Eagle Aviation LLC

EA-100 Maintenance Manual

12/08/2008

Original Issue

PLEASE READ THIS INFORMATION PRIOR TO PROCEEDING

Prior to performing any maintenance, Eagle Aviation, LLC requires all owner/operators and maintenance personnel to read and fully understand this document. To clarify any questions that may arise regarding who can perform maintenance on a specific airplane and what certifications are required, Eagle Aviation LLC has established a ranking structure identified below.

Level 5: A&P, IA

Level 4: A&P

Level 3: LSA Repairman Maintenance

Level 2: LSA Repairman Inspection

Level 1: Owner

Nearly all maintenance procedures that are outlined in this manual contain an associated heading that covers specific maintenance requirements. Refer to the example below.

Tools required: Basic hand tools
Parts needed: As Required
Heavy, LSA Repairman Maintenance
Frequency: 100 hour and annual inspection
Logbook Endorsement: As Required

The bold script line above covers the minimum level of maintenance certification that is required to perform the specific task. Any maintenance personnel that hold a higher level than the minimum level identified can also perform the specific task. If a maintenance procedure is found to not contain a minimum level, an LSA Repairman Maintenance authorization will be the minimum level required to perform the maintenance task. Any questions regarding this level structure should be directed to Eagle Aviation LLC prior to performing the specific task.

If a maintenance procedure identifies that a logbook endorsement is required, only the person performing the maintenance shall endorse the logbook.

Procedures specific to the EA-100 are outlined in this manual. All repairmen should abide by the AC 43-13 Aircraft and Powerplant Mechanics document for generally accepted procedures.

This manual is prepared for and complies with the ASTM Light Sport Aircraft Maintenance Manual requirement F 2283-05.

If at any time the owner/operator has a safety of flight issue or a service difficulty, please fill our form EA-16 found in the ownership information package received at time of delivery and return electronically or by mail.

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1.0 GENERAL DESCRIPTION

The EA-100 is an all-metal, high-wing, tri-gear S-LSA. This manual provides the factory recommended procedures for maintaining, repairing, and performing the 100-hour and Annual Inspection for the EA-100.

NOTE: If at any time during an inspection, maintenance, or repair procedure it becomes apparent that there is not a procedure or it is unclear how to follow the procedure, stop and do not proceed and do not allow the aircraft to enter service. Contact Eagle Aircraft Co. LLC for clarification by calling 877-398-9541.

1.1 EQUIPMENT LIST

1. ELT: Artex ME406
2. Fire Extinguisher: General ABC type
3. Intercom: PS Engineering Inc. PM1000
4. Propeller: Sensenich R70D (long shank) Power Sweep, 66”-70”
5. Trim System: Ray Allen Co.
6. Air Filter: K & N Series
7. Brakes: MATCO–PH-1A
8. Engine Information System: Grand Rapids, Model 4000
9. Electronic Control Unit (ECU): Real World Solutions, Model EC3 EFI
10. Radio: Garmin SL40
11. GPS: AvMap GeoPilot II
12. Transponder: Garmin GTX 327
13. Engine: RAM 115
14. Encoder: Transcal SSD-120-30

1.2 SOURCES FROM WHICH TO PURCHASE PARTS

Eagle Aircraft Co LLC	1-877-369-9541
Wicks Aircraft Supply	1-800-221-9425
Aircraft Spruce and Specialty	1-877-477-7823

1.3 DISPOSABLE REPLACEMENT PARTS

A.	Fuel Filter	In-Line, Metal Can Type
B.	Tires	500x5, 4 Ply
C.	Battery	12v series 14 30 AH Sealed
D.	Oil Filter	FRAM Product PH3862
E.	Brake Pads	Matco PH-1A
F.	Brake Fluid	Automatic Transmission Fluid
G.	Air Filter	K & N Product
H	Spark Plugs	Autolite Platinum AP 3924 (only)
I.	ELT Batteries	Replacement Kit 455-0012 Battery Pack

1.4 ENGINE SPECIFICATIONS FOR RAM 115

- 4-stroke, 4 cylinder horizontally opposed, OHV
- 115 HP (continuous) @ 5000 rpm, 130 foot pounds torque @ 3100
- Dual channel electronic control unit, electronic ignition, electronic fuel injection
- Wet sump lubrication, liquid cooled
- Propeller-Sensenich R70D (long shank) Power Sweep, 66”-70”
- Dimensions
    - Bore 92mm
    - Stroke 67mm
    - Displacement 1781cc
    - Compression Ratio 9.7:1

1.5 WEIGHT AND BALANCE

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1.6 TIRE INFLATION PRESSURE

22 to 25 pounds gauge

1.7 APPROVED OILS AND CAPACITIES

Engine: 4.5 quarts,CASTROL GTX 20W-50 Summer, 10W-14 Winter

Gear Box: .75 quarts, 75W-90 semi synthetic oil

1.8 RECOMMENDED FASTENER TORQUE VALUES

8/32”	20 in. lbs.
10/32”	40 in. lbs.
1/4”	100 in. lbs.
5/16”	140 in. lbs.
3/8”	210 in. lbs.
7/16”	260 in. lbs.
1/2”	320 in. lbs.

1.9 GENERAL SAFETY INFORMATION

Eagle Aviation firmly believes that safety is paramount. If any information in this manual is not clearly understood, please contact Eagle Aviation LLC at 877-398-9541 prior to performing any maintenance related items.

1.10 INSTRUCTIONS FOR REPORTING POSSIBLE SAFETY OF FLIGHT CONCERNS FOUND DURING INSPECTION/MAINTENANCE

If you encounter a possible safety of flight concern during the course of an inspection or maintenance procedure, please refer to the *Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft Manual* for detailed procedures to follow. All Owners/Operators were issued a copy of this manual during the aircraft delivery process.

1.11 GROUND HANDLING

NOTE: Anytime the aircraft is moved, wing walkers should be used to avoid possible damage to the aircraft.

