



# Hints From a DAR

By

Vic Syracuse

- **12-time Aircraft Builder**
  - RV-4, RV-6, RV-7A, RV-8, 2- RV-10's, Prescott Pusher, Kiffox Models II, IV Speedster & 7 SuperSport, Super Stol, Hummingbird Helicopter, 3<sup>rd</sup> RV-10 under construction
- **DAR for Atlanta MIDO 17 years**
- **EAA Tech Counselor & Flight Advisor (50+ First Flights)**
- **Commercial Pilot, ASMEL, ASES, RW Helicopter, CFII, A&P/IA (11300 hours, 74 different types of aircraft)**
- **Author 'Checkpoints' Sport Aviation; Kitplanes "Diagnosis" & "Unairworthy"; Base Leg Aviation You Tube**
- **Founder Base Leg Aviation (KFFC)**
- **Author "Maintenance Handbook for RV Aircraft", "Prebuy Guide for Amateur-Built Aircraft", " Are Your Nuts Tight", "Flying to Alaska"**

# This is Supposed to be FUN

- Find a DAR early in the process
  - A DAR that is Knowledgeable of your aircraft is a big plus!
- Ask if there are any expectations along the journey
  - Examples: resin samples, pictures of closed out assemblies
- Inquire about recommended resources
  - Forums
  - Tech Counselors
  - Flying builders
- Discuss planned modifications
  - Air conditioning, extra fuel, added seats, turbine power, jettisonable items, etc.

# References

- **Advisory Circular 20-27G**  
**Certification and Operation of Amateur-Built Aircraft**  
**Fabrication and assembly checklist for non-approved aircraft**
- **Advisory Circular 90-89B**  
**Amateur Built Aircraft and Ultralight Flight Testing Handbook**
- **EAA Flight Testing Handbook**
- **FAA Order 8130.2K**  
**Revised Listing of Amateur-Built Aircraft Kits**  
**Updated on: February 9, 2024**
- **AC 43-13.2B**
- **EAA Licensing your Homebuilt Aircraft**

# Does this Aircraft Meet the 51% Requirement?



- If the plane was built from plans or an original design with no commercial assistance it is majority amateur-built
- If the plane was built from a kit on the FAA-approved list without commercial assistance it is majority amateur-built.
- If the plane does not meet either of the above conditions it must be evaluated using the **Amateur-Built Fabrication and Assembly Checklist (2011) Fixed Wing**
- Complete the checklist and upload it on the AWC application

# Registration

- **Must be on FAA registry when submitting AWC application**
  - **Reserved N-Number doesn't count**
- **Apply for this about 2 months in advance of expected completion**
- **Application – Form 8050-1**
- **Affidavit of Ownership (notarized) -- Form 8050-88**
- **Bill of Sale – Form 8050-2**

# AWC Application



- You will need to create an AWC account @ [AWC.FAA.GOV](http://AWC.FAA.GOV)
- EAA booklet will guide you through it
- Co-ordinate with DAR prior to submission to assure proper routing
- DAR can usually provide a sample Program Letter
- Don't forget the fabrication checklist if not on 51% kit list

# Program Letter

- Address Program Letter to applicable MIDO or FSDO (Ask DAR)
- Required Information:
  - Builder name and model (from registration)
  - Serial number and registration number
  - List of 2-4 airports other than homebase from which you wish to operate
    - Can not be in Class B/C/D airspace
      - Discuss with DAR

# Aircraft Items

- **Required placards and markings:**

- Registration number (3" for most, 12" if faster than 180 knots)
- EXPERIMENTAL decal (2" x 14") visible at entrance to cabin
- Passenger warning decal unless single seat
- Data plate—must be stainless steel and EXACTLY MATCH the registration
- Controls labeled

# Operating Limitations

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- **No more pink Airworthiness Certificates.**
  - Operating Limitations are a part of the 8130-7 Airworthiness Certificate
  - Night and Instrument operations are normally included
    - Pilot's responsibility to ensure equipment requirements are met
- **Additional Pilot Program is also included**
  - Aircraft, pilot and crewmember require additional paperwork

