



Introduction

This Air Associates Flight Training Manual (FTM) has been designed to provide the pilot with standardized procedures for safe and efficient training operations in the Cessna 172. It is your responsibility to have a complete and thorough knowledge of these procedures and techniques.

Note that this manual does not include all the information found in the Pilot’s Operating Handbook (POH). It is primarily a procedures guide and is to be used as a supplement to the POH, and in conjunction with the Airplane Flying Handbook, and the Airman Certificate Standards (ACS) for Private Pilot, not intended to limit the pilot’s judgment. The pilot can alter procedures to meet existing conditions. No procedure, regardless of how well written, can account for every possible variable; a procedure cannot replace common sense.

Table of Contents

Chapter 1:	Airplane General	
	I. Airspeeds	2
Chapter 2:	Normal Procedures (Expanded)	
	I. External Checklist (Expanded)	3
	II. Normal Checklist (Expanded)	6
Chapter 3:	Abnormal Procedures (Expanded)	11
Chapter 4:	Traffic Patterns/VFR Airwork	
	I. Traffic Patterns	13
	II. VFR Airwork	16
Chapter 5:	Instrument Flight	
	I. Basic Instrument Maneuvers	20
	II. IFR Approaches	2

Chapter 1:

AIRPLANE GENERAL

I. AIRSPEEDS

All airspeeds used throughout this manual are knots indicated airspeeds (KIAS) and assume zero instrument error.

V _{SO}	-Stall, landing configuration:	40
V _{S1}	-Stall, clean configuration:	48
V _R	-Rotation:	55
V _X	-Best Angle of Climb:	62
V _Y	-Best Rate of Climb:	74
V _{FE}	-Maximum Flap Extension:	85/110
V _A	-Maneuvering Speed:	90-105
V _{NO}	-Maximum Structural Cruising:	129
V _{NE}	-Never Exceed:	163
	-Emergency Descent:	120
	-Best Glide:	68

VFR Approach Speeds:

-Downwind:	95
-Downwind past abeam:	85
-Base:	75
-Final:	65

IFR Final Approach Speed:	90
IFR Holding Pattern Speed:	90

Chapter 2: **NORMAL PROCEDURES (EXPANDED)**

Within this section checklists are designated as “Flow” or “Do.”

A Flow checklist is first done using a geometric pattern (i.e., an “L” or an upside down “U”); thereafter and significantly, the checklist is completed with this objective: if your flow is solid, when you do the checklist you will not have to touch or do any item.

A Do checklist is done step-by-step.

For each Make and Model of aircraft you fly, the manufacturer or your training provider will need to guide you if a checklist is Flow or Do; for example, in a retractable gear plane before turning the master on it is critical to check the gear handle, so the first checklist very well may be a Do checklist.

I. EXTERNAL CHECKLIST (EXPANDED)

INTERIOR (Flow)

Documents	A.R.O.W.
Airworthiness Certificate	IN VIEW
Registration Certificate	CHECK ON BOARD
Pilot’s Operating Handbook	CHECK ON BOARD
Weight and Balance Data	CHECK ON BOARD
Key book	CHECK TIMES
Key	REMOVED
Circuit Breakers	IN
Control Wheel Lock	REMOVE
All Switches	OFF
Master Switch	ON
Aircraft Lights	ON/CHECK
Anti-collision (Beacon/Strobe) Lights	CHECK
Landing Light	CHECK
Position (Nav) Lights	CHECK
Flaps	EXTEND
Fuel Quantity Indicators	CHECK QUANTITY
Fuel	Verify QUANTITY with fuel stick for visual inspection of tanks.
Low Fuel Annunciators	OFF
Pitot Heat	CHECK
	Required if flying into precipitation or possible icing conditions.
Avionics Master Switch	ON/OFF
	Check audibly for avionics cooling fan operation.
Static Pressure Alternate Source Valve	OFF
Annunciator Panel Switch	TEST

Check Annunciator Lights.