To move the aircraft, place both hands on the propeller hub close to the spinner and gently pull or push. If more force is necessary, helpers can use the wing struts to assist. The aircraft can also be turned and/or pushed from the tail by standing close to the fuselage, pushing down on the fin to raise the nose wheel, and turning the airplane. Standing close to the fuselage, with one hand on the fin and one hand on the horizontal stabilizer next to the fuselage will allow you to push the aircraft backwards safely and without damage.

Parking and Tie-Down:

Proper tie-down procedure is your best precaution against damage to your parked airplane by gusty or strong winds. To tie down your airplane securely, proceed as follows:

A. Tie sufficiently strong ropes or chains to the wing tie-down fittings located at the upper end of each wing strut.

B. Secure the opposite ends of these ropes or chains to tie-down rings suitably anchored to the ground.

C. Tie a rope or chain through the tail tie-down fitting and secure to a tie-down ring in the ground.

D. Use a seat belt to gently hold the control yoke in the full back position.

Cleaning:

Windshield and Windows:

The windshield is a single piece of long-life polycarbonate plastic, highly resistant to impacts. To clean the windshield, wash with plenty of water and a small amount of Dawn dish soap, using your hand to feel and dislodge any caked dirt or mud. A soft cloth, sponge, or chamois may be used, but only as a means of carrying water to the plastic. Dry with a clean, damp chamois. Rubbing with a dry cloth builds up a static charge on the plastic so that it attracts dust particles from the air. Wiping with a damp chamois will remove the charge as well as the dust and is therefore recommended.

Remove oil and grease by rubbing lightly with a cloth wet with kerosene or hair shampoo. Do not use gasoline, alcohol, benzene acetone, carbon tetrachloride, lacquer thinner, or glass window cleaning spray, as they will soften the plastic and cause crazing.

Once the windows are clean they should be waxed with a good commercial product like Maguire's or an equivalent. These products will fill in small scratches and prevent additional scratching. Follow the manufacturer's directions for use.

Aircraft Exterior, Propeller, Wheels and Tires:

Wash with clear water and a small amount of Dawn dish liquid, rinsing thoroughly and drying with a clean chamois. Wax the surface to preserve the finish as noted above. We do not recommend using anything other than soap and water on the tires.

Engine Compartment:

The engine section should be kept free of any accumulation of oil, grease, and dirt to prevent a fire hazard. The bulkhead between the cabin and engine is galvanized steel and may be cleaned with recommended cleaners for grease and oil.

Upholstery:

Keeping the inside of your airplane clean is no more difficult than taking care of the rugs and furniture in your home. Use a vacuum to remove dust and debris. If spots or stains get on the upholstery they should be removed as soon as convenient before they have a chance to soak in and dry. Cleaning fluids with a carbon tetrachloride or naphtha base are recommended. Soap and water is not recommended on the seats as this can remove the fire retardant treatment.

Lubrication:

Eagle Aviation recommends the use of the LPS family of products (LPS NOS.1, 2 & 3) for general lubricating tasks.

The landing gear wheel bearings require periodic servicing.

2.0 INSPECTIONS

The Operational Inspection Checklist is for the 100-hour or annual inspection. It shall be performed by an LSA Repairman Maintenance or higher level certification. This checklist can be found at the end of this manual and contains the minimum items that are to be inspected during the 100-hour or annual inspection. It should be photocopied and used for each 100-hour or annual inspection, and documented appropriately. It should also be kept with the aircraft maintenance records indefinitely. A logbook endorsement should be made, as required.

3.0 STRUCTURES

Tools required: Basic hand tools
Parts needed: As Required
Heavy, LSA Repairman Maintenance
Frequency: 100 hour and annual inspection
Logbook Endorsement: Required

3.1 WINGS

The EA-100 uses an all-metal wing with a NACA profile of 650-18M. It is a high-lift low-speed style profile with gentle stall characteristics. The wing skins are riveted on hydro formed ribs and substructures in a normal traditional style. The wing is bolted to the fuselage and supported with a single strut. There is no maintenance associated with the wing other than general inspection for

dents and damage. If damage is noted, contact the manufacturer for recommended repair procedures.

The flaps are electrically controlled up and down via a switch in the panel. There is a total of 35° of travel. There is a placarded LED indicator in the panel indicating the flap position. For inspection, operate the flaps up and down. Observe that the flaps move smoothly and that both left and right are together and not split. Check for full travel limits and that they correlate to the flap indicator for position selected. Check the 2 bolts for proper torque that hook the flaps to the central rod that exits the cabin to the flaps.

The ailerons are connected to the yokes via pull cables and solid rods. To inspect, ensure that the yoke travel is free, correct and to limits. Check for cable tightness. There are 2 turnbuckles located directly under the panel. The cables should be taught and not loose. Check the safety wire on the turnbuckle.

Control surface travel is 35° up and 20° down. Flap travel is 0° to 35° to full down.

To remove the wings:

- Drain the fuel
- Remove the riveted fairing panel at the root of the wing.
- Remove the riveted interior panel where the fuel gauge is
- Remove the wing attach nuts
- Disconnect the NAV/Strobe harness
- Remove the jury strut
- Remove the wing strut (support the wing tip with a saw horse or other suitable support)
- Remove the wing attach bolts at the front and rear spars and remove the wing
- To install the wing, reverse procedure

3.2 FUSELAGE

The fuselage is an all-metal traditional design. There is no maintenance required other than checking for overall condition. If the fuselage is damaged, contact the manufacturer for repairs procedures.

The doors are hinge-pinned at the top with 2 hinges. The door is held open with a gas strut.

Inspections to the door are to check the 3 door closure pins for complete and smooth action.

To remove the doors:

- First remove the gas strut. Using a medium straight screwdriver, pry the release of one side of the strut off.
- Then remove the 2 hinge pins and remove the door.
- To install door, reverse procedure

The windshield and windows are Lexan material. This is a very tough and resilient material. Inspect for cracking and scratches, especially around the rivets.

