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Minister's Delegates - Recreational Aviation Inspection Service  
Représentants du Ministre - Aviation de loisir Service d'inspection

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## MDRA C20 MANUAL of PROCEDURES for INSPECTION of COMPOSITE AMATEUR-BUILT AIRCRAFT, INSPECTION AND TECHNICAL INFORMATION RECORD

BUILDER <input type="checkbox"/> IMPORTER <input type="checkbox"/>		MD-RA REGISTRY NUMBER:	
SURNAME:		GIVEN NAME(S)	
ADDRESS:			
CITY:	PROVINCE:	POSTAL CODE:	
HOME TELEPHONE:		FACSIMILE:	
BUSINESS TELEPHONE:		EMAIL:	
REGISTRATION MARKS C-		CERT OF REGISTRATION DATE:	
A/C MAKE:	MODEL:	SERIAL NO.:	
PRESSURIZED <input type="checkbox"/>	PISTON ENGINE <input type="checkbox"/>	TURBINE <input type="checkbox"/>	
AIRCRAFT EQUIPED WITH AN INTEGRATED DIGITAL INSTRUMENT PANEL, (EFIS, TRANSPONDER,ETC)			YES <input type="checkbox"/> NO <input type="checkbox"/>
MAXIMUM TAKE- OFF WEIGHT _____ Lb <input type="checkbox"/> Kg <input type="checkbox"/>			
OWN DESIGN <input type="checkbox"/>		FROM PLAN <input type="checkbox"/>	
LISTED ON TCA/FAA ELIGIBLE KITS LIST <input type="checkbox"/>		KIT REQUIRING MAJOR PORTION, (51%) INSPECTION <input type="checkbox"/>	
QUICK BUILT KIT <input type="checkbox"/>			
DATE CONSTRUCTION STARTED:		DATE CONSTRUCTION COMPLETED:	
NAME of DESIGNER or SOURCE of PLANS, KIT and/or MATERIALS (ATTACH LIST IF REQUIRED):			
ADDRESS:			
CHANGE OF OWNERSHIP <input type="checkbox"/> OR    ADDRESS <input type="checkbox"/>		DATE:	
SURNAME:		GIVEN NAME(S)	
ADDRESS:		CITY:	
PROVINCE:	POSTAL CODE:	TELEPHONE:	

<b>RECORD OF INSPECTIONS</b>					
Job number	Type	Inspector Name (Print)	Obs. Sheet No.	Date	Signature

**The builder must be present at all inspections**

(Y) - Indicates compliance with requirements for Amateur Built aircraft contained in the applicable sections of CARs and the exemption from section 549.01 of the Canadian Aviation Regulations and Chapter 549 of the airworthiness manual - airworthiness standards-amateur -built aircraft.

(N) - Indicates non-compliance. State nature of discrepancy under "Notes"

(N/A) - Indicates not applicable.

**Section 1.1 COMPLIANCE WITH AMATEUR-BUILT REQUIREMENTS**

- |  |       |
|--|-------|
| 1. Has the builder filed a Letter of Intent?   | (Y N) |
| 2. Is an Amateur Built Information Package available?  | (Y N) |
| 3. Is the builder familiar with the applicable legislation?  | (Y N) |
| 4. Does the aircraft gross weight comply with the weight specified by the aircraft designer and / or kit supplier?   | (Y N) |
| 5. Does the aircraft wing loading indicate high performance?   | (Y N) |
| 6. Will the builder be requesting an Aerobatic Waiver?   | (Y N) |
| 7. Does the aircraft meet aerobatic design requirements?   | (Y N) |
| 8. Is the builder familiar with special inspection requirements for composite construction?  | (Y N) |
| 9. Will the builder be incorporating any modifications to the structure which will affect flight, structural integrity of the aircraft, or eligibility for aerobatic waiver? | (Y N) |
| 10. Will the aircraft be built from a kit  | (Y N) |
| 11. Does the builder have copies of applicable newsletters or other pertinent information from the kit supplier?   | (Y N) |
| 12. Does the project meet major portion requirements?  | (Y N) |
| 13. Will the builder use professional assistance?  | (Y N) |
| If yes, give details below   |       |

Contractor Name: \_\_\_\_\_ Telephone \_\_\_\_\_

- |   |       |
|---|-------|
| 14. What work will be subject to assistance? (List below)   |       |
| 15. Does the builder have "Acceptable Methods, Techniques and Practices" (AC 4313 1B or latest amendment)         | (Y N) |
| 16. Has the builder established a project record system?  | (Y N) |
| 17. Are drawings available?   | (Y N) |
| 18. Is the shop adequately heated and does it provide the proper environment for the construction of the project? | (Y N) |

