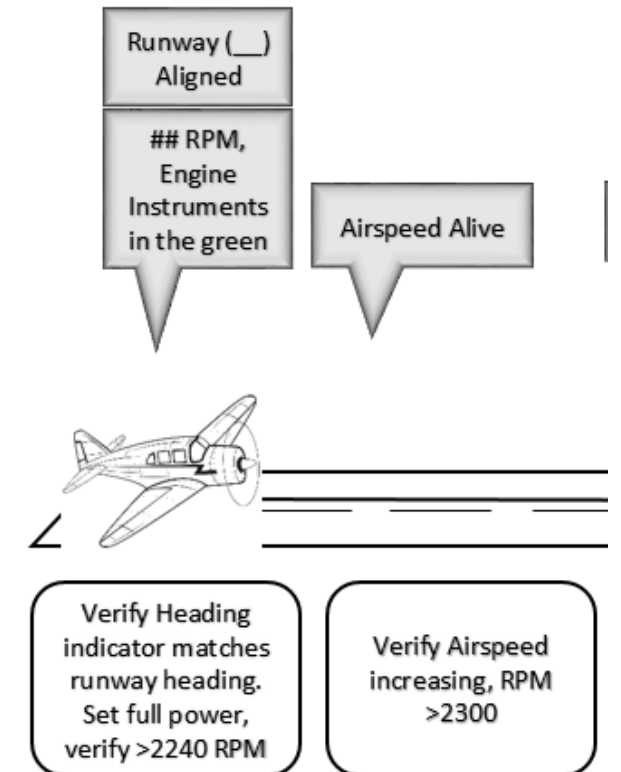
# Profiles Introduction

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”)
- 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.

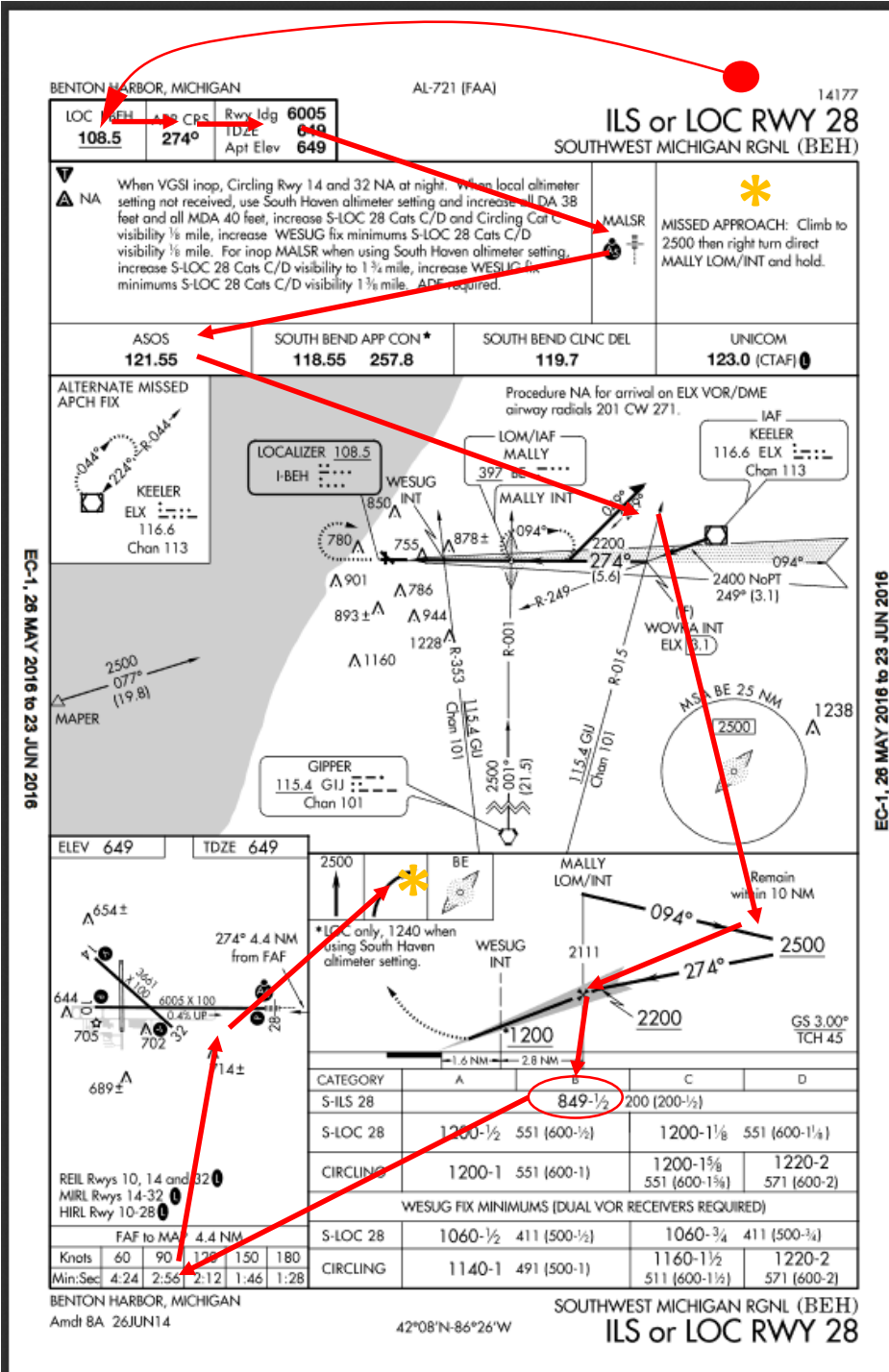
The following items should be covered in every instrument approach briefing:

