

Diamond Star DA40-180

Enjoy:

- FAST Cruise
- Quick climb
- SAFE – 26G cockpit
- Lots of avionics to improve situational awareness
- VERY accurate fuel flow system
- A sports car, not a sedan
- Exceptional visibility (sitting in a fishbowl)
- FUN TO FLY
- Fast X-country bird

Transition to the DA40:

- 1) **This is NOT your father's airplane**
 - use the checklist religiously
- 2) **Adopt an owner mentality**
 - this is YOUR airplane
 - treat it as if it worth a LOT of money (because it is!)
 - report any abuse of the airplane
 - NO Pets Allowed
 - NO Smoking Allowed
 - Use screw cap bottles, no open cup liquids (tons of intricate stuff under the seats)
 - Remove all of your trash when you leave (including empty oil bottles)
- 3) **Free castoring nose wheel;**
 - prone to excessive brake usage;
 - slow taxi (12kts), USE FULL RUDDER TRAVEL, then tap brakes,
 - avoid riding the brakes
 - avoid too much braking on takeoffs; USE RUDDER
 - heels on the floor, balls (of the feet) on the rudder pedals on landing
 - use tow bar when trying to back airplane into a spot. (Do not push on air frame!)

- 4) Extra 10 feet of wing length,
 - wing is not very high off the ground
 - watch out for obstacles while ground maneuvering,
 - ride is a little rougher in turbulence
 - floats as badly or worse than the Archers
 - on the positive side: very docile in the stall
- 5) T-Tail
 - prop blast does not go over elevator, so elevator authority is delayed
 - you have no elevator authority and then, YIKES, you got all you need
 - don't get low and slow
- 6) Composite construction instead of aluminum,
 - NO SCRAPING ice; (did I mention no scraping of ice ?)
 - put in heated hangar if frost present (or wait to melt)
 - nothing more abrasive than a terry-cloth towel
 - do not put luggage on wings (do not sit on wing, do not put anything on the wing!)
- 7) Show passengers
 - how to get in (you do not need to stand on seats to get in!)
 - how to close rear door
 - make sure canopy does not close on fingers, clothing, headset cords, etc
- 8) Seats do not move. (Bring a seat cushion for pilots less than 5'6")
- 9) The rudder pedals move instead
 - look at the center tube for the rudder pedals and memorize which hole setting is best for you, then set it before you get in
 - easier to adjust rudder pedal position while standing outside the aircraft
- 10) Control stick instead of control yoke
 - no (tight) skirts, ladies
 - insure you have full travel of stick before flight
 - passengers 6' 3" or taller won't fit in front seats
- 11) Need hat in summer – it gets hot under that bubble canopy
- 12) POH calls for you to draw fuel (for a minute) from both tanks before takeoff
- 13) POH Calls for no more than 10 gal differential between tanks
- 14) Consider using the clock approach for switching tanks:
 - If Mickey's big hand is left of the 6 and 12, use the left tank
 - If Mickey's big hand is right of the 6 and 12, use the right tank
- 15) Picks up speed when nose pointed down
 - gentle touch on the stick
 - use elevator trim
 - gentle yet positive pulls out of dives
- 16) Uses flaps on all Take-offs (first "notch")
 - retract flaps after take off (positive rate of climb and 500 ft AGL)
 - reduce flaps to T/O position on Go-arounds
 - reduce flaps to T/O position on Touch & Go's
 - rotation speed is about 59 knots
- 17) Plane does not want to slow down
 - plan descents well in advance;
 - avoid shock cooling engine (keep CHT above 300 degrees)
 - continue to retard throttle on descents
- 18) Pull engine back to 15 inches manifold pressure in traffic pattern
 - SLOW DOWN !!
 - reduce power,
 - pitch up to slow down and hold altitude
 - 80 kts on downwind, 75 kts on base
 - approx 71 knots on final; 66 at touchdown
 - if you're 5 or 10 knots too fast the DA40 will float and float and float and ...

