XII.E. Recovery from Unusual Flight Attitudes

About: When outside visual references are inadequate or lost, the VFR pilot is apt to unintentionally let the airplane enter a critical attitude ("unusual attitude").

TSW: Become comfortable recovering from unusual attitudes while flying the airplane without outside visual references

How: This is practiced by the student closing their eyes, the instructor placing the aircraft in an unusual attitude, then once the student opens their eyes reestablish S&L "under the hood" by reference to the flight instruments

Maneuvers

Nose-high decreasing airspeed

1. Indicated by :
    a. Decreasing airspeed on airspeed indicator.
    b. Increasing altitude on altimeter and positive rate on vertical speed indicator
    c. Bank on attitude indicator/heading indicator/turn coordinator
2. Recover by:
    a. Reducing pitch attitude
    b. Simultaneously increasing power
    c. Leveling the wings as necessary.

Nose-low increasing airspeed

3. Indicated by:
    a. Increasing airspeed on airspeed indicator
    b. Decreasing altitude on altimeter and negative rate on vertical speed indicator
    c. Bank on attitude indicator/heading indicator/turn coordinator.
4. Recover by:
    a. Reducing power.
    b. Leveling the wings.
    c. Raising the nose gradually.

Discussion Points:

1. Consequences of attempting to recover from an unusual flight attitude by feel rather than by instrument indications; not trusting instrument indications; not trusting instrument indications can lead to rapid altitude loss as a result of inadvertent steep spirals or power-on/power-off stalls.
2. When an unusual attitude is noticed on your crosscheck, the immediate problem is not how it got there, but what is the aircraft doing and how to get it back to straight and level flight as quickly as possible

Nose High

Nose Low

Common errors:

3. Failure to recognize an unusual flight attitude.
    a. Not interpreting the information provided correctly.
    b. Not sure of which instruments provide pitch, bank, and power information.
4. Inappropriate control applications during recovery:
    a. Not following the correct sequence of actions in recover;
    b. **In descents:** increasing back pressure before leveling the wings, not reducing power in descent: overcompensating on recovery by increasing pitch attitude past that for level flight.
    c. **In climbs:** not lowering the nose fast enough; lowering the nose too far; not adding power
5. Failure to recognize, from instrument indications, when the airplane is passing through a level flight attitude:
    a. Not cross-checking instruments
    b. Not using the attitude indicator and/or airspeed indicator/altimeter to determine level flight.

Evaluations/ Standards:

6. Shows knowledge of attitude instrument flying during maneuver attitudes.
7. Recognizes unusual flight attitudes solely by reference to instruments; recovers promptly to a stabilized level flight attitude using proper instrument cross-check and interpretation and smooth, coordinated control application in correct sequence.