MDRA C20 MANUAL OF PROCEDURES FOR INSPECTION OF *COMPOSITE* AMATEUR-BUILT AIRCRAFT, INSPECTION AND TECHNICAL INFORMATION RECORD, FINAL/IMPORT INSPECTION

Section 1.4 FINAL INSPECTION

GENERAL

1. Have all re-inspection and discrepancies noted on previous inspections been rectified? (Y N)
2. Have all cowls, covers, inspection openings, fairings, etc.. been removed to allow access for proper inspection?
3. Has the aircraft been painted in accordance with designer's recommendations? (Y N)
4. Is there any evidence of over-sanding of structure with resultant damage to glass-cloth structure? (Y N)

AIRFRAME

FUSELAGE (HULL)

1. Are all attachment fittings to accepted practice? (Y N)
2. Is all attachment hardware employed and safely tied? (Y N)
3. Are there inspection openings for all critical areas? (Y N)
4. Is ventilation and drainage provided? (Y N)
5. Are all surfaces protected against environmental deterioration? (Y N)
6. Firewall material and thickness- Correct? Is it sealed? (Y N)

CONTROL SYSTEMS

1. Are all controls secured and safely tied? (Y N)
2. Are control stops provided? (Y N)
3. Are pulleys of proper diameter for bends involved, suited to cable size, and provided with cable guards? (Y N)
4. Is cable fabrication to accepted practice? (Y N)
5. Has builder access to "go-no-go" gauge to check nicopress sleeves after squeezing? (Y N)
6. Is all hardware throughout systems installed and safely tied? (Y N)
7. Is there full throw of all controls with seats occupied and harness secured? (Y N)
8. Are fairleads incorporated which alter cable direction in excess of 3 (three) degrees? (Y N)

EXITS

1. Can aircraft be rapidly cleared in the event of an emergency? (Y N)
2. Is there provision for emergency external release of canopy or door? (Y N)
3. Is the external emergency canopy/door release placarded? (Y N)

WINDSHIELD AND WINDOWS

1. Are windshield and windows of acceptable materials? (Y N)
2. Are they braced for positive and negative pressure? (Y N)
3. Are they free from distortion to allow proper vision? (Y N)

BAGGAGE COMPARTMENT

1. Are walls and floor to specifications? (Y N)
2. Does weight and balance reflect loading of this compartment? (Y N)
3. Are baggage restraints installed? (Y N)

CABIN / COCKPIT

1. Instrument and gauge installation and range markings ok? (Y N)
2. Are all primary minimum instruments readily visible to pilot at a single viewing? Exemption 549.01, para (26) (Y N)

(No scrolling permitted on glass type displays).

Note: A standalone magnetic compass is mandatory

3. Is standalone magnetic compass installed? (Y N)
4. Is fire extinguisher properly mounted (metal bracket) and is it accessible with harness secured? (Y N)
5. Are the following placards installed;
   - Fireproof Aircraft Identification Plate_ (Per **CAR 201.01**) (Y N)
   - Aerobatics prohibited (Y N)
   - Passengers prohibited, (not applicable to imported aircraft) (Y N)
   - Amateur built warning (Must be Bilingual) (Y N)
   - Compass deviation card (Y N)
   - Canopy/door release - Exterior and Interior (Y N)
6. Are seat belts to aeronautical standard (TSO) or equivalent? (Y N)
7. Are seat belts and shoulder harness, anchored to the primary structure? (Y N)
8. Are weight and balance report figures within design specifications? (Y N)
9. Is fire extinguisher rated for the type of material used in this aircraft? (Y N)

WING-TAIL SURFACES

1. Is general fabrication to accepted practice? (Y N)
2. Are hinges and brackets sound? (Y N)
3. Is all hardware safely tied? (Y N)
4. Are all control surfaces including trim tab free of excessive play? (Y N)
5. Are all pulleys properly sized, employed and complete with cable guards? (Y N)
6. Are all fairleads correctly employed? (No change of direction over 3 degrees) (Y N)
7. Do all controls move freely and clearly through their full range of travel? (Y N)
8. Are all external braces, struts, etc. protected against environmental deterioration both internally and externally? (Y N)
9. Are all strut fittings to accepted practice and are end fittings in safety? (Y N)
10. Are struts free from bends and apparent defects? (Y N)
11. Are wire bracing and end fittings to accepted practice and are end fittings in safety? (Y N)