- keep “flying” the airplane until it is tied down. Don’t relax flying it when the wheels touch mother earth!
- 19) Has fuel injected engine
- no primer;
 - no carburetor heat
 - prime via fuel pump (bring to 17 psi then shut off pump) and mixture up, note fuel flow, then bring mixture back to cut-off
 - crank engine and advance mixture as it starts firing
 - special hot start procedure, refer to checklist
- 20) Prone to vapor lock
- use electric fuel pump on high density altitude days at altitude of 8000’ DA and higher
- 21) Has constant speed prop
- cannot tell engine power without looking at manifold pressure gauge
 - that fixed pitch prop clue of changing RPM is NOT present
 - pull prop back to 2400 rpm at 500 agl in climb
 - have to continue to increase throttle in climb, reduce throttle in descent
 - save a bunch of \$\$ by retarding RPM to 2100 in cruise (save tach time)
- 22) Has a high function fuel computer
- have to tell computer that plane has been refueled and how much
 - fuel flow reading is very accurate
 - fuel remaining only as accurate as what you tell the computer at beginning of flight
- 23) Tach reading is digital
- resist temptation to set to EXACTLY 2400 RPM (avoid fixation, fly the plane)
 - same warning about setting manifold pressure (avoid fixation, fly the plane)
 - read up on how to access tach time recorder. (You turn on the master switch but don't start the engine, the VM1000 first goes through a few seconds of self-test in which all the segments are lit and then the field labeled "RPM" shows the tach time.)
- 24) Fuel gauges read 17 gal even when 20 gallons on board
- only after 3 gallons is burned out of each tank will gas gauges start going down
 - Glendale club reports fuel gauges were accurate within a tenth of a gallon
- 25) Special caution needed in windy conditions when opening canopy
- don’t let the wind slam it shut
 - watch out to see wind does not catch it like a sail
 - watch your passengers; make sure they don’t get hit with it if the wind suddenly closes the canopy
- 26) 40 gallons – not 50 gallons on board
- 20% less endurance than Archers
 - pay special attention on how much IFR flight plans must be shortened
- 27) Digital EGT on all four cylinders
- master the special leaning procedure that uses a special feature of the digital EGT gauges
- 28) Overweight with full fuel and four adults
- get familiar with weight/balance calculations
 - watch out for things in kilograms instead of pounds (2.2Kg per pound)
 - passenger and baggage capacity (payload) with the 40-gallon fuel tanks full is about 600 pounds
- 29) One distraction when landing in slightly gusty conditions is the intermittent sounding of the stall warning horn.
- the stalling speed with full flaps is 45-49 knots.
 - the stall warning horn will sound when the plane is hit by a gust.

- avoid the temptation to push the stick forward a bit and land too fast, thus chewing up excess runway.
- 30) Instrument Lighting:
- all instruments are backlit with adjustable intensity.
 - In addition, an electroluminescent floodlight, like what Timex uses in its Indiglo watches, is available just underneath the panel's visor.
 - you can fly safely with either system or both.
 - the floodlight is useful for reading a chart.
- 31) The landing and taxi lights are out near the left wing tip
- this isolates them from engine vibration greatly extending their useful life.
 - be careful about obstacles around the right wing.
- 32) Horizontal Situation Indicator instead of Directional Gyro
- VOR and ILS are much easier to interpret
 - Glide Slope Indication is part of HSI
- 33) Two GPS's on board
- can be sync'd so that map info is on one and numeric data on the other
- 34) Autopilot can be used for:
- constant vertical speed climbs
 - constant vertical speed descents
 - altitude capture (be alert for power changes when you level off)
 - altitude holds
 - ILS GS capture & track (you must control speed via throttle)
- 35) No vacuum system
- instead there are two standby electric (battery) systems
 1. One (Essential Bus) powers one radio, landing lights, transponder, pitot heat, etc. (battery will only last a half hour)
 2. The other powers only the flood light and the steam gauge electric Attitude Indicator (Emergency battery should last 1.5 hours)
 - learn the systems, an electrical failure is VERY SERIOUS on this bird
 - report ANY lights out in the annunciator panel