# Lancair IVP Systems

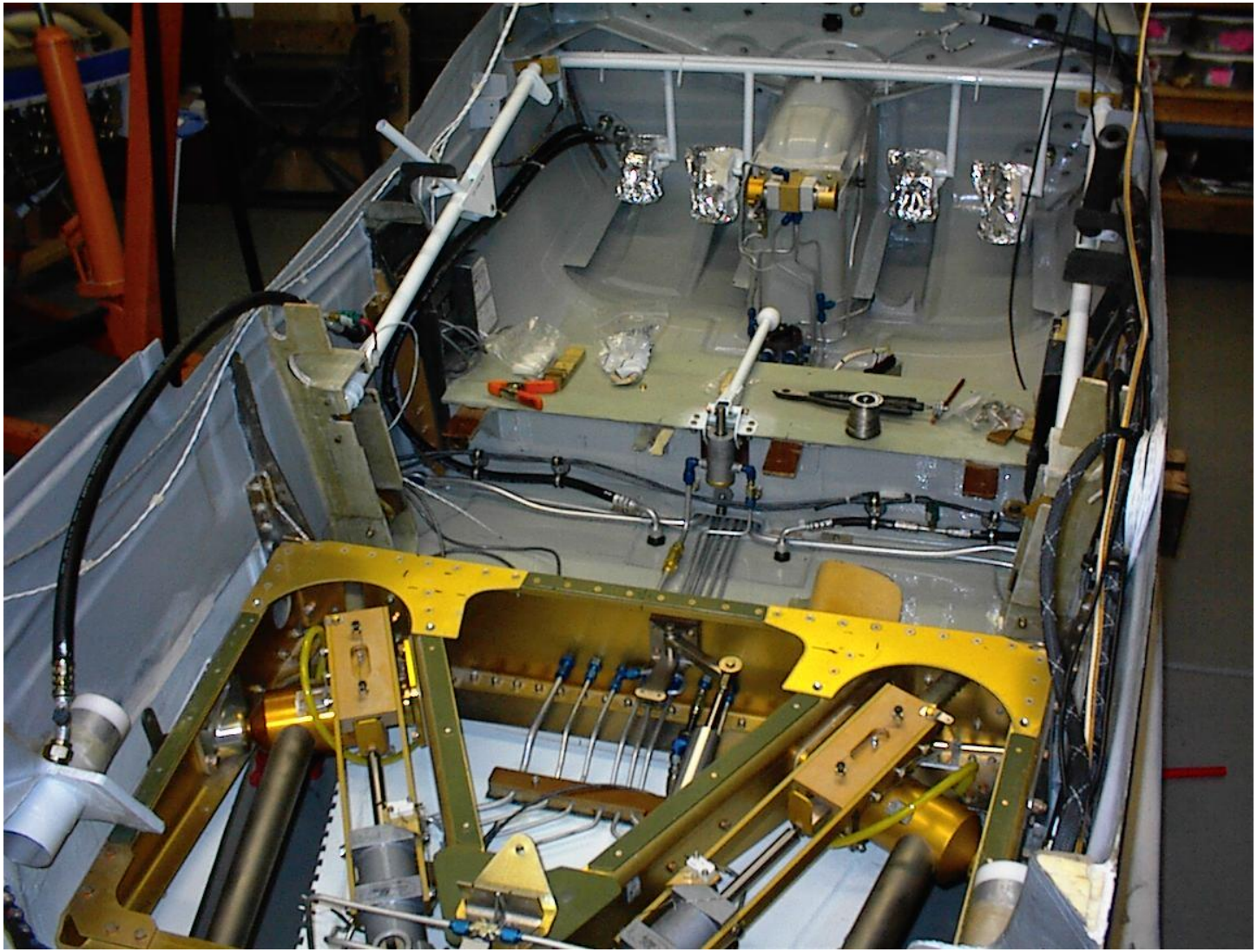
# Lancair IVP

- General
  - 4 place Experimental AB category
  - +4.4 / -2.2 G's utility
  - NOT Aerobatic category
  - GWT established by builder (3400# rec. by Lancair)

# Lancair IVP

- 98 square foot wing/ 108 w. winglets
- 80-110 gallons of fuel for IV/ IVP's
- 5 PSID cabin pressurization
- Continental TSIO 550 (350 hp) engine

# Lancair IV Systems



# Lancair IVP Systems

- Engine
- Fuel
- Hydraulic
- Electrical
- Landing Gear
- Flaps
- Flight Controls
- Pressurization

# Lancair IVP Systems

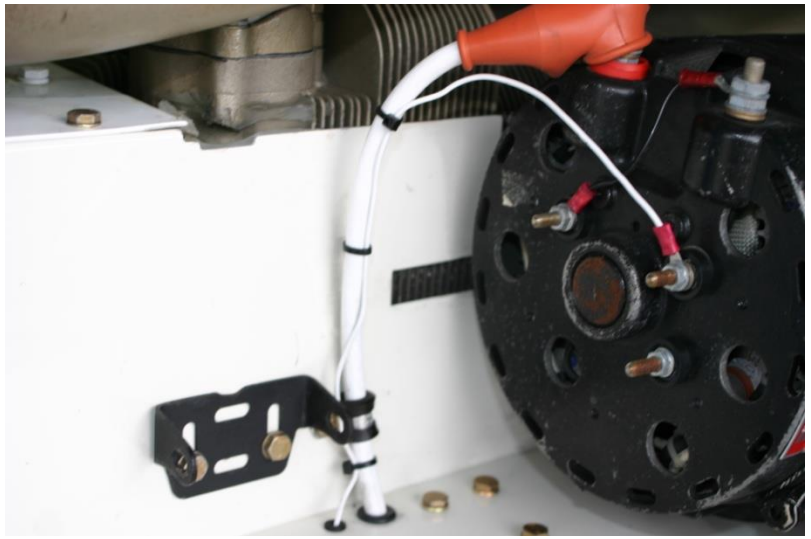
- Engine
  - TCMTSIO 550B, E or C
  - 350 hp
  - 6 cylinder
  - Twin turbo charged
  - 3 Intercoolers