Flaps	EXTEND
Master/Electrical Switches	OFF
Fuel Selector Valve	BOTH
Fuel Shutoff Valve	ON

FUSELAGE/EMPENNAGE (Flow)

Baggage Door	CHECK
Antennas	CHECK
Left Skin	CHECK
	Check for cracks, dents, rivets, and screws.
Left Stabilizer/Elevator	CHECK
	Movement, Condition, Hinges
Bottom of Aircraft	CHECK
Vertical Stabilizer/Rudder	CHECK
	Movement, Condition, Hinges
	Beacon, Position Light
Right Stabilizer/Elevator/Trim Tab	CHECK
	Movement, Condition, Hinges
Right Skin	CHECK
	Check for cracks, dents, rivets, and screws.

RIGHT WING (Flow)

Flap	CHECK
	Movement, Condition, Hinges
Aileron	CHECK
	Movement, Condition, Hinges
Wing Tip	CHECK
	Position Light and Strobe
Leading Edge	CHECK
	Ribs
	CHECK for firmness
Wing Strut	CHECK
Gear Assembly	INSPECT
	Check tire, brake pads, hydraulic line, and strut.
Fuel Tank Sump Quick Drain Valves (5)	SAMPLE
	Check for water, debris, color (blue), and smell.
Fuel Tank Quantity	CHECK
	Verify with quantity indicated by the Fuel Quantity Indicators
Fuel Filler Cap	SECURE and VENT UNOBSTRUCTED
Cabin Air Inlets (2)	CHECK

NOSE (Flow)

Windshield	CHECK
	Check for cracks and visibility.

Engine Inspection	CHECK
Inspect engine for any noticeable damage, loose wires, or hoses.	
Engine Oil	CHECK
6-8 quarts. (POH 5 quarts minimum)	
Right Cowling	CHECK
Check for cracks, dents, rivets, screws.	
Fuel Strainer/Reservoir/Selector Quick Drain Valves	SAMPLE
Check for water, debris, color (blue), smell.	
Antennas	CHECK
Exhaust Pipe	CLEAR
Gear Assembly	INSPECT
Check tire and strut.	
Engine Cooling Air Inlets	CLEAR
Propeller/Spinner	CHECK
Check for cracks, dents, screws and security.	
Air Filter	CLEAR
Left Cowling	CHECK
Check for cracks, dents, rivets, and screws.	
Static Source	CLEAR
Breathers/Vents	CHECK
Two hoses hanging from the bottom of the engine.	
LEFT WING (Flow)	
Cabin Air Inlets	CHECK
Fuel Tank Quantity	CHECK
Verify with quantity indicated by the Fuel Quantity Indicators.	
Fuel Filler Cap	SECURE and VENT UNOBSTRUCTED
Wing Strut	CHECK
Pitot Tube	CLEAR
Pitot Heat FEEL FOR WARMTH (careful to not burn fingers)	
Stall Warning Opening	CHECK
Fuel Tank Vent	CLEAR
Landing/Taxi Lights	CHECK
Leading Edge	CHECK
Ribs Check for firmness	
Wing Tip	CHECK
Position Light and Strobe	
Aileron	CHECK
Movement, Condition, Hinges	
Flap	CHECK
Movement, Condition, Hinges	
Fuel Tank Sump Quick Drain Valves (5)	SAMPLE
Check for water, debris, color (blue), smell.	
Gear Assembly	INSPECT
Check tire, brake pads, hydraulic line, and strut.	

II. NORMAL CHECKLIST (EXPANDED)

BEFORE START (DO)	
Seats	POSITION and LOCK
Belts	SECURE
Passenger Briefing (seatbelts)	COMPLETE
Parking Brake	SET
Circuit Breakers	IN
Take note of any circuit breakers that require resetting.	
Avionics Power Switch	OFF
Fuel Selector Valve	BOTH
Fuel Shutoff Valve	ON
ENGINE START (With Battery) (Cold) (DO)	
Key	IN/OFF
Brakes	HOLD
Throttle	FULL OPEN
Mixture	RICH
*If engine is warm, omit underlined procedures.	
Propeller Area	CLEAR
Beacon	ON
Master Switch	ON
Auxiliary Fuel Pump Switch	ON then OFF
Stabilize Fuel Flow of 5 GPH for 3-5 seconds.	
Throttle	1/4" OPEN
Mixture	IDLE CUT OFF
Ignition Switch	START
Max. duration 10 seconds then 20 seconds for cooldown (3X).	
Mixture	ADVANCE
Throttle	1000 RPM
*If engine is warm, reduce throttle to idle.	
Engine Instruments	CHECK
Oil pressure above lower red line in 30 seconds.	