# Aircraft Preparation

- **Review of Construction process**
  - **Builder logs**
  - **Photos**
  - **Tech Counselor visits**
  - **Testing artifacts**
    - **Composite aircraft**
  - **Engine logs or O/H documentation**
  - **Fuel flow test documentation (for Additional Pilot Program)**

# Repetitive Discoveries



- **Jamnuts, jamnuts, jamnuts!**
- **Use of fiber nuts instead of castellated nuts**
- **Inadequate engine/prop control cable travel**
- **Not using Torque seal or other markings**
- **Improper/missing labeling of switches, controls, knobs, lights, etc.**
- **Improper flight control travel and/or blockages (stick grip interference)**
- **Use of old hoses**
- **Missing safety wire**
- **Data Plate inaccuracies**

# Repetitive discoveries (cont)



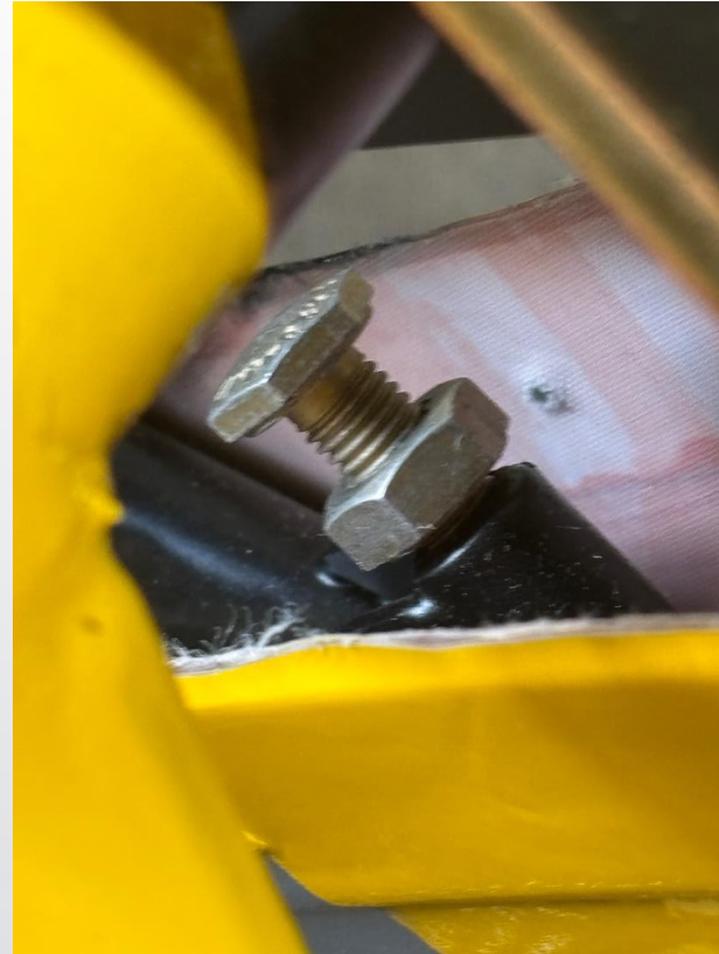
- **Data Plate must match the Registration and must be Stainless Steel**
- **N-Numbers IAW FAR part 45**
  - **3" numbers on Lancair Legacy won't work**
- **Improper lighting and location of lights for night flight**
- **Improper swaging of micropress sleeves**
- **Unavailability of plans/construction documents**
- **Missing logbook entry stating aircraft is in a condition for safe operation**

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## Repetitive Discoveries (cont)

- **Missing ELT functional check (if ELT installed)**
- **Fuel caps missing labels for quantity and Type of fuel**
- **Passenger Warning placards missing (especially tandem aircraft)**
- **Unsupported wiring, especially for electronic ignitions**
- **Transponder checks (not required for airworthiness)**