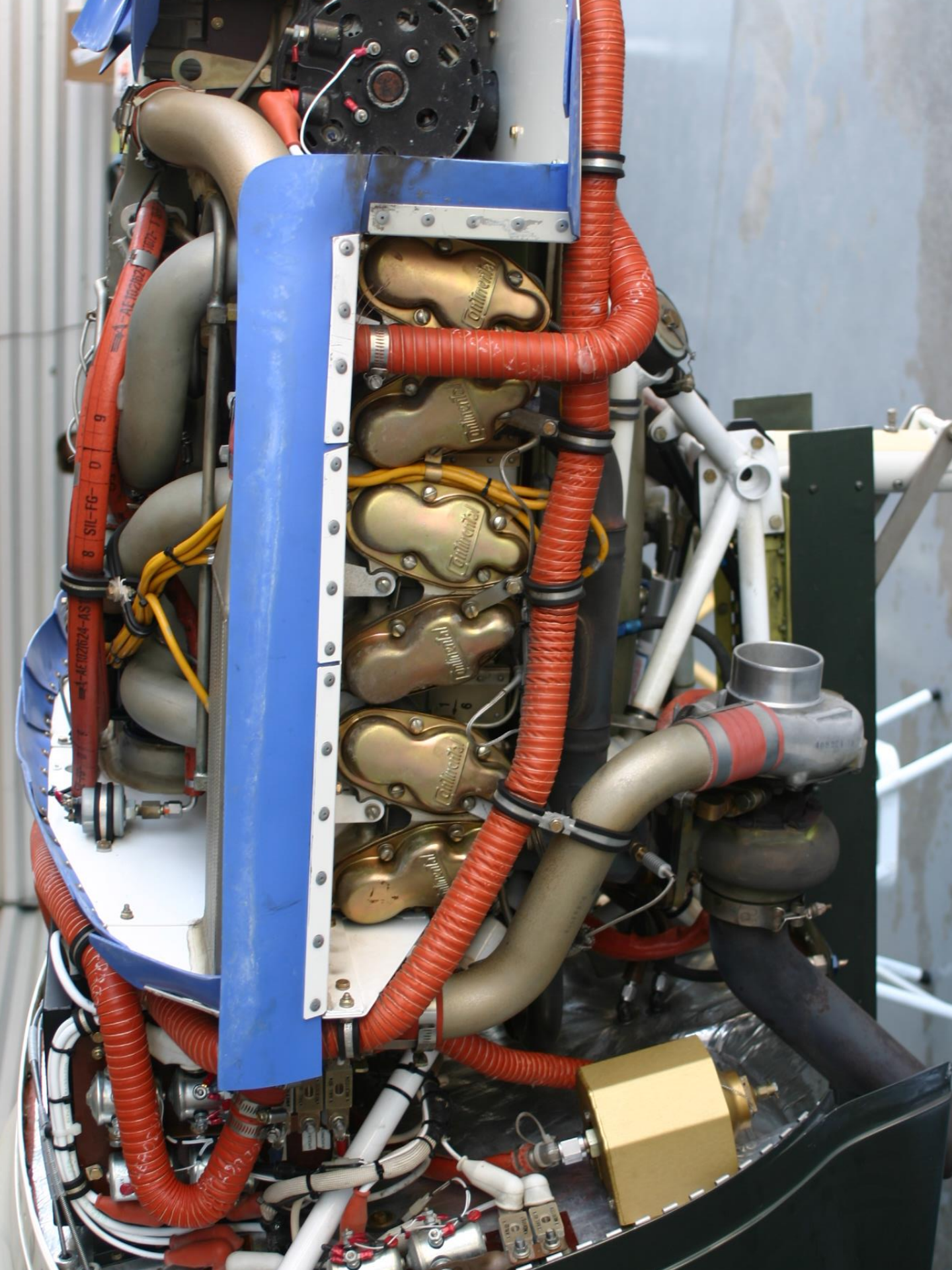
# Lancair IVP Systems

- Fuel flow <45 gph at WOT
- >48 gph will flood engine on T/O

# Lancair IVP Systems

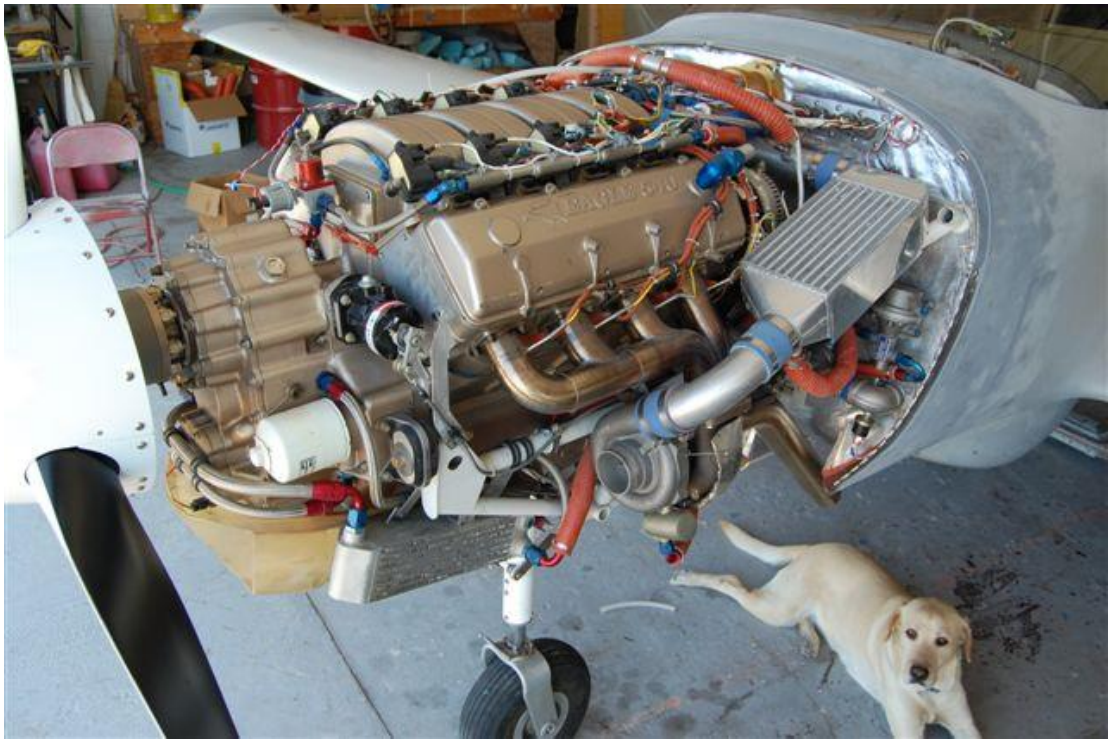
- Engine
  - Cooling air is extremely important
  - Max 400 degrees F CHT climb
  - 380 degrees F cruise
  - Affected by baffling