Repairs to the windows and windshield are as follows:

- Scratches
  - Using a Micro Mesh kit, follow scratch removal procedure

- Cracks
  - If the crack in less than 1 inch long, it can be stop drilled and taped with clear packing 3M style to prevent further travel.
  - If it is determined necessary to replace the glass, then using a #30 drill, drill out all rivets
  - Install new Lexan and rivet place

Seats are an upright designed padded and adjustable with 8 inches forward and aft travel. No maintenance other than lubricating the tracks periodically with LPS 3 is required.

Safety belts are a 3-point lift buckle style. Check for cuts and the attachment hardware for proper torque. If the belts have become cut, than replacement is recommended.

3.3 TAIL

The tail is traditional of design symmetrical horizontal and vertical stabilizers with rudder and elevators. The rudder is connected via cables to the rudder pedals. The elevator is connected to the yoke via solid push pull tubes. Rudder limit travel is 22° left and right and elevator travel is 30° up and 20° down. To inspect, using a protractor and dial indicator check for full travel of both systems. Also ensure that the system is smooth and free. Adjustments can be made to the rudder cables via the turnbuckles located inside the cabin center console. The elevator adjustment linkage is located under the belly access door.

There is an electric trim system on the elevator. Check for full travel up and down. Ensure the indications match the control surface movement.

Control surface travel for the elevator is 35° up and 15° down. The rudder travel is 25° left and right.

There is no other maintenance required other than checking for overall condition. If the tail is damaged, contact manufacture for repairs procedures.

3.4 LANDING GEAR

The main gear is made of 6061-T6 aluminum and is bolted directly to the fuselage. The wheels are attached to the gear. The brake lines are nylon tied to the gear and run through the cabin to the rudder pedals. The brakes are hydraulic disc. For bleeding and inspection procedures see the Matco MFG recommendations. Check for brake lining and overall condition. If the pads need replacement follow the Matco procedure.

The nose gear is a suspended trailing link articulating design. It is directly connected to the rudder pedals for positive ground handling. Inspect for damage and overall condition. Check bolt torque.

- **Wheel removal**
  - Jack airplane using jack board available from Eagle Aircraft Co
  - Remove the 4 bolts holding the axle
  - Remove the brake line
  - Remove the wheel
  - To install, reverse procedure

- **Tire replacement**
  - Remove wheel
  - Remove the 3 bolts that hold the 2 wheel halves together
  - Separate the wheel halves
  - Remove tire
  - Place new tire and tube on one half
  - Bolt together the wheels making sure not to pinch the tube
  - Install wheel be reversing removal procedure

4.0 ENGINE

For additional information on the RAM 115 Engine please refer to the RAM 115 Operator's Manual supplied with this aircraft.

Standard engine: RAM 115 ASTM Compliant Engine.

General description:

- 4-stroke, 4 cylinder horizontally opposed, electronic ignition engine, one central camshaft - push-rods - OHV
- 115 HP @ 5000 rpm
- 130 foot pounds torque @ 3100
- Water cooled with overflow tank
- Wet sump lubrication
- Dual channel electronic control unit
- Electronic fuel injection
- Electric fuel pump
- Direct fire CDI ignition system
- Auto flight redrive with flywheel dampener system
- 12V geared electric starter
- 55 Amp serpentine belt driven alternator
- 2000 HR TBO
- Bore 92mm
- Stroke 67mm
- Displacement 1781cc
- Compression Ratio 9.7:1

4.1 ENGINE COWLING REMOVAL AND INSTALLATION

Tools required: screwdrivers
Parts needed: None
Line, Owner
Frequency: As required
Logbook Endorsement: Not required

Procedure:

- Verify both Masters OFF
- Disconnect negative side of battery
- Turn prop to vertical position by hand in the direction of engine rotation
- Remove the screws from the upper cowling
- Remove upper cowling by lifting straight up ensuring that the front of the cowl does not scrape on the spinner bulk head
- Remove screws on lower cowl
- Remove lower cowl
- To install, reverse removal procedure

Inspection:

Visually inspect cowl for stress cracks around the screw holes and overall condition. Cleaning is accomplished with soap and water. Grease and fuel stains can be removed with automotive products like Armor All stain remover.

Repairs:

Line, LSA Repairman Maintenance or higher with composite skills experience.

Procedure:

The cowl can be repaired with normal fiberglass resin patch kits available at local automotive stores. Light weight body filler can be used to fill any repairs that occur to the cowl as a result of the fiberglass repairs.

4.2 TROUBLESHOOTING OF ENGINE

Refer to the RAM 115 Maintenance manual, Section 7

Tools required: Basic hand tools
Parts needed: As required
Line: LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: As required

4.3 ENGINE OIL/FILTER CHANGE

Tools required: basic hand tools/oil filter wrench
Parts needed: oil and oil filter
Line: owner
Frequency: 50 hours when using aviation fuel, 100 hours when using auto fuel or annual, whichever occurs first.
Logbook Endorsement: Required

Procedure:

- Verify both Masters OFF
- Disconnect negative side of battery
- Verify oil pan is in place
- Disconnect Engine Oil Temp. Probe
- Remove oil plug
- Allow oil to drain
- With an oil filter wrench, remove oil filter and discard filter
- Prior to installing new oil filter, oil the rubber o-ring
- Spin on, hand tighten ¾ turn past rubber 0-ring engages seat and with oil filter wrench, tighten an additional ½ turn
- Replace oil plug, but do not over tighten
- Add new oil as outlined in Section 5.3 of the RAM 115 Operator's Manual
- Reconnect negative side of battery
- Run engine for approximately 30 seconds and verify oil level
- Add oil as necessary

4.4 ENGINE REMOVAL AND INSTALLATION

Tools required: Standard tool set, engine hoist and/or appropriate people to life engine
Parts needed: As needed
Heavy, LSA-Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

Procedure:

- Verify both Masters are OFF
- Disconnect battery
- Remove spinner and propeller
- Drain radiator coolant
- Remove radiator and hoses attached
- Remove heater core hose from engine and heater valve
- Remove heater valve cable