LANDING GEAR

1. Are attachment fittings per drawings? (Y N)
2. Is all hardware safely tied? (Y N)
3. Are brake system components and lines or cables installed and safely tied? (Y N)
4. Are wheels and brakes in good condition? (Y N)
5. Are tires sound with good tread? (Y N)
6. Does retraction system appear adequate for positive control and locking? (Y N)
7. Has a retraction test been accomplished? (Y N)
8. Did the inspector witness the retraction test? (Y N)
9. Emergency release (back up). Is pilot able to operate this control with harness fastened? Inspector must witness the test (Y N)

Note: For aircraft on floats, use C20E Floats Inspection document.

Note: For ski installation/removals, use C20E Floats/Ski Inspection document.

GENERAL

1. Is pitot tube secure and clear? (Y N)
2. Has pitot and static system been tested for leaks? (Y N)
3. Has pitot-static been calibrated? (Y N)
4. Are sufficient access openings provided for proper servicing and maintenance? (Y N)

5. Are registration markings properly installed, legal size and of sufficient contrast to background colors? (Ref **Std 222.01**) (Y N)
6. Is an approved first aid kit installed and readily available? **CAR 602.60 (1) (h)** (Y N)
7. Is an approved ELT installed? (except Glider, Balloon, Airship or Gyrocopter) **CAR 605.38 (1)** (Y N)
8. After review, does the aircraft maintenance schedule meets the requirements of CAR Chapter 625 App B & C? (Y N)
9. Has control rigging and function been checked? (Y N)
9. Have control movements been checked by builder? (Y N)
10. Are all controls and essential equipment easily accessible with harness secured? (Y N)
11. Is cockpit provided with ventilation? (Y N)
12. Seat Strength-Are the seats built to designer's specification? (Y N)

NOTE: Builder supplies these data, inspector records them below.

Control	Test conditions	Deflection		Test results	
Aileron	Stick neutral	**Right** Deg	**Left** Deg	Both ailerons perfectly neutral	(Y N)
	Stick full right	**Right** Deg	**Left** Deg	R aileron, full up, L aileron, full down	(Y N)
	Stick full left	**Right** Deg	**Left** Deg	R aileron, full down, L aileron, full up	(Y N)
		Deflection			
Elevator	Stick neutral	Deg		Both elevators perfectly neutral	(Y N)
	Stick full forward	**Up** Deg		Both elevators full down	(Y N)
	Stick full aft	**Down** Deg		Both elevators full up	(Y N)
		Deflection			
Rudder	Pedals neutral	Deg		Rudder perfectly neutral	(Y N)
	R pedal full forward	**Right** Deg		Rudder full right	(Y N)
	L pedal full forward	**Left** Deg		Rudder full left	(Y N)
		Deflection			
Flaps	Up position	Deg		Flaps up and aligned with aileron and flap indicator in up position	(Y N)
	Down position	**Down** Deg		Flaps and flap indicator in down position	(Y N)
Spoilers	Down position			Spoilers completely recessed in wings	(Y N)
	Up position			Spoilers fully and equally deployed	(Y N)
Trim		**Deflection**			
Elevator	Neutral position	Deg		Trim aligned perfectly with elevator and trim indicator in neutral position	(Y N)
	Nose up position	Deg		Trim full down and trim indicator in nose up position	(Y N)
	Nose down position	Deg		Trim full up and trim indicator in nose down position	(Y N)
		Deflection			
Rudder	Neutral position	Deg		Trim aligned perfectly with rudder and trim indicator in neutral position	(Y N)
	Full right position	Deg		Trim full right and indicator in left position	(Y N)
	Full left position	Deg		Trim full left and trim indicator in right position	(Y N)
		Deflection			
Aileron	Neutral position	Deg		Trim aligned perfectly with aileron and trim indicator in neutral position	(Y N)
	Right wing up	Deg		Trim full down and trim indicator in left position	(Y N)
	Right wing down	Deg		Trim full up and trim indicator in right position	(Y N)