Continental

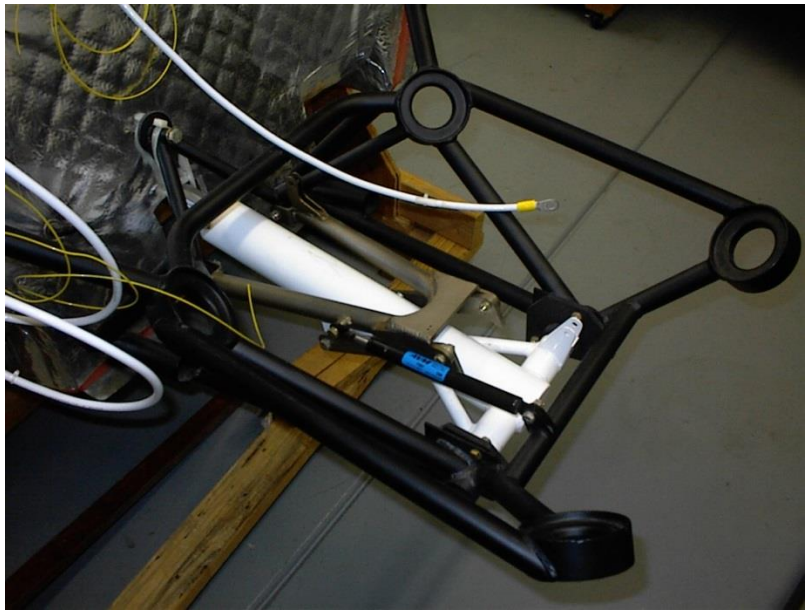
# Lancair IVP Systems

- V8 applications



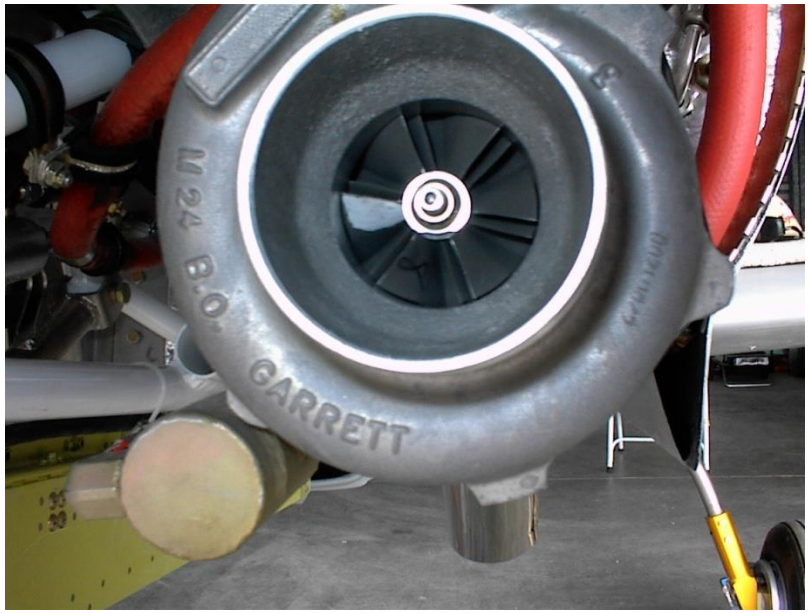
# Lancair IVP Systems

- Engine
  - Bed Mount system



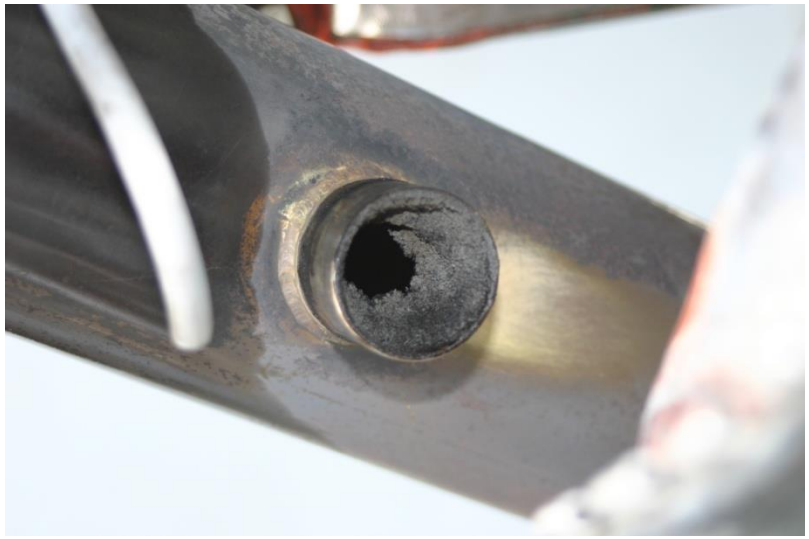
# Lancair IVP Systems

- Turbocharger
  - Keep FOD free
  - Cool down period not nec. (OWT)
  - Support bracket check at 100 hr/ annual for cracks
  - Oil lines check for leaks & chafing



# Lancair IVP Systems

- Engine/ Exhaust
  - check oil air sep line at exhaust for coking at annual



# Lancair IVP Systems

- Engine Limits from TCM (except where noted)
  - 2700 RPM
  - 38.5 inches MP (E ), 38.0 (B)
  - 10 psi oil press (min)
  - 30-60 psi oil press (normal)
  - 240 deg F max oil temp.
  - 100 deg F min oil temp for takeoff
  - 160-200 deg F normal oil temp
  - 380 max cruise CHT / 400 max climb CHT per GAMI
  - 350 max continuous HP

# Lancair IVP Systems

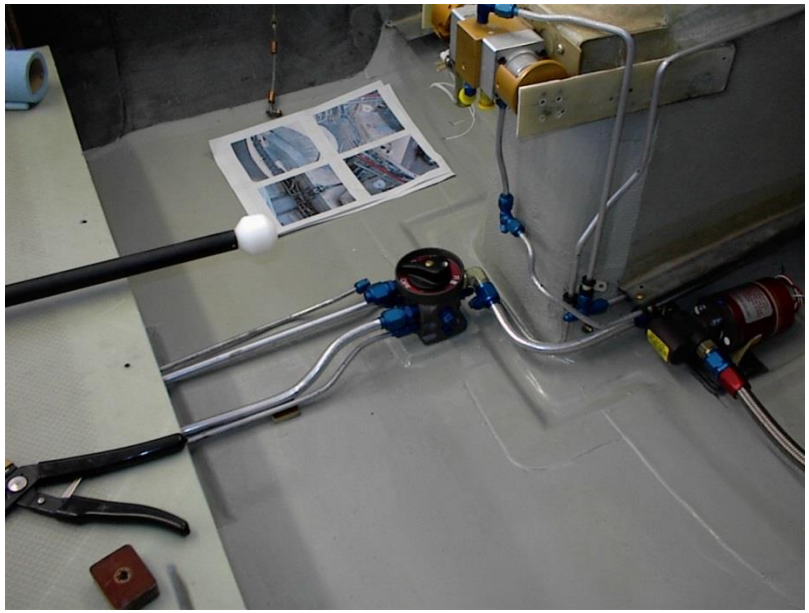
- Fuel System
  - TCM Continuous flow (fuel returns to tank selected)
  - 80-110 gallons wet wings
  - Gravity fed
  - Duke electric boost
  - Primer boost for start
  - 2- 4 quick drains
  - Fuel filter/ sump on firewall

# Lancair IVP Systems

- Fuel System
  - Fuel filter/ sump on firewall

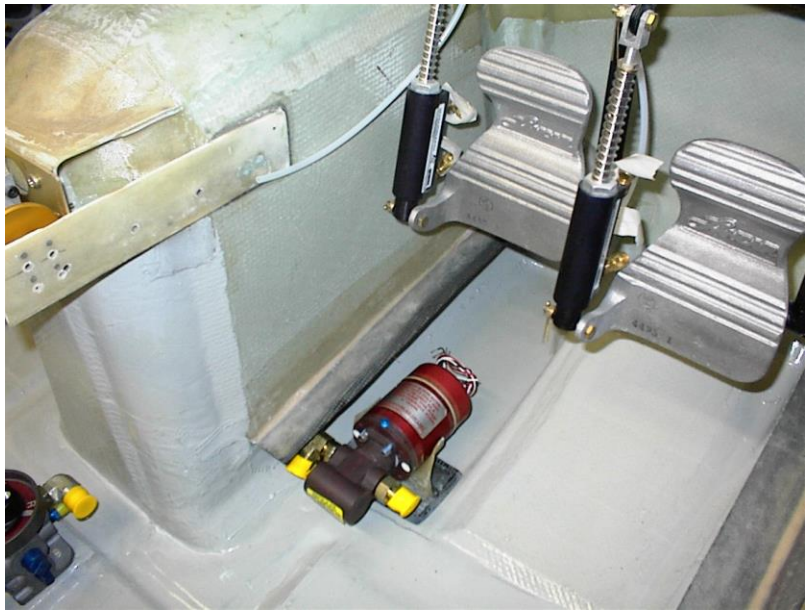
# Lancair IVP Systems

- Fuel System
  - Fuel Selector Valve
  - Left/ Right/ OFF
  - Can leak internally or suck air



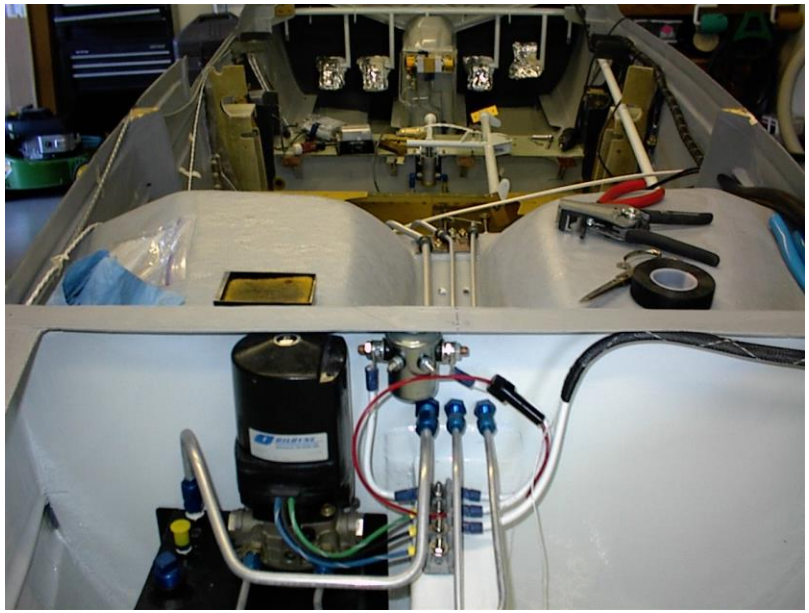
# Lancair IVP Systems

- Fuel System
  - Dukes fuel pump
  - Can fail internally
  - Overboard line should be vented out



