Piper Arrow Maneuvers --- Quick Reference Sheet

Slow Flight*
1. Clearing turn at or above 1500 feet AGL (4,000 MSL+)
2. Set Prop RPM to 2500, then reduce MP to 15"*
3. Landing gear – Down below 150 mph/Check Gear down 3 green.
4. Increase pitch to maintain altitude as airspeed decreases TRIM
5. Extend full flaps (in white arc)
6. Upon reaching Vr (60-70 mph) increase power approx 20"
7. Maintain coordinated flight(increased right rudder at low speed and high power setting)
8. Perform straight and level, and turns (20° or less)
9. Use power to maintain altitude and pitch to maintain airspeed

Recovery*
1. Apply full power, flaps 25°, reduce pitch to maintain altitude – TRIM
2. Gear Up
3. Retract flaps to 10° accelerating through 85 mph TRIM
4. Retract flaps to 0° accelerating through 90 mph TRIM
5. Accelerate to normal cruise or as specified and reduce power as necessary.

Power Off Stall (Approach to landing Stall)*
1. Clearing turn at or above 1500 feet AGL (4,000 MSL+)
2. Reduce Power to 18"/2500 RPM, mixture as required*
3. Landing gear – Down below 150 mph/Check Gear down 3 green.
4. Extend full flaps one notch at a time(below 125 mph)
5. Establish 15"/90 mph descent
6. Power to idle at selected altitude.
7. Apply back pressure to maintain altitude
8. Announce "imminent stall" at stall warning light.
9. Announce "stall" when stall occurs

Recover*
1. Reduce pitch, full power, wings level with coordinated rudder and aileron
2 Retract flaps to 25° establish climb/Vy pitch attitude
3. Positive climb on VSI or Alt- Gear - Up
4. Retract flaps to 10° accelerating through 85 mph TRIM
5. Retract flaps to 0° accelerating through 90 mph and stabilize climbout at Vy (100 mph.)
6. Level off as instructed (pitch, power 18"/2400 rpm, trim)

Power On Stall (Departure Stall)*
1. Clearing turn at or above 1500 feet AGL (4,000 MSL+)
2. Slow to 90 mph level flight
6. Prop & Mixture - forward
3. Add power to 20" MP
4. Smoothly increase the pitch to induce stall.
5. Announce "imminent stall" at stall warning light
6. Announce "stall" when stall occurs

To Recover*
1. Full power, reduce pitch then establish Vy pitch attitude
2. Accelerate to and maintain Vy 100mph
3. Level off as briefed (pitch to horizon, 18"/2400 rpm, trim)

Steep Turns
1 Note heading (outside reference point) and altitude
2. Establish airspeed at 120-mph
3. Roll into a 45° bank turn
4. Back pressure and power to maintain altitude and airspeed
5. Continuous scan (out front, VSI, altimeter, airspeed indicator)
6. Lead rollout for heading by 20°
7. Reduce power and pitch as necessary to maintain altitude and airspeed

Turns Around a Point
1. Clearing turn, emergency landing spot, 600'-1,000'AGL (3,000 MSL)
2. Enter downwind at 105 mph
3. When point is under wing, begin left turn of approx. 30°* (steepest bank)
4. At crosswind, reduce the bank to compensate for decreasing tailwind
5. At upwind, bank will be shallowest due to slowest groundspeed
6. At crosswind, increase bank to maintain equidistance from ref. point
7. Complete two circuits Altitude +100' A/S +10 Kts. Hdg. +10°
*The maximum and minimum bank angles will vary according to wind speed and distance from the point

Short Field Takeoff and Landing
Takeoff (25° Flaps)
1. Taxi onto runway centerline (use all available runway)
2. Hold brakes
3. Apply full power
4. Release brakes
5. Announce (engine instruments checked) (RPM and Oil Gauge)
6. Announce "airspeed alive"
7. Accelerate to Vr (60 mph) and pitch to rotate
3. Positive climb on VSI or Alt- Gear - Up
8. Climb at Vx (85 mph) until obstacle is cleared
9. Announce "obstacles cleared"
11. Pitch for Vy Retract flaps to 10, passing 90mph retract flaps to 0
12. Vy-100 mph

Landing
1. Select runway touchdown point
2. Approaching abeam the tower on downwind-Gear down/3 green checked
3. Abeam touchdown point (15" MP, 10° flaps-below 125 mph)
4. Pitch for 100 mph
5. When touchdown point is 45° off shoulder turn base/Target Altitude 2800'
6. Extend 25° flaps and pitch for 90 mph.
7. Turn final, (Target Altitude 2600')extend 40° flaps, and pitch for 80 mph.
8. Smoothly reduce power so as to land on the selected point on the runway (must be at or beyond specified point, within 200 feet)
9.Upon landing, retract all flaps, apply maximum braking (no tire skid), full back pressure on yoke

Soft Field Takeoff and Landing
Takeoff (25° Flaps)