- Disconnect EGT, Oil Pressure, Oil Temp, Fuel Pressure sensors, etc.
- Clip and remove all nylon zip ties
- Remove all electrical wire harnesses
- Disconnect alternator wires
- Disconnect engine ground and positive cables located on starter
- Disconnect fuel lines
- Disconnect throttle cables
- Remove exhaust springs
- Unbolt exhaust pipes
- Remove muffler
- Remove exhaust pipes
- Place engine hoist over engine or call for lift personnel
- Secure lift straps and hook to lift
- Jack hoist until the rope is tight
- Remove engine mount bolts
- Lift engine up off of mounting bay
- Installation procedure, reverse removal procedure

4.5 ENGINE CLEANING

Tools required: General cleaning supplies
Parts needed: None
Line, Owner
Frequency: As required
Logbook Endorsement: Not required

Procedure:

- Remove engine cowling
- Spray engine down with water soluble engine degreaser
- Spray engine down with warm water, making sure not to spray water directly at the air filters, in the muffler exhaust pipe and the CDI and electrical connections
- Allow to dry thoroughly
- Replace engine cowlings

4.6 ACCESSORIES REMOVAL AND INSTALLATION

Tools required: Basic hand tools
Parts needed: None
Heavy, LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

NOTE: Verify both Masters are OFF and remove battery ground strap.

Procedure:

- Fuel pumps
  - Disconnect electrical lines from pumps

NOTE: Prior to disconnecting fuel lines either drain fuel from fuel tanks or be prepared to stop fuel flow by whatever means necessary.

  - Disconnect fuel lines
  - Remove attachment bolts
  - Inspect for debris in the inlet and outlet side
  - Wipe off any fuel around the pump
  - Install by reversing procedure

- Battery
  - Remove battery cables, negative first
  - Remove battery hold down clamp
  - Remove battery
  - Test volts with voltmeter
  - Charge if required
  - Battery is sealed, no water is required
  - Install by reversing procedure

- Exhaust system
  - Remove muffler springs
  - Remove nuts holding exhaust pipes
  - Remove muffler
  - Remove exhaust pipes
  - Inspect for general condition and cracks around the welds
  - Install with new crush type nuts
  - Install by reversing procedure

- Radiator

CAUTION: Do not drain fluid from radiator until radiator fluid is cooled to ambient temperature or else severe burns could occur. Also, after verifying that radiator fluid is cool, verify that there is not residual pressure by slowly taking the radiator reservoir cap off.

  - Drain coolant system by loosening the radiator plug and allowing to drain
  - Remove both radiator hoses
  - Remove radiator brackets and bolts
  - Inspect radiator for cracks and broken/pushed in fins
  - Install be reversing procedure

To replenish radiator fluid:

  - verify radiator plug is secure, opening engine bleed valve one turn (located on top and directly below fuel manifold), and pouring fluid directly into the radiator reservoir. NOTE: It helps to squeeze the radiator hoses while pouring fluid into the reservoir

- Once full, hand tighten the engine bleed valve. NOTE: Do not over tighten as you will strip out the brass threads
- Replace radiator reservoir cap
- Perform an engine run up and verify that the radiator reservoir fluid is correct

4.7 ENGINE BUILDUP

Eagle Aircraft recommends that the engine tear down and build up is performed by RAM Performance Engines. Please refer to their website for further information. (www.ramengines.com)

4.8 ENGINE COOLING/HEATER CORE SYSTEM TEST

Tools required: Basic hand tools
Parts needed: As Required
Heavy, LSA Repairman Maintenance
Frequency: As required, 100 hour and annual inspection
Logbook Endorsement: Required

Procedure:

- Visually inspect heater core, heater core tubing, radiator, radiator hoses, and all associated fittings and valves for chaffing, cracking and loose clamps/fittings
- If hose(s) appear to be damaged, replace and follow procedures in 4.6

4.9 STATIC RUN-UP PROCEDURES

CAUTION: It is imperative that all FOD and non-required personnel be cleared from the run-up area prior to Static Run-Up Procedures.

Tools required: none
Parts needed: none
Owner: Owner
Frequency: As required
Logbook Endorsement: As Required

Procedure:

- Clear area
- Chock main wheels
- Start and warm up engine as normal procedure
- Cover brakes for safety purposes
- Increase throttle smoothly to maximum RPM
- Reduce throttle to idle

- Let engine cool
- Shut off engine

4.10 ENGINE MOUNT

Tools required: Basic hand tools/engine hoist
Parts needed: Rubber engine mounts
Heavy, LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

Procedure:

- Remove engine as outlined in 4.4
- Remove engine mount bolts/brackets
- If required, remove engine mount
- Inspect rubber engine mounts checking for stress cracking in the rubber. If they have hardened, cracked or worn, replace
- Inspect for nicks, cracks, cracking around welds, and any bent tubes
- Nicks can be dressed out with sandpaper and painted with spray paint
- Bent tubes, or any cracking, contact manufacture for repair or replacement
- Install be reversing procedure

4.11 ENGINE OIL SYSTEM

Tools required: Basic hand tools
Parts needed: Oil/Filter
Heavy, LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

The RAM 115 Engine uses a wet sump design and other than periodic oil and filter changes, the oil system should be maintenance free. Oil and filter change procedures can be found in 4.3.

4.12 ENGINE FUEL SYSTEM

Tools required: Basic hand tools
Parts needed: As required
Line, LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

From the firewall forward, the engine fuel system consists of two fuel filters, two fuel pumps, fuel rails, fuel injectors (one per cylinder) and a fuel pressure regulator. If it has been determined that a fuel system component needs to be replaced, follow the steps below. Prior to replacing any fuel system part, verify that the Masters are OFF and the battery is disconnected. Also verify that either the fuel system has been drained or another way of restricting fuel flow has been determined.

Fuel Pump(s): Follow steps outlined in 4.6/Fuel Pumps.
Fuel Filter(s): Remove old fuel filter and install new filter with new fuel clamps.
Fuel Injectors: Contact RAM Performance for procedure.
Fuel Pressure Regulator: Remove faulty regulator and install new regulator with new fuel clamps.