PRESSURAZATION

1. Is cabin pressurized? (N Y)

2. Are proper wiring firewall bulkhead fittings installed? (Y N)

ELECTRICAL WIRING

BASIC INSTALLATION

1. Are aircraft electrical drawings available and do they reflect proper aviation practices? (Y N)
2. Has the builder used specified type and gauge of wire? (Y N)
3. Are ground connections according to electrical and aviation practices? (Y N)
4. Soldering and/or crimping connections done to electrical and aviation practices? (Y N)
5. Is wiring harnesses routed properly and protected against sharp edge etc.? (Y N)
6. Are grommets used, where required and is wiring secured? (Y N)
7. Is the electrical system protected with a switchable master relay? (Y N)
8. Is electrical equipment protected by fuses and/or resettable breaker? (FUSES or BREAKERS)
9. Are fuses/resettable breakers correctly rated, labeled and within pilot reach? (Y N)
10. Is battery installation to accepted practice and have provisions been made for venting and spill damage_ (Y N)
11. Is the alternator output protected against an over/under charging voltage condition and is a warning provided? (Y N)
12. Is the alternator output protected against an over current condition? (Y N)
13. Is the over current condition corrected automatically or manually? (AUTOMATICALLY or MANUALLY)
14. Are Radio transmitting cables properly routed to prevent induced RF noise signals to electronic equipment? (Y N)

INTEGRATED COCKPIT

15. Has builder determined electrical load for all the installed equipment and as per applicable practices? (Y N)
16. Has a minimum equipment list been generated as per applicable practices?
17. Has builder performed an electrical load analysis required for safe operation of the minimum equipment listed? (Y N)
18. Does aircraft have a back-up battery? (Y N)
19. Can the aircraft electrical system keep the back-up battery charged? (Y N)
20. Has electronic isolation been provided to prevent draining of the back-up battery during normal operation? (Y N)
21. Can the back-up battery provide minimum 45 minutes of operation of the minimum equipment listed? (Y N)
22. Has the back-up battery been tested under the required load? (Y N)
23. Can the pilot monitor state of charge of the back-up battery? (Y N)

PROPULSION SYSTEM

PROPELLER

1. Is condition and type to accepted practice? (Y N)
2. Are propeller bolts of correct length and in safety? (Y N)
3. Are propeller bolts torqued to manufacturing spec? (Y N)
4. Has propeller track been checked? (Y N)
5. Is spinner fabrication and installation to accepted practice?

ENGINE INSTALLATION/IGNITION

1. Are all controls secured and safely tied, with no excessive play, and no evidence of binding or interference throughout full travel? (Y N)
2. Is oil tank secured and safely tied? (Y N)
3. Is crankcase breather line installed including auxiliary vent opening? (Y N)
4. Is ignition harness to accepted practice and in good condition? (Y N)
5. Does engine have:
   two magnetos? (Y N)
   combination of one magnetos and one electronic ignition? (Y N)
   two electronic ignition systems? (Y N)
6. Are magneto, (electronic ignition) wires sound and is the switch grounded directly to the engine? (Y N)

7. Are cabin and carburetor heat muffs and hoses to accepted practice and condition? (Y N)
8. Is cabin heat valve made of fireproof material? (Y N)
9. Is carburetor heat provided to accepted practice and condition? (Y N)
   Note: Carburetor heat mandatory for all Carbs.
10. Is, the fuel injection engine, provided with an alternate air supply to accepted practice and condition? (Y N)
11. Is engine mount free from bends and apparent defects and is attachment hardware in safety? (Y N)
12. Is cowl security, condition and methods of attachment to accepted practice? (Y N)
13. Is the engine ground-strapped directly to the airframe? (Y N)