**Summary, Compliance With Amateur-Built Requirements:**

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

White Copy of MDRA C21 Inspection Sheet – number \_\_\_\_\_

Date - \_\_\_\_\_ Inspector's Signature \_\_\_\_\_ Print Name \_\_\_\_\_  
          yyyy-mm-dd

**End of Section 1.1 Use the space below for notes if required**

**Section 1.2 SHEAR WEBS INSPECTION,  
(Do not use this section for pre-cover inspections)**

1. List parts inspected:
  
2. What is material quality?
  
3. Does builder have invoices for materials? (Y N)
4. Has kit of materials been purchased from a recognized dealer and do materials meet designer's specs? (Y N)
5. Has the builder constructed confidence samples and presented them for examination? (Y N)
6. Is the builder fully conversant with procedures and is he following kit instructions? (Y N)
7. Has the builder kept resin samples, labeled for identification, and were they presented for your examination? (Y N)
8. Do shop conditions meet minimum standards? eg-temp, humidity, cleanliness (grease, oil) (Y N)
9. Has accuracy of foam cores been maintained? (Y N)
10. Are shear webs laid up in accordance with designer's instructions? (Y N)
11. Was correct cloth used on shear webs and does resin content appear correct? (eg - dry, or resin rich) (Y N)
12. Was peel ply used effectively on lay-up of shear webs? (Y N)
13. Are there any defects notable in the lay-up? (eg dry areas, voids, blisters, etc.) (Y N)
14. Has builder made any repairs to such areas? If so, are they in accordance with designer's criteria? (Y N)
15. How was cure time controlled?
16. Were jigs used and has spar alignment been maintained? (Y N)

Details:

17. Have flocking and fillers been used per designer's criteria? (Y N)
18. Is shear web inspection complete? (Y N)

**SUMMARY, Shear Webs, Inspection:**

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 1.2 Use the space below for notes if required**

## Section 1.3 PRE-PAINT / PRE- COVER INSPECTION

### GENERAL

List parts inspected:

What is material quality?

1. Has the builder constructed confidence samples and presented them for examination? (Y N)
2. Have all shear webs been inspected previously? (Y N)
3. Have all discrepancies from previous shear webs or pre- cover inspections been rectified? (Y N)
4. Do parts conform to drawings with respect to dimensions and material? (Y N)
5. Are all lay-ups done in accordance with designer's instructions? (Y N)
6. Is spar flagging visible and in accordance with design (Y N)
7. Is workmanship to accepted practice? (Y N)  
If not, elaborate:
8. How have alignment and symmetry of aircraft been assured? (Y N)  
Explain
9. Are trailing edges of surfaces true and straight? (Y N)
10. Do control surfaces mate properly with wing or canard? (Y N)
11. Are surfaces fair and free of large deviation in contour? Are there voids or irregularities? (Y N)
12. Have any repairs been carried out by the builder? (Y N)  
If so, do they meet designer's criteria? (Y N)
13. Has all attachment hardware been installed and is the work in accordance with designer's instructions? (Y N)
14. Will large amounts of filler be required to prepare surfaces for paint? (Y N)
15. Is there any evidence of over-sanding of structure with resultant damage to glass-cloth structure? (Y N)
16. Does builder understand the need to adhere to designer's colour preference?  
(Light basic colours, white, pale blue, etc)? (Y N)

### FUSELAGE (HULL)

1. Are welded parts to accepted practice (Y N)
2. Are all attachment fittings to accepted practice? (Y N)
3. Are all drilled holes properly located, free from elongation and treated for protection from environmental deterioration? (Y N)
4. Is all attachment hardware employed and safely tied? (Y N)
5. Has builder assured alignment and symmetry? (Y N)
6. Is craftsmanship to accepted practice? (Y N)

### MAINPLANE (WINGS)

1. Are all drilled holes properly located, free from elongation and are all interiors treated for protection from environmental deterioration? (Y N)
2. Has builder assured symmetry? (Y N)
3. Is craftsmanship to accepted practice? (Y N)
4. Is all attachment hardware employed and safely tied? (Y N)

**CONTROL SURFACES**

- 1. Are all drilled holes properly located and free from elongation (Y N)
- 2. Is craftsmanship to accepted practice? (Y N)
- 3. Is all attachment hardware employed and safely tied? (Y N)
- 4. Has builder assured symmetry? (Y N)

**UNDERCARRIAGE**

- 1. Type:                      Wheels                       Skis                       Floats
- 2. Is undercarriage complete? (Y N)
- 3. Is undercarriage installed? (Y N)
- 4. Are all attachment fittings installed and safely tied? (Y N)
- 5. Is brake plumbing, components, and all attachment hardware employed and safely tied? (Y N)
- 6. Has undercarriage symmetry been assured? (Y N)

**SAILPLANE**

- 1. Is tow hook installed? (Y N)
- 2. Tow hook attachment OK? (Y N)
- 3. Is tow hook properly located in reference to data? (Y N)