# Jam Nuts!



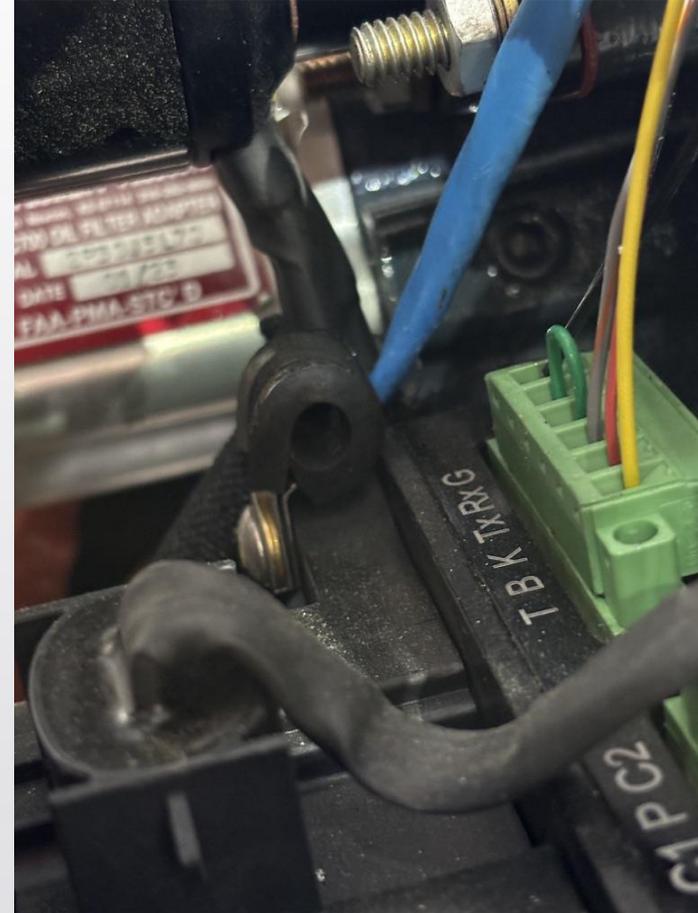
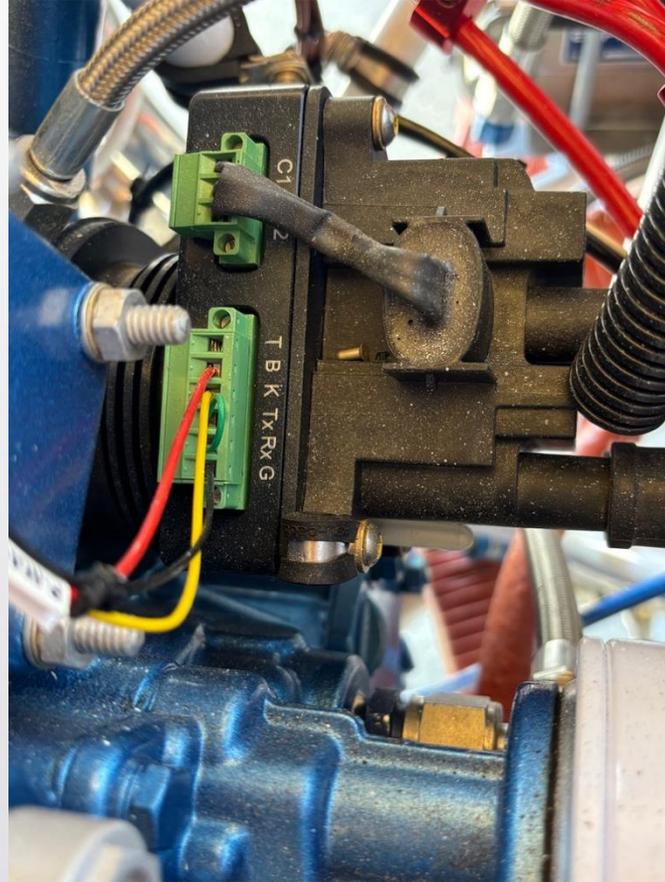
# Wrong Nut



