Figure 9-3. Pattern A.

NOTE
Initial square pattern should be based on cardinal headings, such as MH 360 or MH 270, and on an IFR-like altitude (4,200 MSL, etc.); later patterns can be based on headings such as MH 030, MH 135, MH 217, etc.
Figure 9-4. Pattern B.

LEVEL FLIGHT: Straight-and-Level; Timed Turns (standard rate); Racetrack Holding Pattern.
Figure 9-5. Pattern C.
LEVEL FLIGHT: Straight-and-Level; Procedure Turn; Teardrop Turn; Racetrack Pattern. Constant speed; All turns standard rate; IFR-like altitude.

NOTE Pattern not drawn exactly to scale because the straight paths may overlap.

NOTE Pilots should refer to this pattern in the cockpit. This is for practice in following written instructions; you must work the pattern into your scan. Part of doing these maneuvers is to learn how not to get lost in navigating a procedure. Success requires a “what’s next” mind-set and for you to anticipate aircraft control.

Figure 9-6. Pattern D.
Figure 9-7. Pattern E.

1. Enter a normal climb

2. Level off 500 ft higher and accelerate to normal cruise speed

3. Commence a normal descent

4. Level off 500 ft lower and at normal cruise speed

CLIMBS/DESCENTS at Normal Airspeeds

START Normal Cruise Speed

500 ft gain in altitude
Normal climb
Normal cruise

Normal cruise
500 ft loss in altitude
Normal descent
Normal cruise
Figure 9-8. Pattern F.

1. Enter climb at same speed
2. Level off 500 ft higher and maintain specific speed
3. Commence descent at specific speed
4. Level off 500 ft lower and maintain specific speed

CLIMBS/DESCENTS at Specific Airspeeds

START at Low Cruise Speed
Figure 9-9. Pattern G.

VERTICAL S’s at a Specific Airspeeds

1. Enter a 500 fpm climb for 1 min (should gain 500’)

2. Enter a 500 fpm descent for 1 min (should return to start altitude)

3. Enter a 400 fpm climb for 1 min, then 400 fpm descent

4. 300 fpm climb and descent

5. 200 fpm climb and descent

A. Straight (on a constant heading).
B. Straight, with 500 fpm climbs and descents.

C. Vertical S’s with Turns. As you enter the climb commence a standard-rate turn left or right. At top of climb, reverse direction of turn and commence descent. Complete remaining S’s in same sequence.

START
at
Low cruise speed and maintain throughout maneuver

Not drawn to scale
Figure 9-10. Pattern H.
Figure 9-11. Pattern I.

S-TURNS ACROSS A CARDINAL HEADING With configuration changes and heading changes

This will help you speed up your scan rate, and learn the power settings and altitude adjustments required during instrument approach procedures.

SUGGESTED ACCURACIES
- Altitude: 100 ft
- Airspeed: 10 KIAS
- Bank angle: 5°

PROCEDURES
- Make heading changes 15 either side of the selected cardinal heading.
- Use maximum bank angle 10°.

If flying a high-performance airplane:
- Option 1 – slow it down by using 20-degree (larger) heading changes and stabilize between config changes.
- Option 2 – maintain a heading for a short time (30 seconds) before going right into the next config change to promote stabilization.

(Landing configuration and airspeed)

(Typically used during final approach to Minimum Descent Altitude or in a circling approach)

(Typically used during an instrument approach prior to reaching the Final Approach Fix)

(Typical configuration and airspeed when maneuvering to commence an instrument approach)

START
- Config. #1: aircraft clean
- Airspeed: approach speed + 40 KIAS

RETURN TO CONFIG. #1 & AIRSPEED
- Config. #1: aircraft clean
- Airspeed: approach speed + 40 KIAS

RETURN TO CONFIG. #2 & AIRSPEED
- Config. #2: approach flaps gear up
- Airspeed: approach speed + 40 KIAS

RETURN TO CONFIG. #3 & AIRSPEED
- Config. #3: approach flaps gear down
- Airspeed: approach speed + 30 KIAS

CHANGE TO CONFIG. #4
- Config. #4: full flaps gear down
- Airspeed: approach speed

CHANGE TO CONFIG. #3
- Config. #3: approach flaps gear down
- Airspeed: approach speed + 30 KIAS

CHANGE TO CONFIG. #2
- Config. #2: approach flaps gear up
- Airspeed: approach speed + 40 KIAS
Figure 9-12. Pattern J.
This is a lesson in cockpit management and thinking ahead. When done in the airplane, file IFR. Use the autopilot, as this is a lot of headwork.

Figure 9-13. Pattern K, navigation and cockpit technology.