1. Yoke- full aft
2.. Taxi onto runway centerline smooth turn, no brakes
3. Apply full power
4. Announce (engine instruments checked) (RPM and Oil Gauge)
5. Announce "airspeed alive"
6. Maintain sufficient elevator pressure to keep the nose wheel just off the runway
7. Lift off at minimum airspeed
8. Reduce pitch to remain in ground effect
9. Pitch up at 85 mph
10. Positive climb on VSI or Alt- Gear - Up
11. Climb at Vx (85 mph) until obstacle is cleared if necessary
12. Announce "obstacles cleared"
13. Pitch for Vy Retract flaps to 10, passing 90mph retract flaps to 0
14. Vy-100 mph

Landing
1. Select runway touchdown point
2. Approaching abeam the tower on downwind-Gear down/3 green checked
2. Abeam touchdown point (15" MP, 10° flaps-below 125 mph)
3. Pitch for 100 mph
4. When touchdown point is 45° off shoulder turn base/Target Altitude 2800'
5. Extend 25° flaps and pitch for 90 mph.
6. Turn final, (Target Altitude 2600')extend 40° flaps, and pitch for 80 mph.
7. Smoothly reduce power so as to land be at or beyond the selected point on the runway
8.Upon landing maintain full back pressure on yoke. Add power as necessary to keep weight off nosewheel

* For slow flight and stalls set prop to 2500 RPM before reducing MP below 18". Keep prop at 2500 throughout maneuver and recovery

Reference Air speeds/mph

Vr 65
Vx 85 gear down/96 gear up
Vy 95 gear down/100 gear up
Vlo_{down} 150 Vlo_{up} 125
Best Glide 105
Vso 64
Vs1 71
Va 131 @ Max Gross wt.

Vno 170
Vne 214
Vfe 125

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COMMERCIAL MANEUVERS

PERFORMANCE MANEUVERS

Steep Turns

1 Note heading (outside reference point) and altitude
2. Establish airspeed at 120-mph
3. Roll into a 50-60° bank turn
4. Back pressure and power to maintain altitude and airspeed
5. Continuous scan (out front, VSI, altimeter, airspeed indicator)
6. Lead rollout for heading by 20°
7. Reduce power and pitch as necessary to maintain altitude and airspeed
8. Roll immediately into a 50-60° bank turn opposite direction.
9. Back pressure and power to maintain altitude and airspeed
10. Continuous scan (out front, VSI, altimeter, airspeed indicator)
11. Lead rollout for heading by 20°

Steep Spirals

1. Power to idle
2. Maintain level flight until 105 mph
3. Roll into 45º abeam selected point – downwind heading
4. Vary bank as necessary to maintain distance from point.
5. Clear engine on upwind heading
6. Roll out and recover to level flight on entry heading after 3 circles, 1080º of turn, at least 1000' AGL

Chandelles

1. Airspeed 120 mph
2. Roll into 30º bank advance power to 22"
3. Maintain 30º bank while increasing pitch to maximum during first 90º of turn.
4. Smoothly roll out while maintaining pitch to arrive at 180º of turn just above stall speed.

Lazy 8's

1. Entry speed 120 mph approx 17"/2400 rpm
2. Smoothly increase pitch and bank together to reach maximum pitch up and ½ maximum bank at 45º of turn.
3. Continue to increase bank while starting to decrease pitch to attain maximum bank and minimum airspeed while pitch transitions through level flight at 90º of turn.
4. Decrease bank while simultaneously continuing to decrease pitch to reach maximum pitch down and ½ maximum bank at 135º of turn.
5. Continue to decrease bank while increasing pitch to arrive at 180º ±10º of entry heading, entry altitude±100' ±10 knots of entry airspeed.
6. Repeat in turn to the opposite direction

Accelerated stall

1. Establish 90 mph IAS
2. Establish a steep-bank level turn – 15" MP
3. Smoothly increase back pressure until a stall occurs
4. Recover by releasing back pressure, rolling wings level and adding power as necessary to maintain or recover to level flight

GROUND REFERENCE MANEUVERS

8's on pylons

1. Entry speed 120 mph, altitude approximately 1000' AGL
2. Select pylons
3. Enter 45º downwind between pylons
4. Abeam first pylon roll to put reference line on the pylon
5. Vary pitch as required to maintain pivotal altitude/reference line on pylon
6. Approaching 90º from entry heading scan for second pylon
7. Rollout to cross midpoint between the pylons with wind correction anle
8. Abeam second pylon roll to put reference line on the pylon
9. Vary pitch as required to maintain pivotal altitude/reference line on pylon
10. Roll out on entry heading

TRAFFIC PATTERN

180º Power off accuracy landing

1. Downwind leg no more than 1000' AGL
2. Gear down
3. Power to idle abeam desired touchdown point – 1000' marker
4. Pitch for best glide 100-105 mph
5. Prop – low rpm if desired
6. Turn toward touchdown point
7. Prop – high rpm no later than 90º from runway

EMERGENCY PROCEDURES

Emergency Descent

1. Power – Idle, Gear –down, Prop- forward
2 30º-45º bank
3. Establish 120 mph

Recovery

1. Increase pitch for level flight
2. Retract landing gear - Airspeed below 125
3. Re-establish cruise RPM and MP