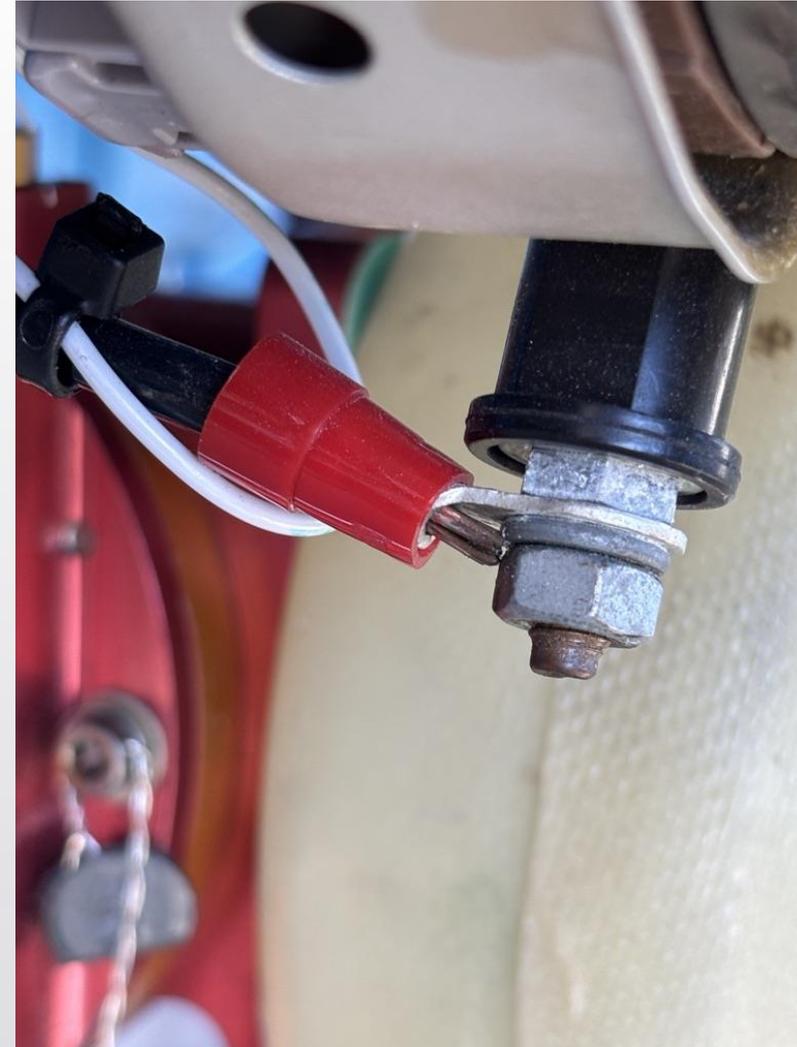
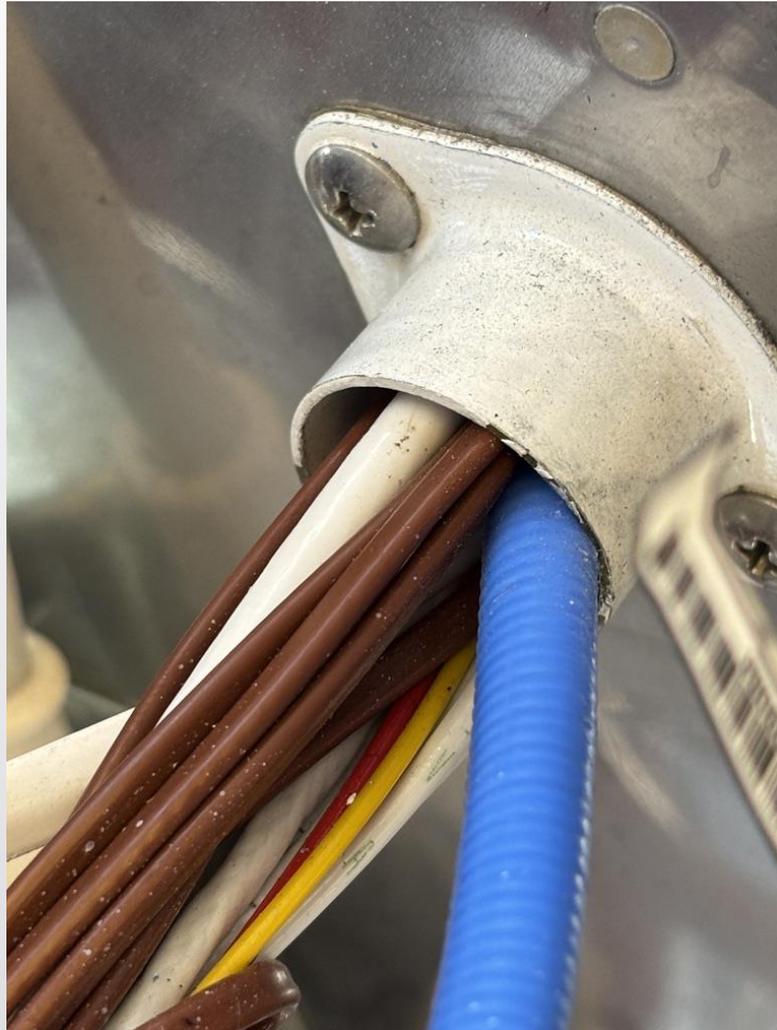
# Improper/substituted length bolt