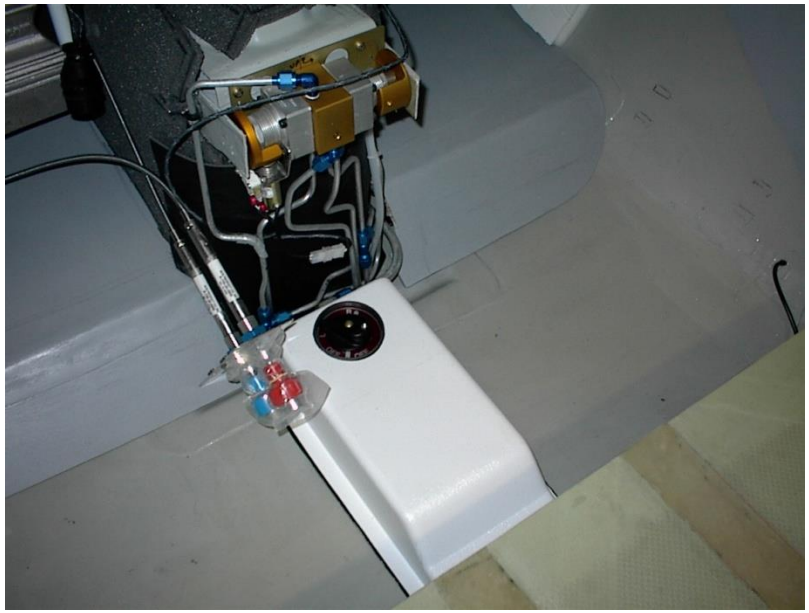
# Lancair IVP Systems

- Hydraulics
  - 1100 psi
  - Oildyne (Parker) Electro-hydraulic res./ pump assy.
  - Accumulator
  - Operates flaps & gear
  - Service system with Mil H 5606 fluid



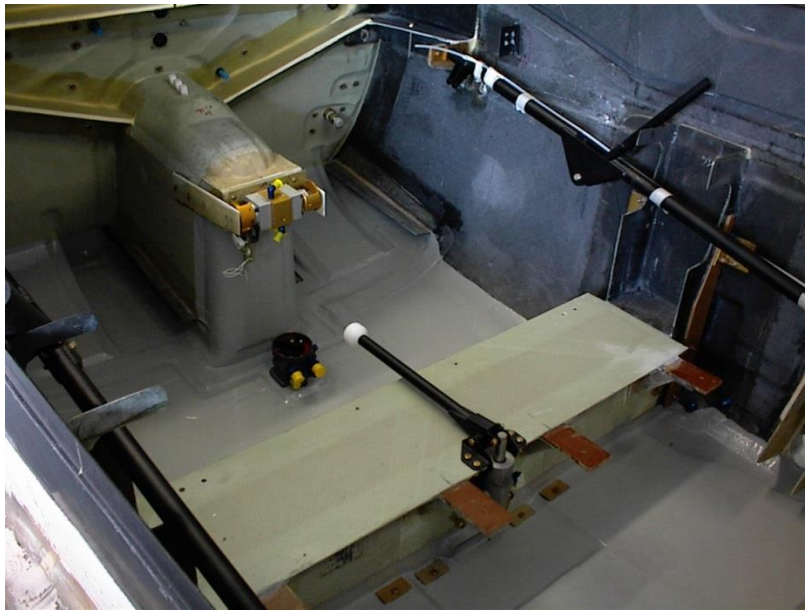
# Lancair IVP Systems

- Hydraulics
  - Controlled by hydraulic valve on panel



# Lancair IVP Systems

- Hydraulics
  - Emergency hand pump
  - Pumps down mains only
  - Nose gear is pushed down by 110 psi gas strut
  - Check operation in-flight annually

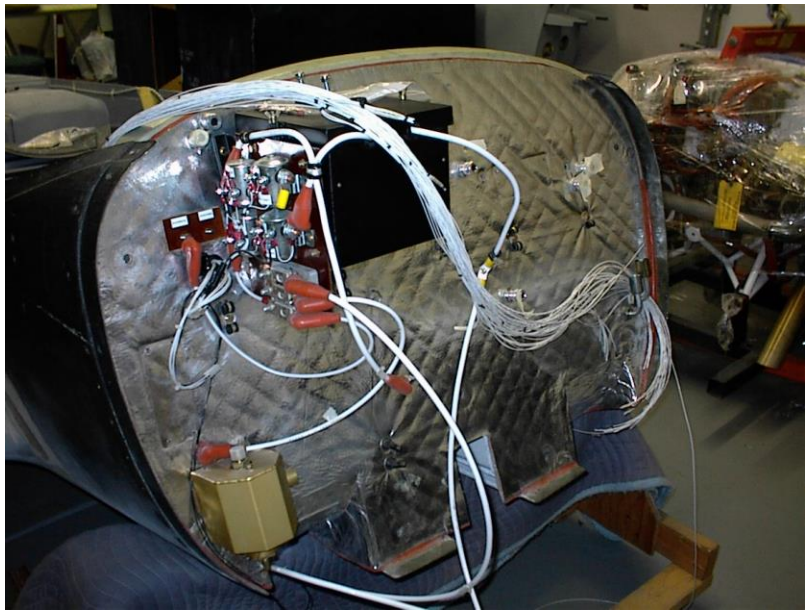


# Lancair IVP Systems

- Hydraulics
  - Accumulator
  - Check flap operation with pump off to determine if accumulator is airworthy

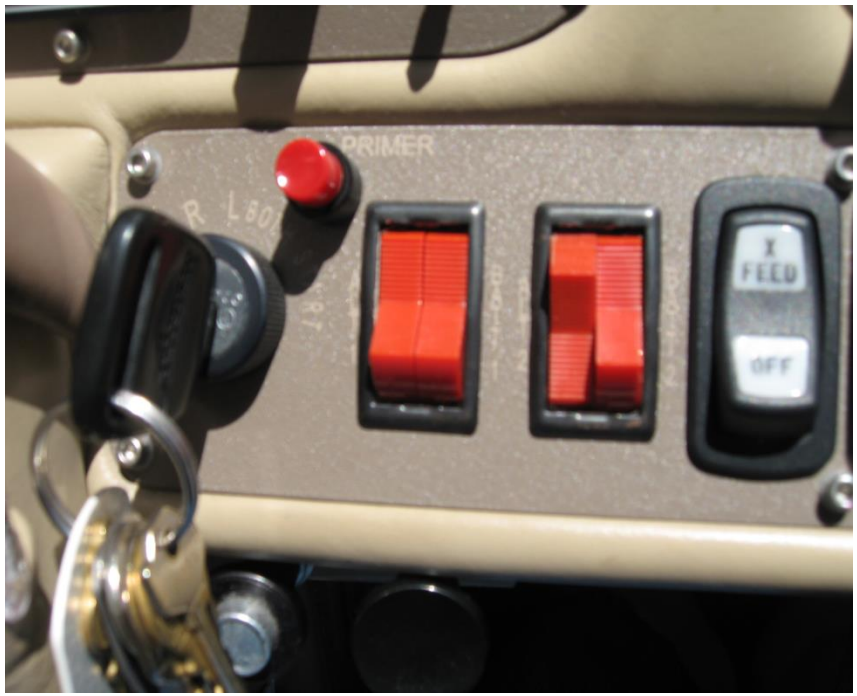
# Lancair IVP Systems

- Electrical
  - Battery on firewall
  - Electrical control panel
  - Starter solenoid
  - Battery solenoid
  - CB panel



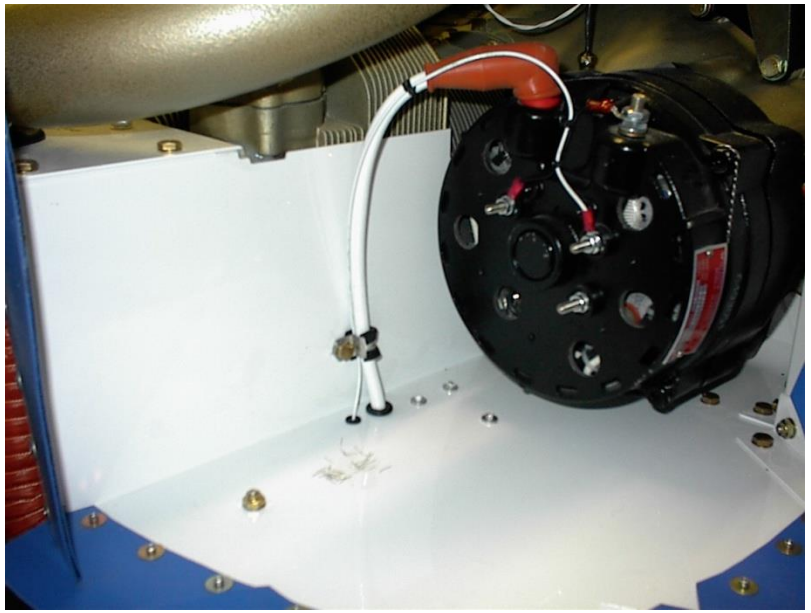
# Lancair IVP Systems

- Electrical
  - Battery/ master switch
  - #2 batt/ master



# Lancair IVP Systems

- Electrical
  - 12 or 24 volt battery(s) on firewall or elsewhere
  - 14v or 28 v system
  - 60 -100 amp alternator
  - Standby electrical system?