4.13 AIR INDUCTION/FILTER REMOVAL AND SERVICING

Tools required: Basic hand tools
Parts needed: As required
Line, Owner
Line, LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

The air filter can be removed by simply loosening the band clamp that secures it and pulling it off towards the firewall. It should be cleaned by tapping it on a hard surface or using compressed air. If it has been determined that the air filter should be replaced, replace the filter over the air induction inlet and secure it by tightening the band clamp.

4.14 IGNITION SYSTEM

Tools required: Basic hand tools
Parts needed: As required
Line, Owner (spark plug, coil, wire harness replacement)
Frequency: As required
Logbook Endorsement: Required

The RAM Ignition System is a direct fire CDI ignition system. It consists of the Electronic Control Unit (ECU), 4 coils, 4 spark plugs (one per cylinder) and 4 wire harnesses. If the ECU is determined to be at fault, Eagle Aviation shall be contacted and will follow up with procedures to follow. Any other ignition component on the RAM 115 can be purchased from most any automotive supply store. The replacement of a spark plug, coil or wire harness is self explanatory, but if any questions do arise, Eagle Aviation should be contacted.

The spark plugs that are required and need to be used are the Autolite Platinum AP3924. Prior to install, each plug should be gap checked for .035-.040.

4.15 ENGINE CONTROLS

Tools required: Basic hand tools
Parts needed: As required
Heavy: LSA Repairman Maintenance
Frequency: As required, 100 hour and annual inspections
Logbook Endorsement: Required

The EA-100 uses a push/pull cable for the control of the throttle. This system is set at the factory and normally does not need any adjustment. However it is possible that the system can become out of proper rigging due to various procedures performed. For safety reasons, the RAM 115 engine uses a spring loaded wide open throttle position if throttle linkage failure would occur. The throttle system uses a knob type push/pull lever connected to a solid mechanical rocking action lever. If a throttle rigging problem does occur, there are three rigging points that need to be checked. First, check that the blue firewall cable lock nut is secure. Second, check that the nut on the end of the throttle cable (where it connects to the throttle/butterfly throat plate assembly) is secure. Lastly, verify that the articulating throttle arm is secure and the nut has not backed off. Lock Tight could also be applied to these nuts. Once this is accomplished, an idle and full RPM run up check should be performed to verify proper throttle rigging.

Because the RAM 115 is fuel injected and has electronic ignition, there are no choke and/or carburetor ice systems/cables for rigging.

4.16 ENGINE IDLE ADJUSTMENT

Tools required: Basic hand tools
Parts needed: As required
Heavy: LSA Repairman Maintenance
Frequency: As required
Logbook Endorsement: Required

The engine should idle at 1,200 RPM ± 25 RPM. This check should take place once the engine has warmed up to normal operating temperature, is static, and wind conditions are calm. Also, any adjustments should be made with the engine stopped and both Masters verified OFF.

A wrench will be required to loosen the idle set screw nut. This nut is located on the bottom of the throttle body assembly, next to the articulating throttle arm. It is recommended that the set screw be turned only ¼ to ½ turn and then rechecked. Once the proper idle is established, tighten the idle set screw nut.

5.0 FUEL SYSTEM

There are 3 fuel tanks, two in each wing and one belly tank. Each wing tank holds 9 gallons and the belly tank holds 2 gallons, for a total system capacity of 20 gallons. There is approximately 2 gallons of unusable fuel. All tanks are aluminum and rectangular in shape. They are permanently

mounted and removal is not required or recommended. The main wing tanks have a visible clear tube that can be read from the cabin by the occupants. The level on each clear tube reads Full, ¾, ½,¼ and Empty. Both wing tanks have independent vents located under the wing near the wing strut and the belly tank is vented back to the left (pilot) fuel tank. There is one fuel valve drain located on the belly which is used to drain any impurities from the fuel system.

Fuel is pumped by two electric fuel pumps located on the firewall. The fuel leaves the wing tanks and travels to a "T" joint that joins both wing tank fuel capacities. From the "T" joint the fuel travels to the belly tank and forward through the firewall where it is split into two separate fuel lines again through a "T" joint. Both fuel paths flow through a separate fuel filter and to its corresponding fuel pump. Each fuel pump pressurizes the fuel and is once again joined together into one fuel line through a "T" joint. The pressurized fuel then flows to the fuel rail and distributed into each cylinder via a corresponding fuel injector. The fuel injectors are controlled by the Engine Control Unit (ECU). A pressure regulator regulates the amount of pressure required by the ECU to operate the fuel injectors and the unused fuel is then returned via a fuel return line into the low pressure side of the fuel system, just prior to the fuel filters.

The fuel pumps are turned ON and OFF by corresponding switches located in the cockpit. The fuel pumps also function as fuel shutoff valves. When a pump is not on, fuel cannot flow because it is a gear type pump. Fuel pressure is monitored and viewed in the cockpit via the Engine Information System. For safety and redundancy, both fuel pumps are used during start, take-off and landing, but one fuel pump can adequately supply fuel pressure demands for all RPM operating ranges. Because two pumps are not required for extended flight, one pump should be turned off to conserve pump life and reduce electrical draw. Anytime a rough running engine is experienced, both fuel pumps should immediately be turned ON. 100LL aviation fuel and 91 octane auto gas can be used in the RAM 115. It is also acceptable to burn 91 octane auto gas that contains up to 10% ethanol.

Tools required: Basic hand tools
Parts needed: As required
Heavy: LSA Repairman Maintenance
Frequency: As required, 100 hour and annual inspections
Logbook Endorsement: Required

NOTE: Prior to performing any procedures below, read the following CAUTIONS.

CAUTION: Verify both Masters are OFF and remove battery ground strap.

CAUTION: Prior to disconnecting fuel lines either drain fuel from fuel tanks or be prepared to stop fuel flow by whatever means necessary.