# Unsecured wiring



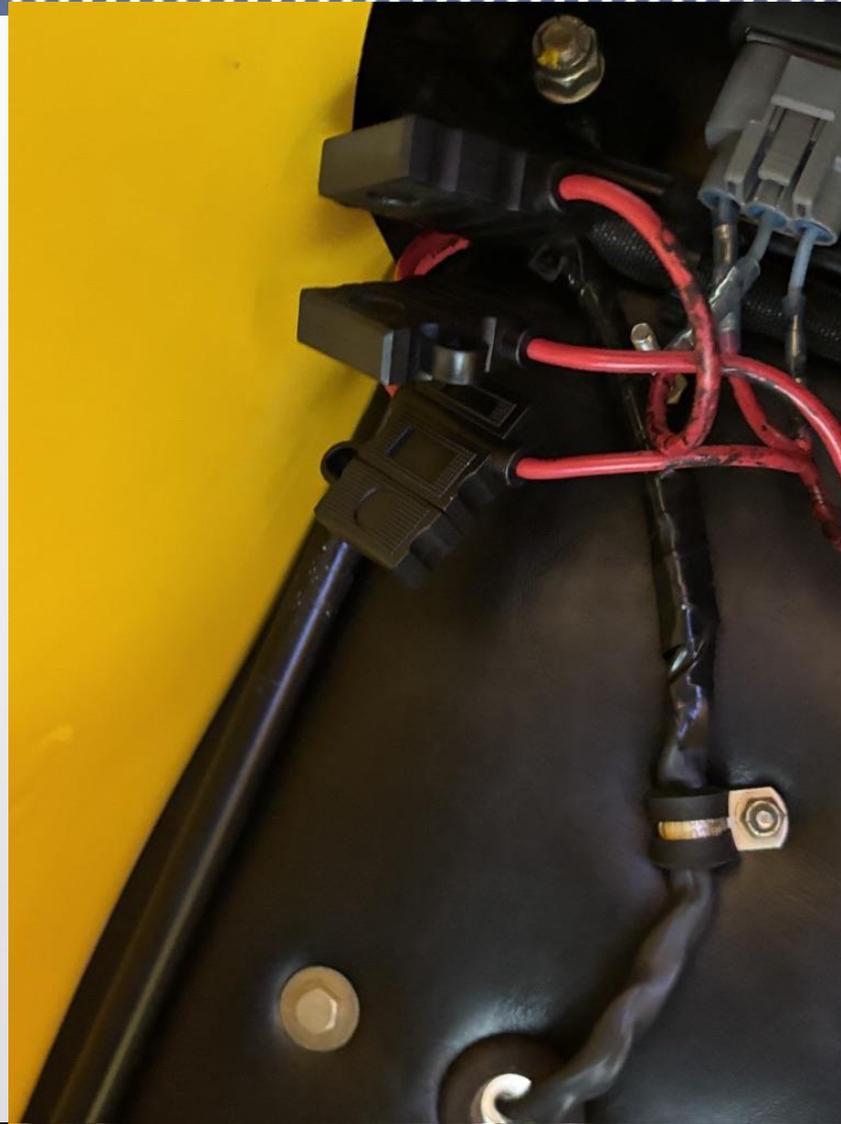
# Unprotected/uncrimped wires



# Unconnected wires



# Unmarked fuse holders



# Improper tail strobe



# Unlabeled controls



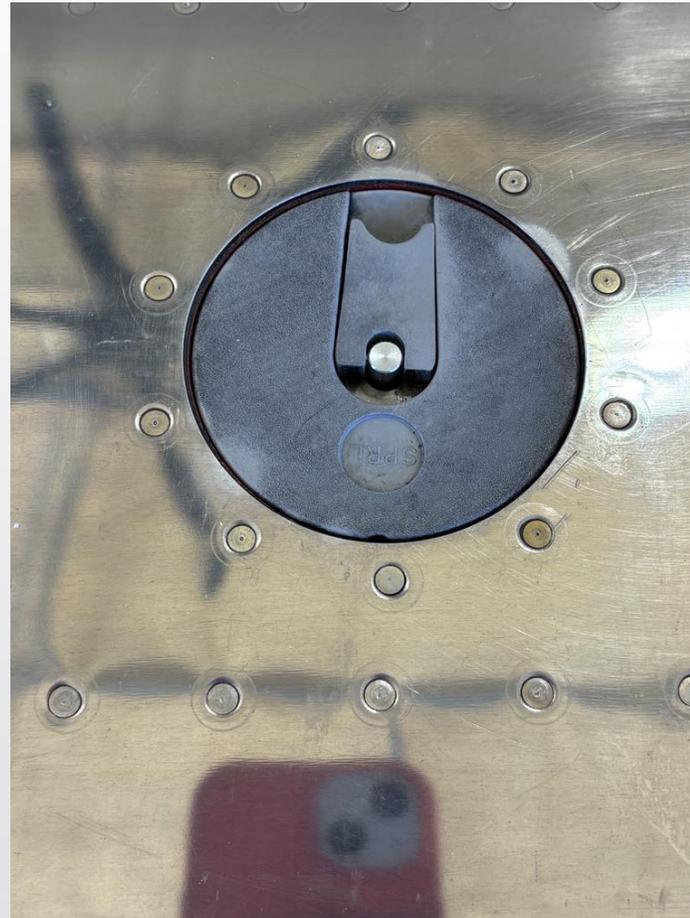
# Unlabeled controls



# Fuel System