# Lancair IVP Systems

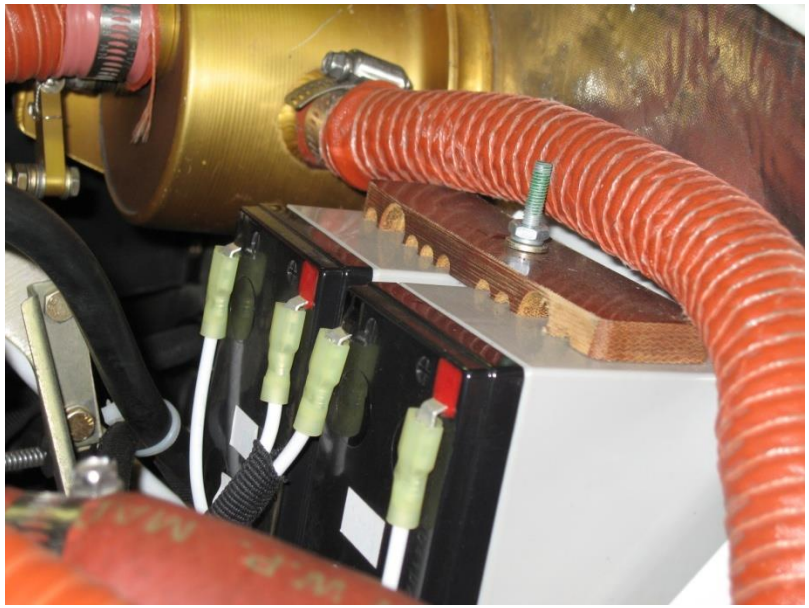
- CB Panel

# Lancair IVP Systems

- Main battery

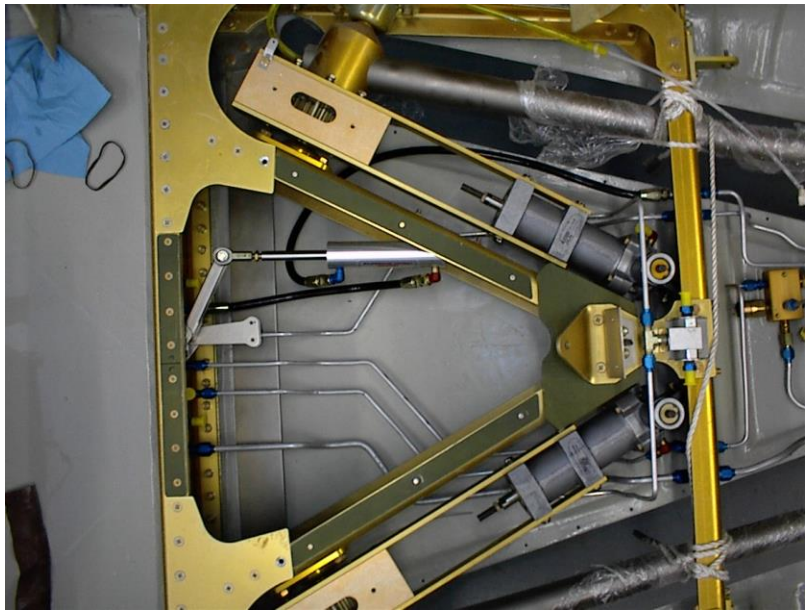
# Lancair IVP Systems

- Standby battery



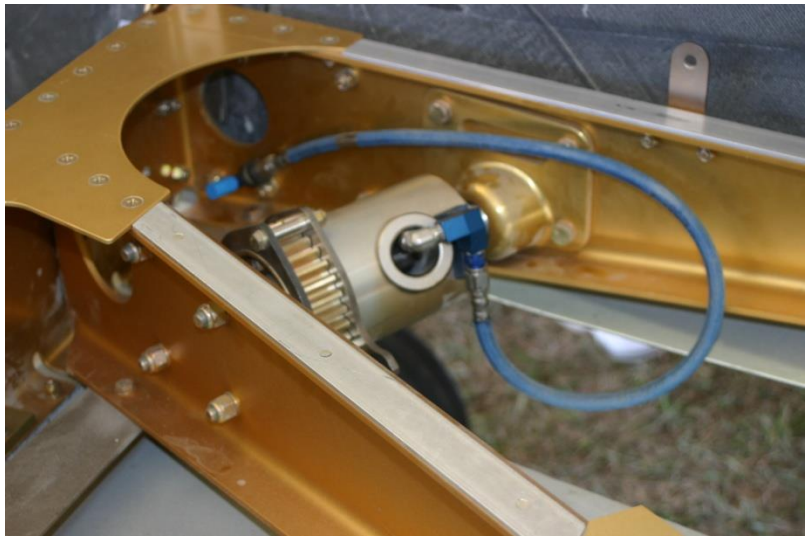
# Lancair IVP Systems

- Landing Gear
  - Mains hydraulically actuated
  - Internal downlock
  - Held up by hyd pressure (no uplock)
  - Rack and pinion operation
  - Grease rack at annual/ 100 hour
  - SB on nylaflow brake lines



# Lancair IVP Systems

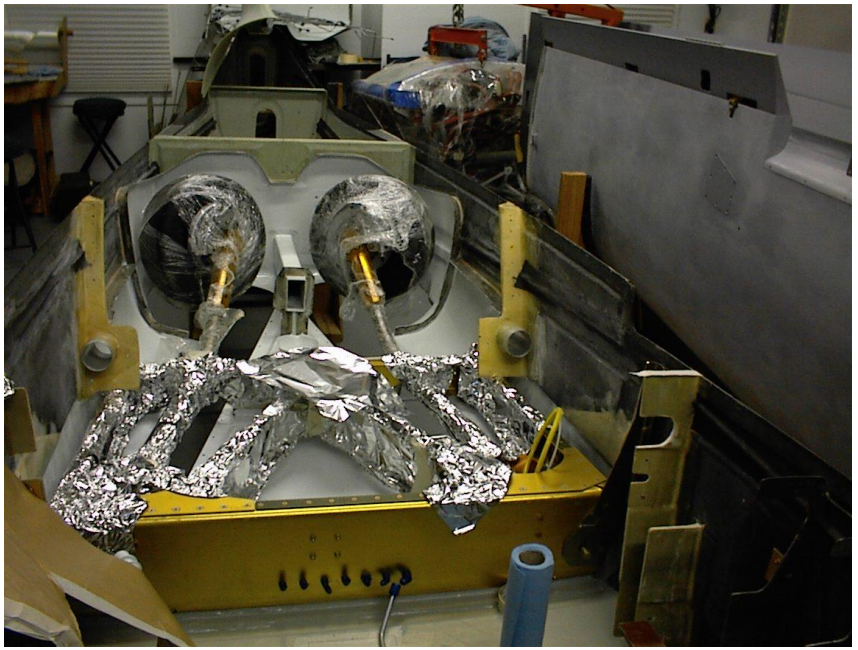
- Landing Gear
  - SB on nylaflow brake lines