AFTER START (Flow)

Avionics Power Switch	ON
Avionics	SET
Com 1	GROUND
Com 1 standby	TOWER
Com 2	
ATIS	
Nav 1&2 standby	A/R
Transponder	STBY & 1200
ATIS	OBTAIN
Circuit Breakers	IN
Take note of any circuit breakers that require resetting.	
If circuit breaker has "popped" more than once, discontinue flight.	
Flight Instruments	SET
Altimeter.	SET
GPS Baro	SET
D.G.	SET
All Others	CHECK
Flaps	RETRACT
Mixture	Lean for Max RPM @1000 RPM

TAXI (DO)

FMS	Set Zoom to SafeTaxi
Parking Brake	RELEASE
Throttle	IDLE
Brakes	TEST
Apply just enough pressure to test the brakes.	
Flight Instruments	CHECK
-Attitude Indicator should indicate no more than 5 degrees of bank during turns.	
-D.G. should indicate turns in proper direction.	
-Magnetic compass should indicate turns in proper direction.	
-Turn coordinator should indicate turns in proper direction with ball opposite of turn.	

ENGINE RUNUP (DO)

Airplane	INTO WIND
Clear behind the airplane.	
Parking Brake	SET
Flight Controls	FULL/FREE
Movement	CORRECT
Engine Instruments	IN LIMITS
Oil Pressure	IN GREEN

Oil Temperature	ABOVE WHITE LINE
Throttle	1800 RPM
Magnetos	IN LIMITS
Max. drop	150 RPM
Max. difference	50 RPM
Vacuum Gauge & Ammeter	CHECK
Vacuum Gauge	IN GREEN (4.5 - 5.5)
Ammeter	CHARGING
Engine Instruments	CHECK
Oil Temperature and Pressure	IN LIMITS
Annunciator Panel	OUT
Throttle	CHECK IDLE
RPM should be around 600-650.	
Throttle	1000 RPM
Throttle Friction Lock	ADJUST
Magnetos	BOTH
Mixture	RICH (AR)
Elevator Trim	SET T/O
Fuel Selector Valve	BOTH
Wing Flaps	SET
Takeoff Brief	COMPLETE

BEFORE TAKEOFF (DO)

FMS	Set Zoom to see about 2 to 8 nautical miles
Flight Instruments	CHECK
D.G (Heading Indicator).	ALIGN and note precession
Heading Bug.	Set to Departure Runway Heading
Pitot Heat	A/R
Pitot heat should be used any time when flying in visible moisture below 40° F	
Transponder	ALT
Engine Instruments	CHECK
Oil Temperature	GREEN
All others	GREEN
Doors/Windows	SECURE
Time	RECORD
Call the tower for takeoff and record the time when cleared.	
Landing Light/Strobes	ON
Do not turn lights on until ready to roll onto the runway for takeoff.	

AFTER TAKEOFF/CLIMB (Flow)

Power	SET
Engine Instruments	MONITOR
Oil Temp. & Press.	IN GREEN
Vacuum Gauge	IN GREEN
RPM	CHECK
Ammeter	CHARGING
Mixture	Lean for Max RPM above 3000' DA

CRUISE (Flow)

Power	SET
Mixture	LEAN A/R
Engine Instruments	MONITOR
Oil Temp. & Press.	IN GREEN
Vacuum Gauge	IN GREEN
RPM	CHECK
Landing Light	OFF

APPROACH / DESCENT (Flow)

Radio	SET
ATIS	OBTAIN
Flight Instruments	CHECK/SET
Altimeter	SET
D.G.	SET
Engine Instruments	MONITOR
Oil Temp. & Press.	IN GREEN
Suction Gage	IN GREEN
RPM	CHECK
Ammeter	CHARGING
Landing Light	ON
Mixture	Enrichen to maintain engine smoothness

BEFORE LANDING (Flow)