**SUMMARY, Pre-paint / Pre- Cover Inspection:**

Is pre paint/pre-cover inspection complete? (Y N)  
 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 1.3 Use the space below for notes if required**

## 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)

### 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? (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, (Y N)
  - 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 anchored to the primary structure? (Y N)
8. Are weight and balance report figures within design specifications? (Y N)
9. Is the fire extinguisher rated for the type of material used in this aircraft? (Y N)

### **ENGINE INSTALLATION**

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. Are magneto, (electronic ignition) wires sound and is the switch grounded directly to the engine? (Y N)
6. Are cabin and carburetor heat mufflers and hoses to accepted practice and condition? (Y N)
7. Are cabin heat valves made of fireproof material? (Y N)
8. Is carburetor heat provided to accepted practice and condition? (Y N)  
*Note: Carburetor heat mandatory for all Carbs.*
9. Is engine mount free from bends and apparent defects and is attachment hardware in safety? (Y N)
10. Is cowl security, condition and methods of attachment to accepted practice? (Y N)
11. Is the engine ground-strapped directly to the airframe? (Y N)

### **ELECTRICAL SYSTEM**

1. Has the builder used specified type and gauge of wire? (Y N)
2. Are grommets used and is wire secured? (Y N)
3. Are fuses or circuit breakers employed? (Y N)
4. Is battery installation to accepted practice and have provisions been made for venting and spill damage\_ (Y N)
5. Is structure around battery protected against spillage? (Y N)

### **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? (Y N)

### **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 colours? (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. Has control rigging and function been checked? (Y N)
9. Have control movements been checked by builder? (Y N)

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

Control	Test conditions	Deflection		Test results
Aileron	Stick neutral	<b>Right</b> Deg	<b>Left</b> Deg	Both ailerons perfectly neutral (Y N)
	Stick full right	<b>Right</b> Deg	<b>Left</b> Deg	R aileron, full up, L aileron, full down (Y N)
	Stick full left	<b>Right</b> Deg	<b>Left</b> Deg	R aileron, full down, L aileron, full up (Y N)
		<b>Deflection</b>		
Elevator	Stick neutral		Deg	Both elevators perfectly neutral (Y N)
	Stick full forward	<b>Down</b> Deg		Both elevators full down (Y N)
	Stick full aft	<b>Up</b> Deg		Both elevators full up (Y N)
		<b>Deflection</b>		
Rudder	Pedals neutral		Deg	Rudder perfectly neutral (Y N)
	R pedal full forward	<b>Right</b> Deg		Rudder full right (Y N)
	L pedal full forward	<b>Left</b> Deg		Rudder full left (Y N)
		<b>Deflection</b>		
Flaps	Up position		Deg	Flaps up and aligned with aileron and flap indicator in up position (Y N)
	Down position	<b>Down</b> Deg		Flaps down 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)
		<b>Deflection</b>		
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)
		<b>Deflection</b>		
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 trim indicator in left position (Y N)
	Full left position		Deg	Trim full left and trim indicator in right position (Y N)
		<b>Deflection</b>		
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)

- 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)

**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- test operation of alternate air supply (Y N)
- 10. Air Filter - Check for proper installation (Y N)
- 11. Does Air Box has unsecured hardware in danger of ingestion? (Y N)
- 12. Does Foam Filter has screen to prevent ingestion? (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 temp and pressure
- Cyl head temp
- Exhaust Gas temp
- Cycling of variable pitch prop
- Engine/prop vibration
- Cycle of Carb heat control
- Cycle of Mixture control
- Right and left magnetos, (electronic ignition) OFF- Normal RPM drop
- Momentary ignition switch OFF- test for no live mag, (electronic ignition)

Have engine brought to idle, then shut off.

- 6. Shut down normal? (Y N)
- 7. Are there any oil leaks? (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 and equipped with a suitable drain? (Y N)
- Note: ensure no points in fuel lines below gascolator.*
9. Has fuel flow been checked with minimum fuel and at maximum angle of climb? (Y N)
  10. Did Builder record results on MDRA C14- fuel flow report? (Y N)
  11. Tank supports? (Y N)
  12. Is the tank compartment vented? (Y N)
  13. Is fuel gauge installation and operation correct? (Y N)
  14. Is the fuel system bonded? (Y N)
  15. Is the fuel tank protected against chafing? (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? (Y N)
- For the aircraft on floats
10. Was the installation inspected? (Y N)
  11. Is the installation per the drawings? (Y N)
  12. Is there a process to drain water from the floats? (Y N)
  13. Does the weight and balance record reflect the presence of the installed floats? (Y N)

**SUMMARY, Final Inspection:**

1. Is the inspection complete? (Y N)

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


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**