# Lancair IVP Systems

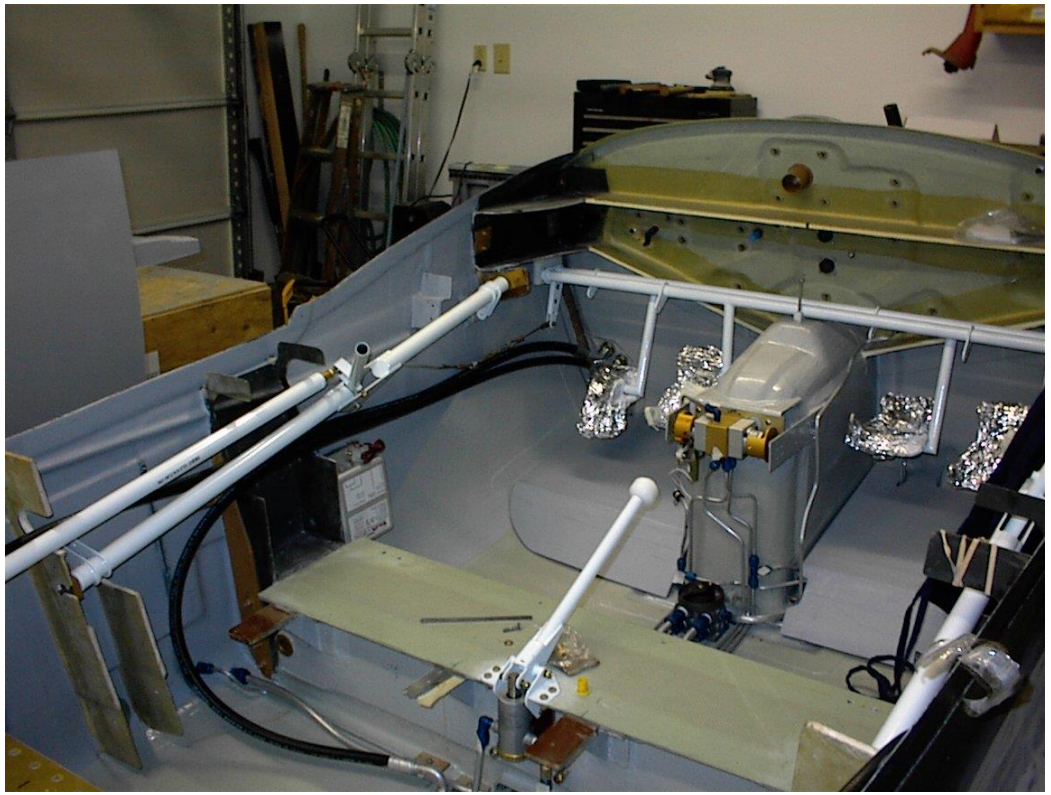
- Cleveland wheels and brakes
- Gear door clearance is an issue

# Lancair IVP Systems



# Lancair IVP Systems

- Flight Controls



# Lancair IVP Systems

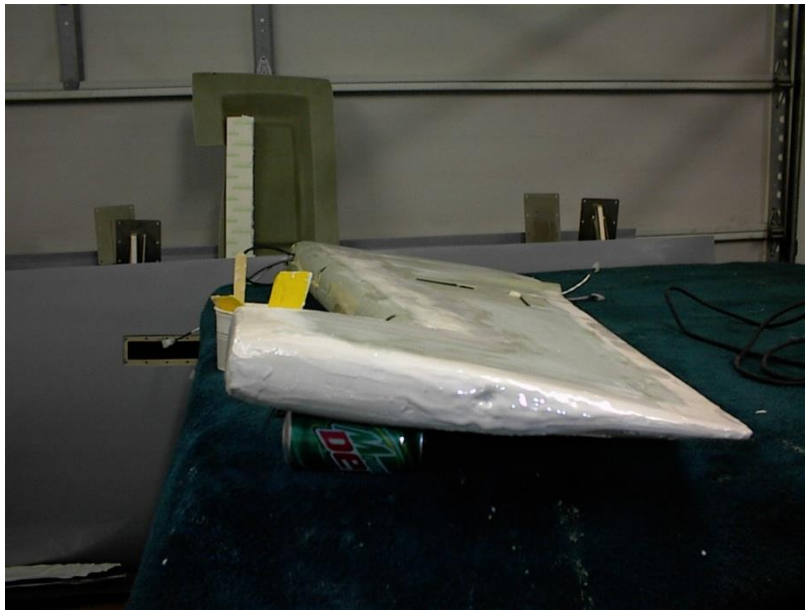
- Ailerons
  - Counterweighted with lead on leading edge
  - Travel +14/-20 degrees

# Lancair IVP Systems

- Rudder
  - Mass balanced with lead counterweight
  - Trim pocket

# Lancair IVP Systems

- Rudder
  - Mass balanced with lead counterweight
  - Trim pocket

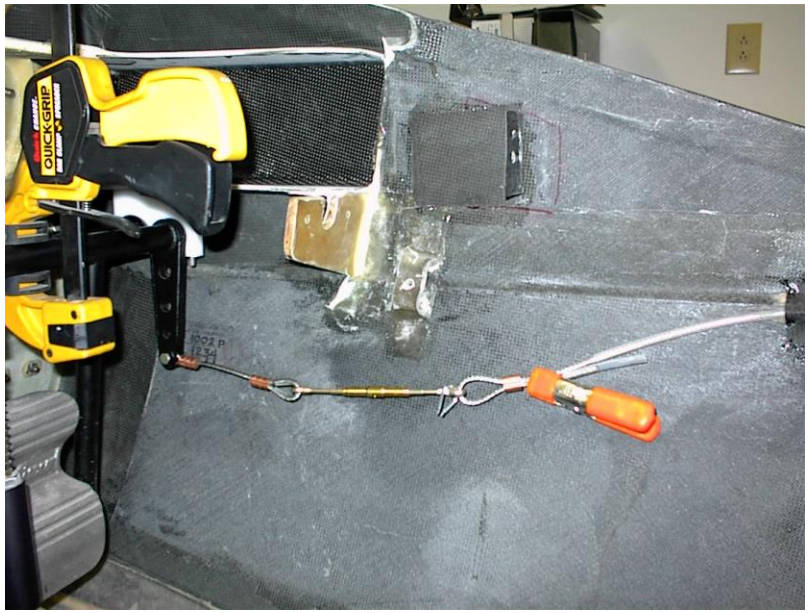


# Lancair IVP Systems

- Flight Controls
  - Elevator & aileron pushrods
  - Rudder cables
  - All pass through pressure vessel

# Lancair IVP Systems

- Flight Controls
  - Rudder cables



# Lancair IVP Systems

- Flight Controls
  - Full Slotted Fowler Flaps
  - Vented

# Lancair IVP Systems

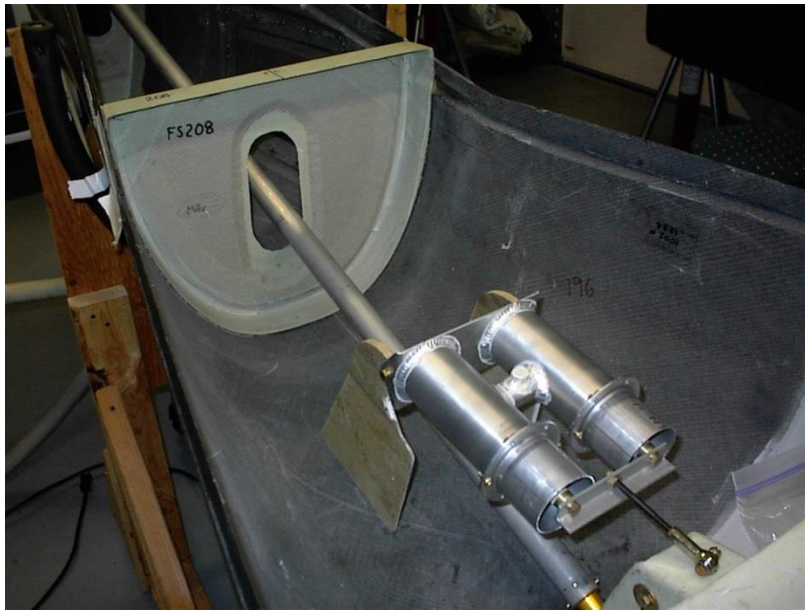
- Flight controls
  - Flap actuator
  - Hydraulically operated
  - Flow control valve controls flap speed