Belts	(B)	SECURE
Check Traffic	(C)	CLEAR
Gas	(G)	BOTH
Check Fuel Quantity Indicators.		
Undercarriage	(U)	FIXED
Mixture	(M)	RICH (<3000' DA)
Power	(P)	A/R
Switches (LIGHTS).....	(S).....	ON
A/R		

AFTER LANDING(Flow)

Wing Flaps	UP
Elevator Trim	SET T/O
The above items are done each time a touch and go is performed.	
The below items are for full stop landings.	
Transponder	ALT
Landing Light/Strobes	OFF
Mixture	Lean for Max RPM @1000 RPM
FMS	Set Zoom to SafeTaxi

SHUTDOWN (DO)

Avionics Power Switch	OFF
Throttle	CLOSE
Mixture	IDLE CUT-OFF
After engine stops:	
All Switches	OFF
Magnetos	OFF
Control Lock	INSTALL
Fuel Selector Valve	LEFT or RIGHT
Postflight Inspection	COMPLETE
The postflight inspection should consist of a walk around to ensure that nothing has happened to the aircraft since boarding.	

Chapter 3: **ABNORMAL PROCEDURES (EXPANDED)**

For the purpose of the abnormal checklist, all items outlined by a box must be memorized and able to be executed from memory. In an emergency situation, the checklist serves as a backup. All checklists are Flow for memorized items, then start at beginning (including memorized items again) and Do.

ABNORMAL CHECKLIST

ENGINE FIRE -AFTER START

Starter	CONTINUE CRANKING (Max 30 sec)
Mixture	IDLE CUT-OFF
Throttle	CLOSE
Fuel Shut Off Valve	OFF

ELECTRICAL FIRE

All Electrical Switches	OFF
Vents	OPEN
Heat	OFF

ENGINE FAILURE

Airspeed	TRIM FOR 68
Landing Spot	SELECT
Fuel Selector Valve	BOTH
Mixture	RICH
Throttle	1/4 - □" OPEN
Magnetos	CHECK LEFT and RIGHT, THEN BOTH
Fuel Boost Pump	ON THEN OFF

FORCED LANDING

Radio	SET/MAYDAY
ELT	ON
Transponder	7700
Fuel Selector Valve	OFF
Mixture	IDLE CUT-OFF
Throttle	CLOSE
Magnetos	OFF
Flaps	A/R
Master Switch	OFF
Seat Belts	SECURE
Door	AJAR

ELECTRICAL FAILURE

Alternator	OFF then ON
Ammeter	CHECK
If ammeter shows a charge:	Continue Flight
If ammeter shows a discharge:	
Alternator	OFF
Nonessential Electrics	OFF
Land As Soon As Practical	

I. TRAFFIC PATTERN -Takeoffs and Landings

A. Traffic Pattern - Normal Takeoff and Landing

- Complete Before Takeoff checklist.
- Advance throttle smoothly to full power.
- Check engine instruments.
- Maintain directional control on the runway centerline.
- Rotate at 55 KIAS with 0° flaps (50 KIAS with 10° flaps).
- Pitch to V_y attitude; airspeed 74 KIAS.
- Maintain a straight track over the extended runway centerline until within 500 - 300 feet of traffic pattern altitude.
- Turn with max of medium bank (30 degrees) to crosswind leg or depart the traffic pattern.

Crosswind leg

- Maintain perpendicular ground track to the runway.
- Scan for traffic.
- Turn with medium bank (30 degrees) to downwind leg within 1/2 - 1 mile of the runway.

Normal Landing - Downwind leg

- Level off at pattern altitude.
- Establish speed of 95 KIAS, power about 2100 – 2200 rpm.
- Perform Before Landing checklist (BCGUMPS).

Abeam touchdown

- Reduce power to 1600 rpm (AR).
- Set flaps to 10° (AR).
- Establish speed of 85 KIAS.
- Turn with medium bank (30 degrees) to base leg when approximately 45° from touchdown point.

Base leg

- Maintain perpendicular ground track to the runway.
- Set flaps to 20° (AR).
- Establish 75 KIAS.
- Scan final approach for traffic.
- Turn to final approach.