- 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 Navaids 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 Engine Start

*Cue: Ready to Start Engine*

- Parking Break ..... ON
- Fuel Selector ..... FULLEST TANK
- Battery Master ..... ON
- Fuel Pump ..... ON
- Beacon Switch ..... ON
- Ignition Switch ..... LEFT MAG
- Throttle ..... OPEN ¼ inch
- Mixture ..... RICH
- Prime ..... AS REQ'D THEN LOCK



# Engine Start

*Cue: Before Engine Start Check Complete*

- Propeller Area ..... “CLEAR”
- Starter ..... ENGAGE
- Ignition Switch ..... BOTH
- Power ..... ADJUST 800-1000 RPM
- Oil Pressure ..... CHECK



MINIMUM CATEGORY OPERATIONS  
NO RPT PASSENGERS ALLOWED

CONTROLS FREE  
FUEL ON PROPER TANK  
ELECTRIC FUEL PUMP ON  
LADDER/STAIR RELEASER OFF  
WASTING FUEL

TAXI  
ENGINE CAREFULLY CHECKED  
T/O SET  
FLAPS SET  
DOOR LATCHES

N4946L

Vy 85mph  
Vx 78mph at 25deg flaps

# Before Taxi

*Cue: Engine started and stabilized*

- Timer ..... SET
- Radios (4) ..... ON
- Transponder ..... ALT / SET CODE
- Mixture ..... LEAN OUT 1" FOR TAXI
- Landing Light ..... ON
- Parking Break ..... OFF
- Brakes & Steering ..... CHECK





# Ground Check

*Cue: Holding short departure end of runway*

- Parking Break ..... ON
- Fuel Selector ..... FULLEST TANK
- Mixture ..... ADJUST FOR D.A. & ELIVATION
- Throttle ..... 2000 RPM
- Carburetor Heat..... CHECK, THEN OFF
- Ignition Switch ..... CHECK  
MAX DROP 125/MAX DIFERENCE 50 RPM
- Fuel Pump ..... OFF
- Engine Instruments – Check
  - Oil Temp/Pressure
  - Vacuum 4.9-5.1
  - Ammeter – Positive
- Throttle ..... IDLE THEN 1000 RPM



Finish

# Before Takeoff

*Cue: Holding short of departure runway*

- Flight Instruments ..... CHECK/SET
- Flight Controls ..... FREE AND CORRECT
- Strobes ..... ON
- Mixture ..... ADJUST FOR D.A & ELEVATION
- Carburetor Heat..... OFF
- Landing Light ..... ON
- Fuel Pump ..... ON
- Fuel Selector ..... VERIFY FULLEST TANK
- Flaps ..... 0° Normal/25° SHORT or SOFT
- Trim ..... SET FOR TAKEOFF
- Door/Window ..... CLOSED/LATCHED
- Seats ..... ADJUSTED & LOCKED
- Seatbelts ..... FASTENED
- Empty Seat ..... SECURED
- Takeoff Briefing ..... COMPLETE