# Lancair IVP Systems

- Flight Controls
  - Elevator bell crank

# Lancair IVP Systems

- Flight Controls
  - Compensator



# Lancair IVP Systems

- Compensator system with elevator boots

# Lancair IVP Systems

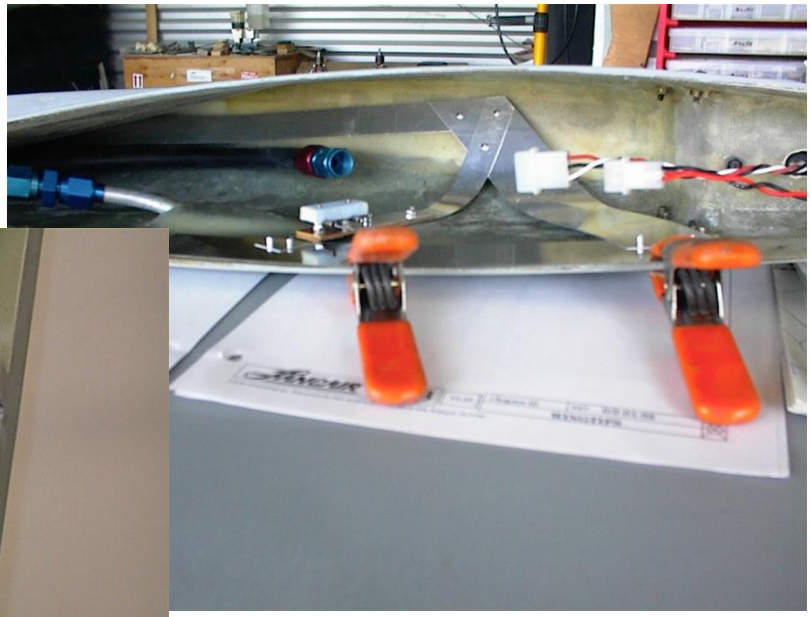
- Non compensator system

# Lancair IVP Systems

- Speed brake pocket

# Lancair IVP Systems

- Antenna

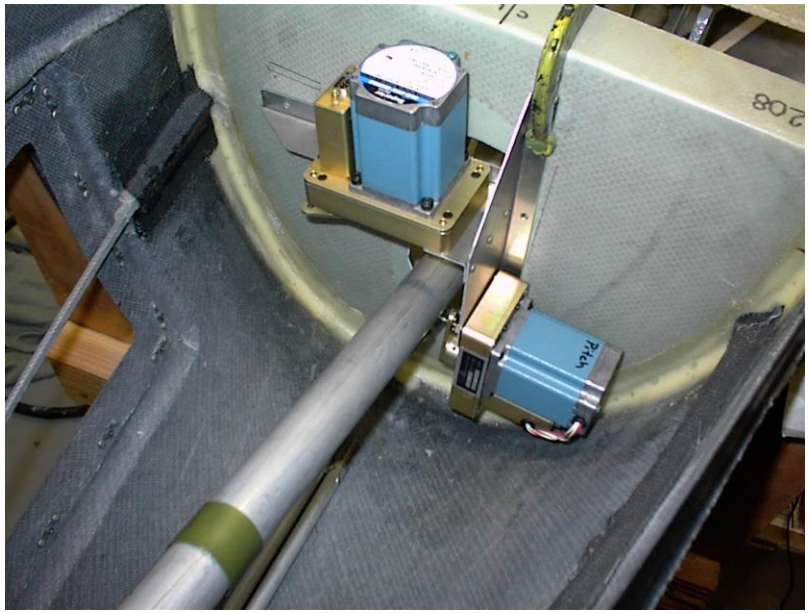


# Lancair IVP Systems

- Autopilot
  - Servo locations
  - brands
  - malfunctions

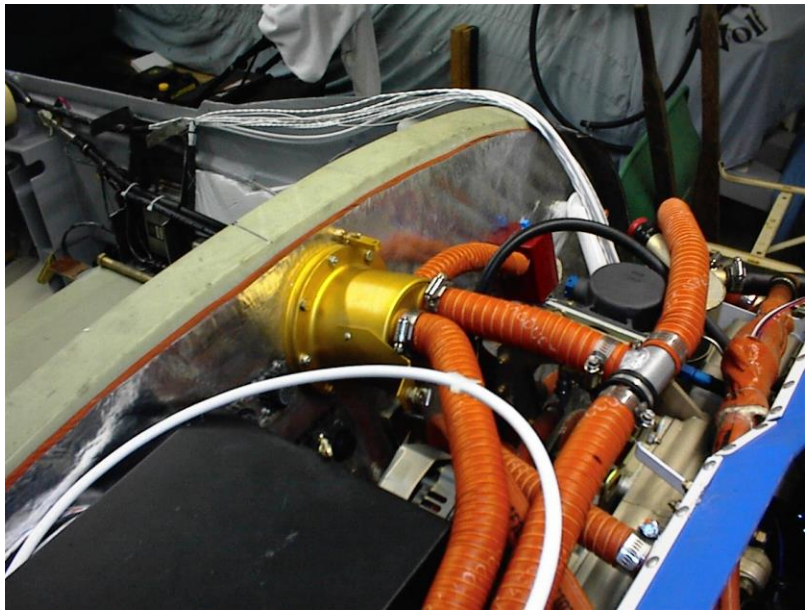
# Lancair IVP Systems

- Autopilot servos
  - Trutrak pitch and yaw servos



# Lancair IVP Systems

- Pressurization
  - 5 psid
  - Inflow valve
    - Mechanical via push pull cables
    - Dumps inflow
    - Regulates temperature

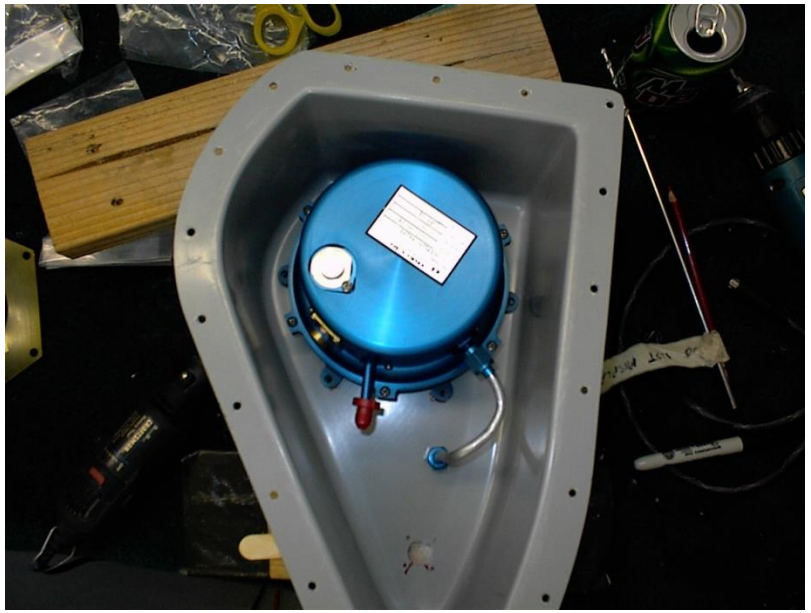


# Lancair IVP Systems

- Pressurization
  - Dukes Controller
  - Set +500’ for takeoff and landings
  - Set for cruise altitude in flight
  - Monitor cabin altitude in flight
  - Can dump cabin quickly via door seal