Final approach

- Set flaps to 30° (AR).
- Establish stabilized approach at 65 KIAS.
- Align the longitudinal axis of the airplane with the runway centerline.
- Touchdown smoothly on the main landing gear at the approximate stalling speed with no drift and the airplane over the runway centerline.
- Keep the nosewheel off the runway with aft control wheel as long as practical.
- Exit the runway environment
- Complete the After Landing checklist.

B. Crosswind Takeoff and Landing

TAKEOFF

- Same procedure as a Normal Takeoff.
- Turn ailerons into the wind (Full deflection for takeoff & gradually takeout the ailerons as you gain airspeed).
- Maintain directional control on the runway centerline.
- Add 5 KIAS to the rotation speed for crosswinds greater than 6 knots.
- Establish a positive rate of climb.
- Establish crab angle to prevent side drift on the upwind

LANDING

- Same procedure as a Normal Landing.
(in the event of a strong wing, consider using a lower flap setting).
- Correct for win drift in patter by crabbing into the wind.
- Establish sideslip or crab on final approach. Drift is controlled with aileron and the heading with rudder.
- Touchdown on the upwind main wheel first in a sideslip.

C. Go-Around (Balked Landing)

- Make timely decision to discontinue the approach.
- Apply full power.
- Establish V_y Attitude
- Retract flaps to 20°.
- Establish the climb speed at V_x or 62+ KIAS.
- Retract flaps to 10° after obstacles are cleared & positive rate of climb.
- Retract flaps to 0° after obtaining positive rate of climb.

D. Short-Field Takeoff and Landing

- Complete Before Takeoff checklist.
- Extend flaps to 10°
- Utilize the full length of runway.
- Hold brakes and advance throttle to full power.
- Check engine instruments.
- Release brakes.
- Maintain directional control on the runway centerline.
- Hold elevator in a neutral position.
- Liftoff at 51 KIAS.
- Pitch to 56 KIAS until clear of obstacles.
- Lower pitch to accelerate to 62 KIAS.
- Retract flaps above 62 KIAS.
- Pitch for V_y (74 KIAS) and climb out.

Short-Field Landing

- Same procedure as a Normal Landing using a slower airspeed on final approach with a steeper angle of descent.
- Fly final approach at 62 KIAS.
- Reduce power to idle while transitioning the aircraft to the flare attitude.
- Touchdown smoothly at approximate stalling speed.
- Apply maximum braking without lockup, with full aft control wheel.

E. Soft-Field Takeoff and Landing

- Complete Before Takeoff checklist.
- Extend flaps to 10°.
- Hold control wheel full aft during taxi and start of takeoff roll.
- Continue rolling from taxiway into the takeoff roll.
- Apply full power smoothly.
- Check engine instruments.
- Maintain directional control on the runway centerline.
- Raise nosewheel off the runway as soon as possible.
- Liftoff and remain in ground effect.
- Accelerate to V_x (62 KIAS) in ground effect.
- Smoothly pitch to an attitude that will yield V_y (74 KIAS) or V_x (62 KIAS) as required.
- Retract flaps

Soft-Field Landing

- Same procedure as a Normal Landing.
- Maintain some power on during the flare to land with the weight on the wings rather than the wheels.
- Touchdown smoothly, power as required.
- Retard throttle to idle and hold control wheel aft to keep the nosewheel off the runway as long as practical.

II. VFR AIRWORK

A. Pre-Maneuver Checklist (HELL)

This checklist is to be performed prior to beginning any maneuver.

(H)eight

A/R

All maneuvers (except ground reference maneuvers) must be performed at an altitude that allows stalls and slow-flight recovery above 1500 feet AGL. Ground reference maneuvers will be performed at 600-1000 feet AGL.

(E)ngine Instruments

CHECK

(L)ocation

NOTE

Note location to ensure that maneuvers are being performed in a safe area away from towns, built-up areas, and airspace. Be within gliding distance of an emergency landing site. In the event of an emergency, be able to notify ATC of your location before landing.

(L)ookout

COMPLETE

Two 90 degree turns, or one 180 degree turn with no more than 30 degrees of bank will be executed to be certain that the airspace is clear. Always maintain a constant lookout for traffic.