modifications



# Unlabeled fuel caps



# Missing Fuel pump overflow tube



# Improperly secured ballast

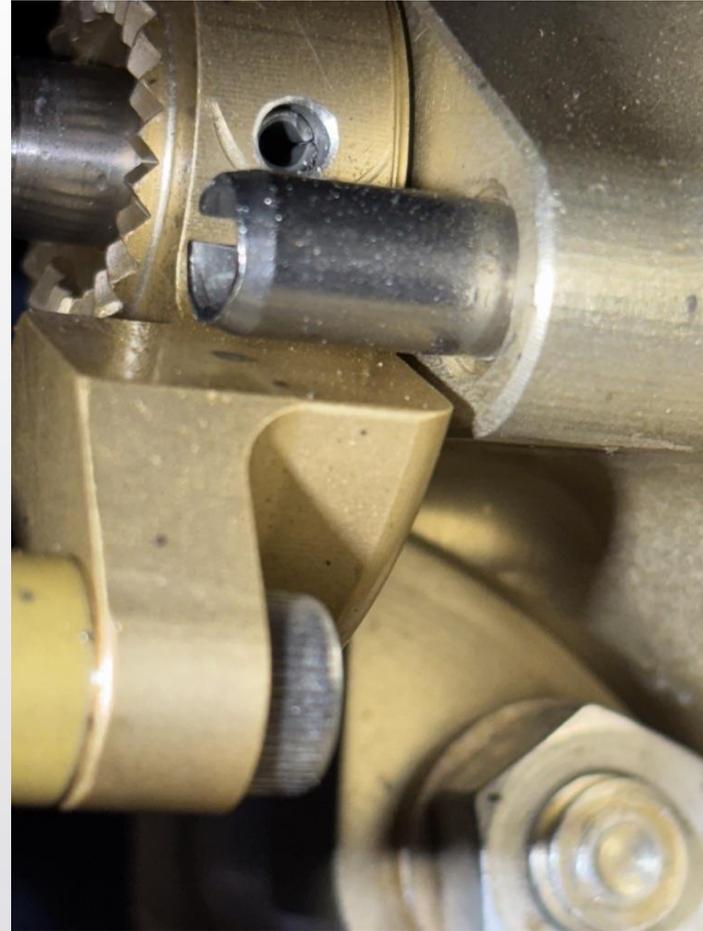




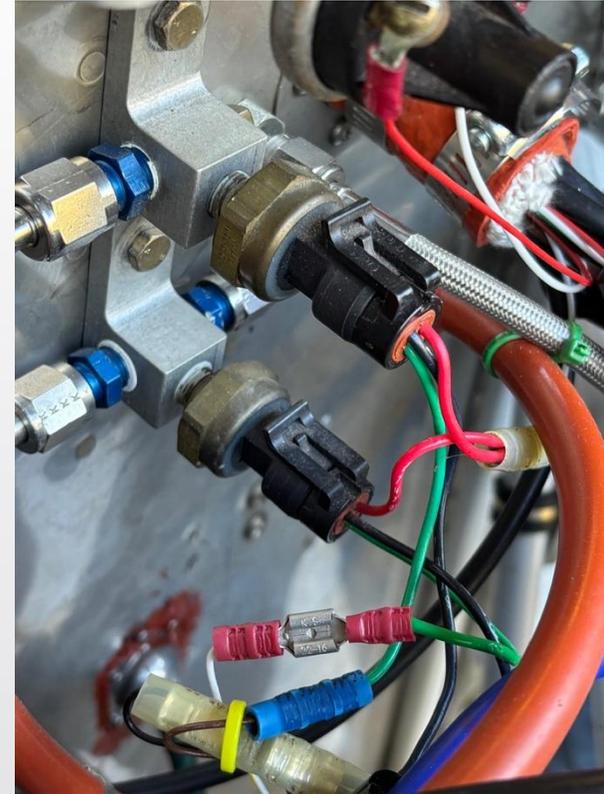
# Lack of Torque Seal/Cross Check



# Insufficient control travel



# Ignored Service