Procedure:

- Main fuel pump removal and replacement
  - Verify both Masters are OFF
  - Disconnect wires to the pump
  - Remove the bolt securing the pump
  - Loosen the fuel line clamps

  - Remove pump
  - To replace pump, reverse procedure

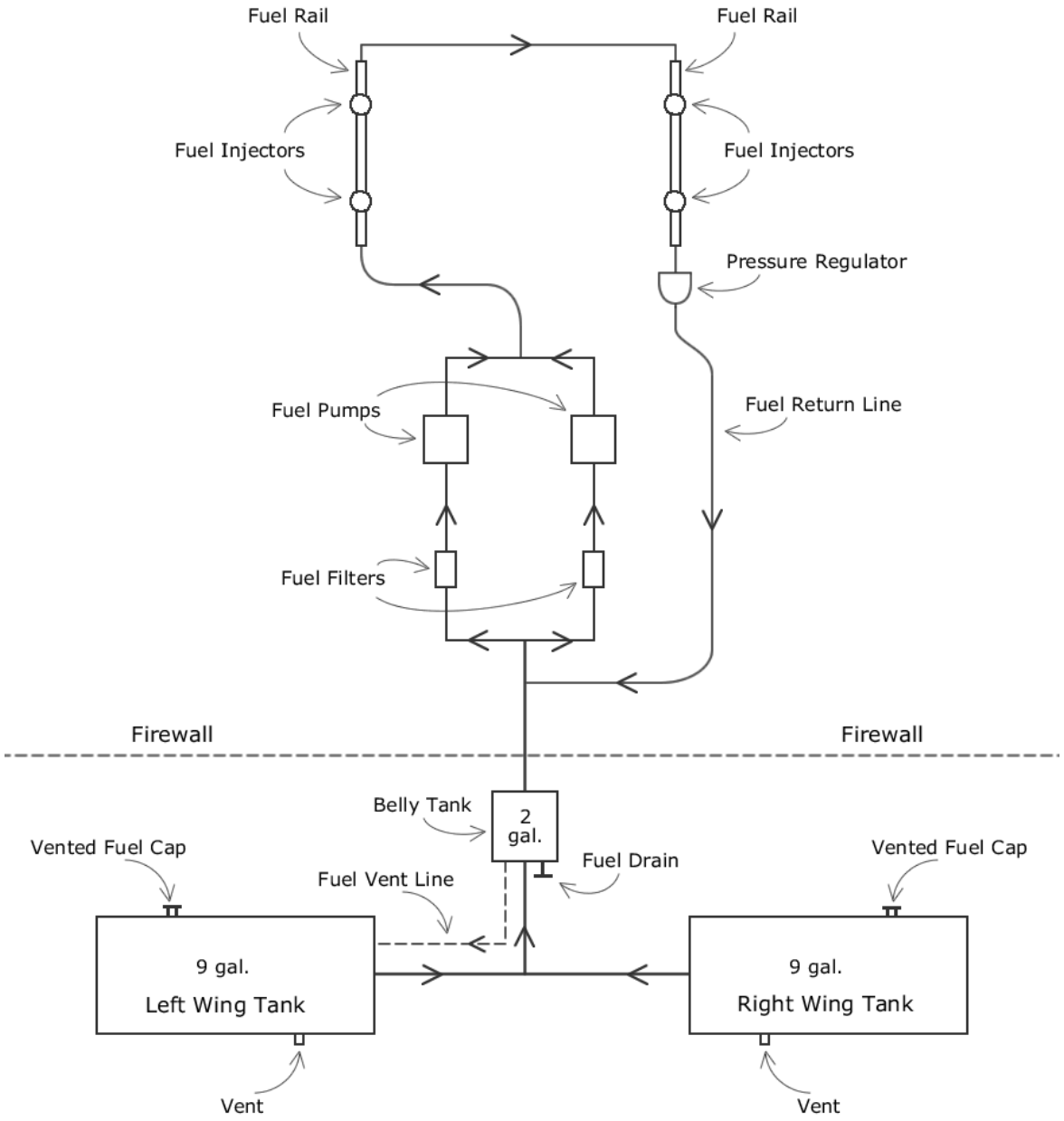
- Fuel filter removal and replacement
  - Loosen fuel line clamps to filter
  - Remove fuel filter
  - To replace filter reverse procedure

- Fuel distribution system inspection
  - Check all hoses and connections for clamp tightness and leaks
  - If source of leak cannot be found, pressurize the fuel system by turning fuel pumps ON and verify pressure on Engine Information System
  - Recheck all hoses and connections
  - If source of leak is found, depressurize and drain the fuel system
  - Replace faulty part
  - Add fuel, re-pressurize the fuel system and verify that no fuel leak exists.
  - If source of fuel leak/smell cannot be found, do not fly aircraft and contact Eagle Aviation for procedure to follow.

* Refer to Fuel System Diagram on next page.

Fuel System Diagram

(Not to scale)



6.0 PROPELLER

The propeller used is the R70D (long shank), Adjustable Pitch, Power Sweep Propeller (66”-70”), manufactured by Sensenich. The pitch is set by the factory and is matched correctly to the EA-100 for optimal performance. There is a metal leading edge protection guard that adds durability and life the propeller. There is no maintenance required as to the direct operation of the aircraft and no time limit for overhaul.

Tools required: Basic hand tools
Parts needed: Safety wire
Heavy: LSA Repairman Maintenance
Frequency: As required, 100 hour and annual inspections
Logbook Endorsement: Required

Procedure:

- Repair
  - All repairs to the propeller are to be made by the manufacturer
  - Remove the propeller and send to manufacture for repairs

- Removal
  - Verify both Masters are OFF and disconnect negative side of battery
  - Remove both engine cowlings
  - Remove all screws holding spinner
  - Cut and remove safety wires
  - Remove bolts holding propeller
  - Installation, reverse procedure, torque bolts to 25 ft/lbs

- Field repairs
  - With any sign of cracking, prop strike of any sort, do not fly aircraft, remove prop and send to manufacture
  - Small nicks (no greater than the width of a dime) that do not penetrate the carbon fiber and/or leading edge metal guard can be sanded out with fine grit sandpaper. Start with 320 wet/dry and work up to 1200 grit wet/dry
  - If there is any question as to the size and depth of a nick, contact Eagle Aviation prior to flight

7.0 UTILITY SYSTEMS

Cabin heating and airflow for the EA-100 is a forced air, heater core type system that avoids any chance of carbon monoxide poisoning from the forced air system. Hot water is routed from the engine to a heater core located behind the pilot’s side instrument panel. A fan then moves air through the heater core and into the ducting system.