B. Training Cruise Flight

- Perform Cruise checklist.
- Establish 95-105 KIAS.
- Set power as required (2100-2300 RPM)

C. Steep Turns

- Establish 95 KIAS, power as required.
- Roll into a 360° turn at an angle of bank of 45° (50° for commercial).
- Maintain coordination.
- Apply power as required to maintain 95 KIAS.
- Begin rollout 20° before the initial heading is reached.
- Adjust pitch to maintain altitude
- Roll into a 360° turn at an angle of bank of 45° (50° for commercial) in the opposite direction.
- Begin rollout 20° before the initial heading is reached.
- Recover to training cruise flight.

D. Maneuvering During Slow Flight

- Reduce power to 1600 rpm.
- Extend flaps incrementally below VFE.
- Adjust pitch to establish MCA (5knots above stall horn)
- Adjust power to maintain altitude (+/- 2000 RPM)
- Perform maneuvers as specified.
- Recover
- Increase throttle to full power.
- Decrease pitch
- Retract flaps incrementally
- Recover to training cruise flight.

E. Power-Off Stall

- Reduce power to 1600 rpm.
- Extend flaps below VFE.
- Establish a stabilized descent at 65 KIAS.
- Increase pitch to a stall attitude.
- Reduce power to idle.
- Announce the imminent stall.
- Execute a full stall.
- Recover promptly by decreasing pitch attitude.
- Apply full power & apply rudder as necessary.
- Pitch to the horizon.
- Minimize the loss of altitude.
- Retract flaps to 20°.
- Accelerate to 62 KIAS.
- Retract flaps to 10°.
- Maintain a positive rate of climb.
- Retract flaps to up.
- Recover to training cruise flight.

F. Power-On Stall

- Reduce power to 1600 rpm.
- Slow to 65-60 KIAS.
- Increase pitch to stall attitude.
- Apply full power.
- Level wings or establish a no more than 20° bank with aileron
- Maintain directional control with rudder
- Announce the imminent stall.
- Execute a full stall.
- Recover promptly by decreasing pitch attitude.
- Level the wings.
- Minimize the loss of altitude.
- Recover to training cruise flight.

G. Rectangular Course

- Establish 95 KIAS, power as required.
- Altitude 600 to 1000 ft. AGL.
- Enter the maneuver 45° to the downwind leg.
- Maintain a ground track parallel to and within ¼ - ½ mile of the course.
- Apply adequate wind drift correction.
- Use 30° of bank in the turns.
- Exit 45° on downwind.

H. S-Turns Across a Road

- Establish 95 KIAS, power as required.
- Altitude 600 to 1000 ft AGL.
- Select two points aligned 90° to the wind.
- Enter the maneuver on the downwind.
- Cross the point and roll into a bank.
- Maintain a constant radius of ¼-½ mile through 180° of turn with varying bank to correct for the wind.
- Cross the imaginary line along the two points and roll into a bank to the opposite direction with the same radius.
- Maintain a constant radius through 180° of turn with varying bank to correct for the wind.
- Exit Downwind

I. Turns Around a Point

- Establish 95 KIAS, power as required.
- Enter the maneuver downwind approximately ¼ - ½ mile from the point.
- Cross the point and adjust banking for groundspeed changes.
- Maintain a constant radius of through a 360° of turn with varying bank and wind drift correction.
- Divide attention between flight path, ground-based references, manipulating of the flight controls, and scanning for outside hazards.
- Exit downwind

J. Eights-On-Pylons

- Determine the Pivotal Altitude (PA = GS knots²/11.3).
- Select suitable pylons.
- Establish 95 KIAS, power set to around (2200-2300 RPM).
- Enter the maneuver downwind at a 45° angle of the selected pylons at the PA.
- Maintain the line-of-sight reference line on the pylon with minimum longitudinal movement.
- Roll out from the turn when on the downwind heading
- Pivot around the next pylon.

K. Lazy 8

- Establish 95 KIAS, power as required.
- Select reference points at 45°, 90°, 135° and 180°
- Enter a coordinated climbing turn towards the reference point.
- At 45° of turn, attain 15° of bank and the maximum pitch up.
- At 90° of turn, attain 30° of bank, level pitch attitude.
- At 135° of turn, attain 15° of bank and the maximum pitch down.
- At 180° of turn, attain straight and level, initial altitude and 95 KIAS
- Begin turn in the opposite direction and attain the same standards.