# Before Takeoff – Subsequent Takeoffs

*Cue: Holding short of departure runway (after a taxi-back only)*

- Trim ..... SET FOR TAKEOFF
- Flaps ..... 0° Normal/25° SHORT or SOFT
- Strobes ..... ON
- Mixture ..... ADJUST FOR D.A & ELEVATION
- Carburetor Heat..... OFF
- Landing Light ..... ON
- Fuel Pump ..... ON
- Fuel Selector ..... VERIFY FULLEST TANK
- Flight Instruments ..... CHECK/SET
- Takeoff Briefing ..... COMPLETE



WING/TAKEOFF SPEED  
NO WPT PASSENGERS ALLOWED

CONTROLS FREE  
ELECTRIC POWER-ON  
ELECTRIC FUEL PUMP ON  
ELECTRIC HEAT OFF  
WINGING ON

TAXI  
ENGINE GAGES CHECKED  
FLAPS SET  
DOOR LATCHES

N4946L

FLIGHT INSTRUMENTS  
FUEL, OIL, TEMPERATURE, TORQUE  
CLAS. FUEL PUMP ON  
CLAS. DOWN 125 RPM

CLIMB

ALT

CLAS. DOWN 125 RPM

CLAS. DOWN 125 RPM

Vy 85mph  
Vx 78mph at 25deg flaps

[Green box highlighting a switch]

[Green box highlighting a switch]

[Green box highlighting a switch]

[Green box highlighting a red knob]

Flaps/Trim

# Climb

*Cue: Climbing through 1,000' AGL*

- Flaps..... UP
- Fuel Pump..... OFF





Flaps

# Descent (within 10 miles)

*Cue: Beginning descent (from cruise), or going back to Andrews (from practice area)*

- Radios & Avionics ..... CHECK AND SET
- Altimeter ..... SET
- Heading Indicator ..... SET
- Landing Light ..... ON
- Mixture ..... ADJUST
- Fuel Selector ..... FULLEST TANK
- Seat/Seatbacks ..... ADJUSTED AND LOCKED
- Seatbelts ..... FASTENED
- Approach Briefing ..... COMPLETE

Seatbacks/Belts



# Before Landing

*Cue: Before entering traffic pattern*

- (G) “gas” Fuel Selector – Fullest Tank
- (M) mixture – FULL RICH
- (S) “Switches”
  - Fuel Pump – ON
  - Landing Light – On



MINIMUM CATEGORY OPERATIONS  
NO RTT PASSENGERS ALLOWED

CONTROLS FREE  
FUEL ON PROPER TANK  
ELECTRIC FUEL PUMP ON  
LADDER/STAIR REAR OFF  
WASTING FUEL

TAXI  
ENGINE CAREFULLY CHECKED  
TIE DOWNS  
FLAPS SET  
DOOR LATCHES

Vy 85mph  
Vx 78mph at 25deg flaps

N4946L

FUEL ON PROPER TANK  
ELECTRIC FUEL PUMP ON  
CLAS. FUEL PUMP ON  
CLAS. DOWN TIE DOWN

THROTTLE AND  
MANEUVERING  
ROCKERS SET DOWN

THROTTLE  
READY TO  
FLY IN THIS  
POSITION

THE USE OF THE MASTER BATTERY DISCONNECT SWITCH  
DURING TAKEOFF, LANDING, AND  
EMERGENCY



# After Landing

*Cue: After clearing runway, or while back-taxiing*

- Trim/Flaps ..... Set NEUTRAL/RETRACTED
- Fuel Pump ..... OFF
- Landing Light ..... AS REQ'D
- Mixture ..... LEAN 1 inch
- Strobe Lights ..... OFF
- Transponder ..... AS REQ'D



Trim (Above)/Flaps

Transponder

# Stopping Engine

*Cue: Parked at final resting spot*

- Parking Brake ..... AS REQ'D
- Fuel Pump ..... OFF
- Landing Light ..... OFF
- Avionics ..... OFF
  - Radios (4) and Transponder
- Throttle ..... 1000 RPM
- Ignition Switch ..... GROUND CHECK
- Mixture ..... IDLE CUT-OFF

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*(Propeller Stops)*

- Ignition ..... OFF / KEY REMOVE
- Beacon ..... OFF
- Battery Master Switch ..... OFF



Part 1



Transponder



Part 2