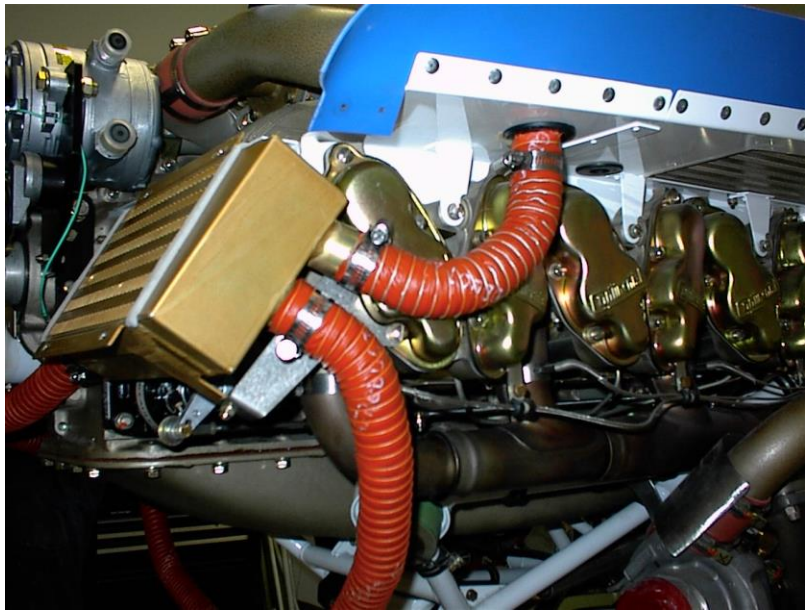
# Lancair IVP Systems

- Pressurization
  - Dukes outflow valve
    - Electrically operated
    - Regulates Pressure
    - Dumps cabin
    - Located under rear seat
    - Service annually per SB



# Lancair IVP Systems

- Pressurization
  - Intercooler
  - Conditions pressurized “bleed” air



# Lancair IVP Systems

- Panels / Instrumentation

# Lancair IVP Systems

- Panels/ Instrumentation

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# Lancair IVP Systems

- Panels/ Instrumentation

# Lancair IV Systems

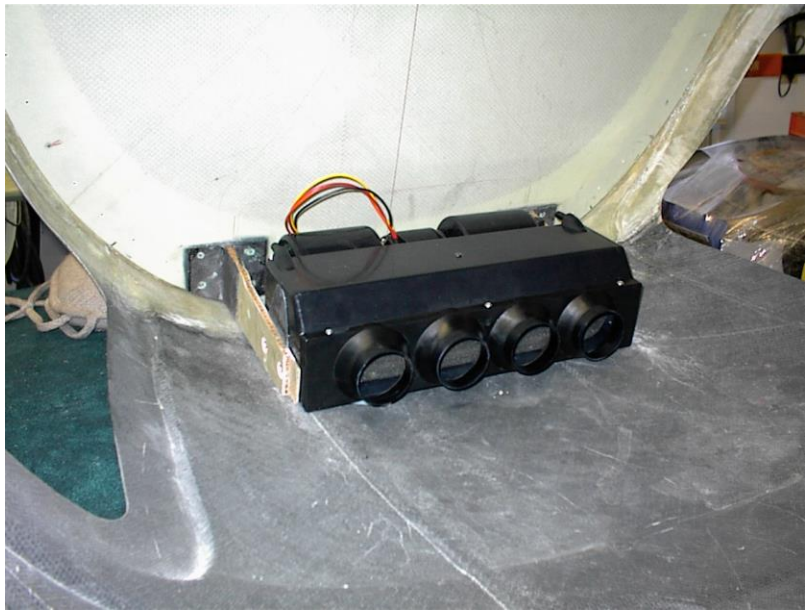
- Air Conditioning
  - Airflow Systems

# Lancair IVP Systems

- Air Conditioning
  - Condenser
  - Belly mounted or aft bay mounted

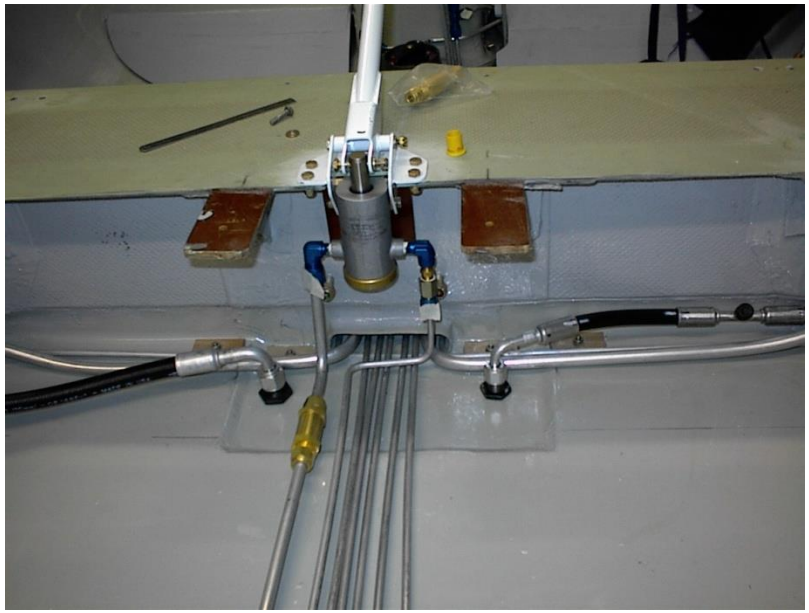
# Lancair IVP Systems

- Air Conditioning
  - evaporator



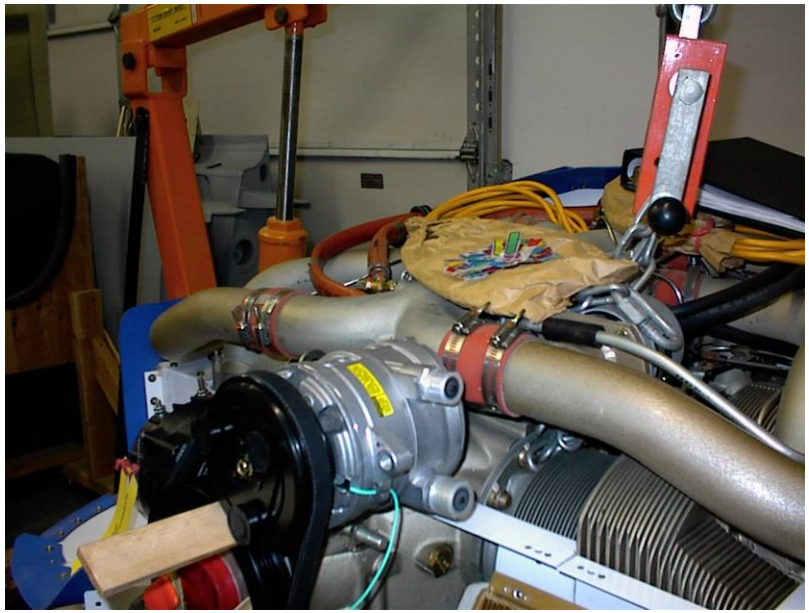
# Lancair IVP Systems

- Air Conditioning
  - Refrigerant lines



# Lancair IVP Systems

- Air Conditioning
  - Compressor
  - Engine mounted belt driven
  - Or, aft bay mounted electrically driven



# Lancair IVP Systems

- Air conditioning
  - Bracket failure

# Lancair IVP Systems

**Lancair Systems Quiz**

- The hydraulic system operates the landing gear and flaps via:
  - electric gear and flap switches on the control pedestal
  - hydraulic control valves on control pedestal for normal gear and flaps
  - mechanical levers that connect via push pull cables to the landing gear and flaps
- The fuel system on your aircraft has _____ gallons useable fuel.
- You must use what type of hydraulic fluid to service the hydaraulic reservoir?
  - Skydrol
  - Mil H 5606
  - Automatic transmission fluid
- The brake reservoir is located _____ ?
- The turbo charger has a TIT limit is?
  - 1725 C
  - 1750F
  - 1650F

# Lancair IVP Systems

- Manifold pressure limit is
  - 38.5 inches
  - 38 inches
  - 29.5 inches
- How much supplemental O2 is required by 91.211?
  - 1 hour for each passenger
  - 10 minutes for each occupant
  - 30 minutes for the pilot
  - none
- The outflow valve is located _____ and must be serviced how frequently?
- Explain Lean of Peak operation
- The nose gear strut is extended by—
  - The hydraulic nose gear cylinder
  - The emergency gear down hand pump
  - The gas strut