L. Emergency Descent (Engine Fire)

- Run through memorization items.
 - Power to idle
 - Pitch for 110 KIAS or greater if fire is not extinguished.
 - Establish 45° bank.
 - Forced landing execute.
- Time Permitting:
- Squawk 770
 - 121.5 (mayday position)

M. Chandelle

- Establish 95 KIAS, power as required.
- Select a 90° reference point.
- Establish a 30° bank turn.
- Apply full power and constantly increase pitch through first 90° of turn.
- Hold the pitch attitude and slowly level the wings through the last 90°
- Complete the maneuver at 180° of turn, airspeed at Vs.
- Reduce pitch to resume straight and level flight at the final altitude.

N. Steep Spirals

- Select an altitude which will ensure at least THREE 360° of turn.
- Enter on a specified heading ¼ -½ mile from a point on the ground.
- Throttle closed to idle
- Establish 70 KIAS
- Roll airplane to no more than 60° of bank to maintain a constant radius.
- Correct bank angle for wind drift to maintain constant radius
- Divide attention for traffic avoidance.
- Recover from the maneuver toward an object or specified heading no lower than 1500 AGL.

(Engine should be periodically advanced to cruise power on the upwind to prevent excessive engine cooling and/or spark plug fouling)

O. Accelerated Stall

- From straight and level flight, decrease power to obtain 80 KIAS.
- Flaps up
- Roll into a 45° turn.
- Smoothly, firmly and progressively apply back pressure until an impending stalls occur.
- Recover promptly at the first indication of an impending stall.
- Return to the altitude, heading and airspeed as specified.

I. BASIC INSTRUMENT MANEUVERS

A. Intercepting and Tracking Radials

- Reset the directional gyro to the magnetic compass.
- Tune in the frequency of the radio navigation facility.
- Identify the facility.
- Determine the orientation of the aircraft to the facility.
- Set the OBS to the desired course.
- Determine the intercept angle (20° - 90°)
- Turn to intercept the radial.

B. Intercepting and Tracking Bearings

- Reset the directional gyro to the magnetic compass.
- Tune in the frequency of the radio navigation facility.
- Identify the facility.
- Continuously monitor the facility identification.
- Determine the orientation of the aircraft to the facility.
- Determine the intercept angle (20° - 90°).
- Turn to intercept the bearing.

II. IFR APPROACHES

Approach Preparation

Perform during the descent and prior to the Initial Approach Fix.

- Complete the Approach Checklist.
- S- select.
- T- tune.
- I - identify.
- M- markers.
- E- entry.
- E- estimate wind drift.
- Perform the Approach Briefing.
 - 1- Type of approach
 - 2- Runway in use (airport)
 - 3- Initial approach altitude (if applicable)
 - 4- Inbound and outbound headings
 - 5- Final approach heading/altitude
 - 6- MDA/DH
 - 7- Missed approach procedure

Example of an IFR Approach Briefing:

Practice ILS
Runway 33 Lawrence
Initial 3100 ft
Inbound 329
Final 2900 ft, heading 329
Decision Height 1031 ft
Missed Approach: Climb to 2000 ft., then climbing right turn to 3100 ft.,
direct NEWBN LOM and hold.

- Set Nav1 on ILS frequency and OBS to final approach course.
- Set Nav2 on ILS frequency or for a cross fix.
- Set both Navs alternate frequencies for the Missed Approach.

At the **Initial Approach Fix:**

- Slow to 90 KIAS, power as required.
- Perform BCGUMPS.

At the **Final Approach Fix:**

- Time - Start time for the approach.
- Turn - Turn to intercept inbound course.
- Twist - Adjust the radios for navigation.
- Transition - Airspeed, power, and flaps as required.
- Talk - Call ATC, final approach fix inbound.

At the **Missed Approach Point:**

- Apply full power.
- Retract flaps.
- Pitch to V_{γ} (74 KIAS).
- Report Missed Approach to ATC.
- Fly the missed approach procedure.