FLIGHT AND ENGINE CONTROLS

1. Are controls placarded for identification and operation? (Y N)
2. Is operation of all controls smooth throughout their full range? (Y N)
3. Are all controls protected from jamming by foreign objects? (Y N)
4. **Is** there full throttle control travel to stop on carb or throttle body? (Y N)
5. No binding or jackknifing of cables during full range of throttle movement. (Y N)
6. No binding or rough operation of Mixture full rich to full lean_ (Y N)
7. Carburetor heat control-full heat, ensure valve is closed and seated. When moved to full cold, ensure valve is fully seated. (Y N)
8. All controls operating in proper direction? (Y N)
9. Fuel Injection-, ensure that alternate air supply valve is closed and seated. When moved to full cold, ensure valve is fully seated. (Y N)
10. Air Filter - Check for proper installation (Y N)
11. Does Air Box contains unsecured hardware in danger of ingestion? (Y N)
12. Does Foam Filter has screen to prevent ingestion? (Y N)

FUEL SYSTEM

1. Is selector valve within reach of pilot with harness secured and is it placarded? (Y N)
2. Are fuel lines to accepted practice, correctly installed, and secured against vibration? (Y N)
3. Does fuel tank have a finger screen at the outlet? (Y N)
4. Are all fuel drains located at lowest point in the system with the aircraft at rest? (Y N)
5. Are fuel drains fitted with positive shut off valves? (Y N)
6. Are drain overflows clear of all structures? (Y N)
7. Are the tanks vented? (Y N)
8. Is the gascolator properly located, (as low and horizontally as far as possible from exhaust pipes and draining outside of cowling) and equipped with a suitable drain? (Y N)
   Note: ensure no points in fuel lines below gascolator.
9. Is engine fuel provided by Carburetor? (Y N)
10. Does carburetor fuel flow only needs gravity feed? (Y N)
11. Is fuel injection mechanical? (Y N)
12. When Mechanical fuel injection; is main fuel pump mechanical? (Y N)
13. Does it have a back-up electrical boost pump? (Y N)
14. Has fuel flow been checked with minimum fuel and at maximum angle of climb and results recorded on MDRA C14- fuel flow report? (Y N)
15. Does fuel flow test meet fuel flow requirement? (Y N)
16. Does fuel system require fuel pump to achieve minimum fuel flow? (N Y)
17. Does system have a main and an auxiliary pump? (Y N)
18. System operating with two electrical pumps, requires a 2nd battery. Is aircraft equipped with a second electrically independent battery? (Y N)
19. Is the fuel pump system equipped with a fuel pressure gauge? (Y N)

20. Is the tank compartment vented? (Y N)
21. Is fuel gauge installation and operation correct? (Y N)
22. Is the fuel system bonded? (Y N)
23. Is the fuel tank and tank supports protected against chafing? (Y N)
(Y N)

ENGINE TESTING

Have builder setup aircraft for an engine run-up.

Explain that you will check for the following during run up:

1. Engine start: Hard ❑ Easy ❑
2. Does oil pressure rise immediately? (Y N)
3. Does engine idle smoothly? (Y N)

Have builder apply power and check the following:

4. Are brakes operative and holding the aircraft in position? (Y N)
5. Are the following readings or operations normal:
    - Oil temperature and pressure ❑
    - Cylinder head temp ❑
    - Exhaust Gas temp ❑
    - Cycling of variable pitch prop ❑
    - Engine/prop vibration ❑
    - Cycle of Carb heat control ❑
    - Cycle of Mixture control ❑
    - Cycle the alternate air supply on the fuel injection engine ❑
    - Right and left magnetos, (electronic ignition) OFF- Normal RPM drop ❑
    - Momentary ignition switch OFF- test for no live mag, (electronic ignition) ❑
6. Does engine stay running when masters turned off? (Y N)
7. Has fuel/ignition been calibrated (timing advance, injector Pulse)? (Y N)
8. Has engine output been tested for max HP and RPM? (Y N)
9. Does constant speed propeller cycles through full acceptable limits (Y N)
10. Have engine brought to idle, then shut off.
11. Shut down normal? (Y N)
12. Are there any oil leaks? (Y N)

SUMMARY, Final Inspection:

1. Is the inspection complete?

Re-inspection of following is required: None □

Has builder been notified of your findings? On site? ❑ By Mail? ❑

Date -_____ Inspector's Signature_____Print Name_____
yyyy-mm-dd

End of Section 1.4 Use the space below for notes if required