Bulletins



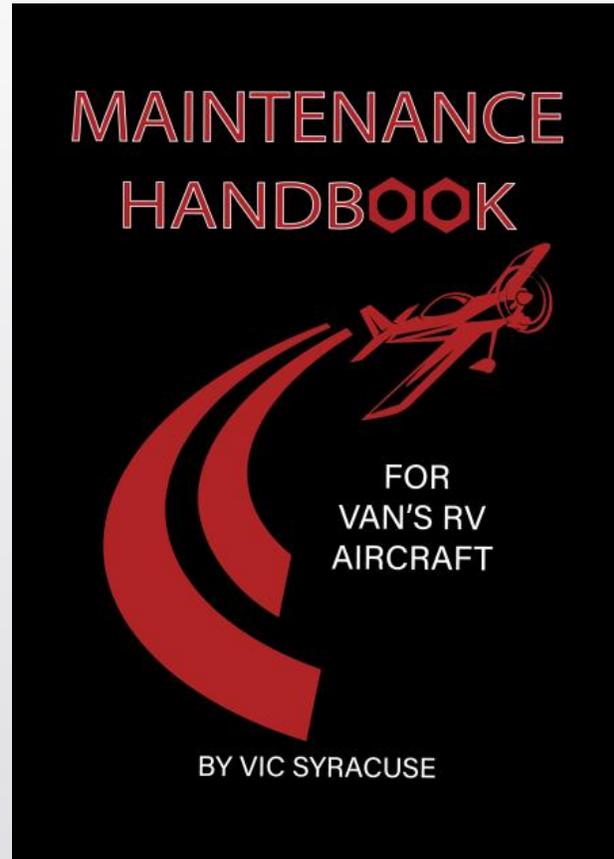
# Turnbuckles need to be secured



# QUESTIONS?



**Get the Book!**



[www.baselegaviation.com/store](http://www.baselegaviation.com/store)

or  
Aircraft Spruce  
Or  
Vans Aircraft

<https://www.youtube.com/@baselegaviation1614>