Determining on the position of the heater core valve, ambient or hot air is directed to both the lower vent ducts and to the defrost vent eyelets. The defrost vent eyelets are movable and can

be adjusted to direct airflow, and can be totally shutoff if not needed or if maximum lower vent airflow is required. The heater fan switch is a two-position switch which offers low or high airflow. The air flow temperature is controlled by the heater push/pull control knob. Both of these control devices are located on the center cockpit panel.

There are 2 'Vista Vents' in the windshield for fresh air. These are operated by the pilot and passenger to control fresh air into the cabin.

Tools required: Basic hand tools
Parts needed: As required
Heavy: LSA Repairman Maintenance
Frequency: As required, 100 hour and annual inspections
Logbook Endorsement: Required

Troubleshooting: There is little maintenance required for the heating system. Normal items to check are; leaking heater core tubing or loose duct pipes.

- Leaking heater core system
  - Identify source of leak
  - Refer to 4.6 and 4.8 for procedures

- Check the operation and distribution of airflow and temperature control devices
  - Check for smooth and free operation
  - Replace cables if they are binding and not freely operating
  - Check free movement of defrost eye ducts and shut off capability
  - Replace if faulty

- The 'Vista Vents' generally do not require any maintenance however if they become cracked they should be replaced
  - Unscrew the 4 screws holding the vent on
  - Install new vent in the windshield

8.0 INSTRUMENTS, SYSTEMS AND AVIONICS

The EA-100 S-LSA uses traditional style instruments for flight. Engine and systems monitoring is performed by the Engine Information System. The instrument panel has 3 sections. Each section can be removed by unscrewing the face screws.

The left panel section contains: flight critical switches

The center panel section contains: flight and navigation instruments, comm. Radio

The right panel section contains: Engine Information System, light switches, ELT switch, and control surface switches/indicators

The center lower panel contains: throttle quadrant, intercom volume controls, headset jack plug-ins (on side of quadrant), pitch trim switch, heater controls, and audio aux.

Refer to the POH for the weights and arms of the optional equipment.

None of the instruments in the EA-100 require any maintenance. If the instrument becomes inoperative it should be removed and replaced. This should be completed by a FAA approved avionics shop.

Tools required: Basic hand tools
Parts needed: As required
Heavy: LSA Repairman Maintenance, Authorized Avionics Repair Station
Frequency: As required, 100 hour and annual inspections, Per 91 Requirements
Logbook Endorsement: Required

- General instrument removal procedure
  - It is normally not required to remove the instrument panel
  - Each instrument is individually wired in a fashion that will allow for the instrument to be unscrewed and disconnected.
  - Remove battery ground strap before attempting to remove any instrument
  - Unscrew face screws for the affected instrument
  - Remove instrument and disconnect wire harness
  - Replace and reverse procedure

- Pitot/static system
  - The pitot tube is located on the left wing leading edge
  - Should there be damage to it, unscrew and replace making sure to replace the rubber o-rings
  - The pitot tube is connected to a flexible hose that travels through the wing and into the airspeed indicator
  - The airspeed, altimeter, VSI, transponder and encoder are all plumbed together. The line is open to the cabin for static pressure.
  - The system should have a pitot/static system check every 24 months as per FAR 91

9.0 ELECTRICAL SYSTEMS

The EA-100 has 2 electrical sources; battery and engine generated and regulated power. The battery is a series 14 30AH sealed battery. It is mounted on the firewall in a battery tray. Engine driven electrical power is produced by the magneto and regulated to 14.4V. Total power available is 55 amps.

All electrical equipment is protected via fuses. All power comes from the battery and the engine supplies power to the battery. This provides default redundancy if the engine electrical power becomes in-op, the battery continues to supply electrical power.. Should the engine electrical power fail, the system power will drop to battery voltage of 12 V. This will illuminate a light on the panel indicating the failure. The battery has enough energy to run all systems for 30 minutes.

There are 2 electric busses for the distribution of electrical power. The start master and the avionics master. They are energized by 2 spring loaded switches located on the panel. Loads that are critical to flight are on the start bus and non-essential loads are on the avionics bus. This will allow for quick load shedding should there be a failure of electrical power.

The flaps and trims are electric systems.

Refer to the electrical schematics for the distribution of power.

There is an ELT located in the belly. Access is from the door under the fuselage. There is a remote switch located on the instrument panel.

For overall trouble shooting refer to the manuals that accompany the individual system.

List of electrical equipment:

- Engine gauges
- Panel lights
- Radio/GPS
- Transponder
- Encoder
- High/low voltage system sensor
- Low fuel level system
- NAV lights
- Strobe lights
- Landing light
- Accessory outlet
- Trim system
- Flaps
- Intercom
- ELT system

10.0 STRUCTURAL REPAIR

The EA-100 is of conventional design and construction. Damage that occurs will be reported to Eagle Aviation for specific repair procedures.

Any procedure not identified in this manual must be referred to the manufacturer for further instructions. All repairs will follow the manufactures recommendations and/or the proven techniques as presented in AC 43.13. All repairs will be documented appropriately in the airframe logbook.

11.0 EXTERIOR PAINT AND COATINGS

The paint used is DuPont Imron style. Application is via HVLP. Repairs can be accomplished by using the same paint and general industry standard methods of repair.

Authorized aircraft paint shops and FBO's that provide maintenance are approved. Repainting of any nature will be documented appropriately in the airframe logbook.

12.0 OVERHAUL

Should it become necessary because of damage from weather, accident, etc., to overhaul the aircraft, contact Eagle Aviation for procedures.

13.0 SAFETY DIRECTIVES

Eagle Aviation LLC will notify all owners of record of any safety directives that arise. The owner will be notified as to the level and corrective procedures. These procedures are outlined in the Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft Manual(SP).

14.0 RECORD OF REVISIONS

The revision chart is updated by Eagle Aircraft Company LLC each time a revision is issued. The chart contains a list of all revisions made to the Maintenance Manual since its original issue. All affected pages will be noted with a '-'symbol. This will aid the pilot in easily identifying the information that has changed.

Revision No.	**Date**	**Affected Chapters**	**Affected Pages**	**Date Entered**
Original Issue	11-10-2007	N/A	N/A	Eagle Aircraft CO

15.0 OPERATIONAL INSPECTION CHECKLIST

Aircraft Make/Model: _____ S/N: _____

Engine Make/Model: _____ S/N: _____

Date of Inspection: _____ TT Airframe: _____ TT Engine:_____

Inspector: _____ Cert. #: _____

Scope and Detail of Items (As Applicable to the Particular Aircraft) to be Included in Annual and 100-Hour Inspections. If a specific item does not apply, place "n/a" as appropriate, in space provided.

(a) Each person performing an annual or 100-hour inspection shall, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He shall thoroughly clean the aircraft and aircraft engine after initial visual inspection for oil, exhaust, or other leaks as applicable is completed.

(b) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the fuselage and hull group:

____Pass ____Fail (1) Fabric and skin-for deterioration, distortion, other evidence of failure, and defective or insecure attachment of fittings.

____Pass ____Fail (2) Systems and components-for improper installation, apparent defects, and unsatisfactory operation.

(c) Each person performing an annual or 100-h inspection shall inspect (where applicable) the following components of the cabin and cockpit group:

____Pass ____Fail (1) Generally/for uncleanliness and loose equipment that might foul the controls.

____Pass ____Fail (2) Seats and safety belts/for poor condition and apparent defects.

____Pass ____Fail (3) Windows and windshields/for deterioration and breakage.

____Pass ____Fail (4) Instruments/for poor condition, mounting, marking, and (where practicable) improper operation.

____Pass ____Fail (5) Flight and engine controls/for improper installation and improper operation.

____Pass ____Fail (6) Batteries/for improper installation and improper charge.

____Pass ____Fail (7) All systems/for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.

(d) Each person performing an annual or 100-hour inspection shall inspect (where applicable) components of the engine and nacelle group as follows:

____Pass ____Fail (1) Engine section/for visual evidence of excessive oil, fuel, or hydraulic leaks, and sources of such leaks.

____Pass ____Fail (2) Studs and nuts/for improper torquing and obvious defects.

____Pass ____Fail (3) Internal engine/for cylinder compression and for metal particles or foreign matter on screens and sump drain plugs. If there is weak cylinder compression, for improper internal condition and improper internal tolerances.

____Pass ____Fail (4) Engine mount/for cracks, looseness of mounting, and looseness of engine to mount.

____Pass ____Fail (5) Flexible vibration dampeners/for poor condition and deterioration.

____Pass ____Fail (6) Engine controls/for defects, improper travel, and improper safetying.

____Pass ____Fail (7) Lines, hoses, and clamps/for leaks, improper condition and looseness.

____Pass ____Fail (8) Exhaust stacks/for cracks, defects, and improper attachment.

____Pass ____Fail (9) Accessories/for apparent defects in security of mounting.

____Pass ____Fail (10) All systems/for improper installation, poor general condition, defects, and insecure attachment.

____Pass ____Fail (11) Cowling/for cracks, and defects.

(e) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the landing gear group:

____Pass ____Fail (1) All units/for poor condition and insecurity of attachment.

____Pass ____Fail (2) Shock absorbing devices/for improper oleo fluid level.

____Pass ____Fail (3) Linkages, trusses, and members/for undue or excessive wear fatigue, and distortion.

____Pass ____Fail (4) Hydraulic brake lines/for leakage.

____Pass ____Fail (5) Wheels/for cracks, defects, and condition of bearings.

____Pass ____Fail (6) Tires/for wear and cuts.

____Pass ____Fail (7) Brakes/for improper adjustment.

____Pass ____Fail (8) Floats and skis/for insecure attachment and obvious or apparent defects.

____Pass ____Fail (f) Each person performing an annual or 100-hour inspection shall inspect (where applicable) all components of the wing and center section assembly for poor

general condition, fabric or skin deterioration, distortion, evidence of failure, and insecurity of attachment.

____Pass ____Fail (g) Each person performing an annual or 100-hour inspection shall inspect (where applicable) all components and systems that make up the complete empennage assembly for poor general condition, fabric or skin deterioration, distortion, evidence of failure, insecure attachment, improper component installation, and improper component operation.

(h) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the propeller group:

____Pass ____Fail (1) Propeller assembly/for cracks, nicks, binds, and oil leakage.

____Pass ____Fail (2) Bolts/for improper torquing and lack of safetying.

(i) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the radio group:

____Pass ____Fail (1) Radio and electronic equipment/for improper installation and insecure mounting.

____Pass ____Fail (2) Wiring and conduits/for improper routing, insecure mounting, and obvious defects.

____Pass ____Fail (3) Bonding and shielding/for improper installation and poor condition.

____Pass ____Fail (4) Antenna including trailing antenna/for poor condition, insecure mounting, and improper operation.

____Pass ____Fail (j) Each person performing an annual or 100-hour inspection shall inspect (where applicable) each installed piece of optional equipment on this listing for improper installation and improper operation.

____Pass ____Fail Option number one: _____

____Pass ____Fail Option number two: _____

____Pass ____Fail Option number three: _____

____Pass ____Fail Option number four: _____

____Pass ____Fail (k) Each person performing an annual or 100-hour inspection shall remove and inspect the ELT installed for proper operation of the “G” switch and calendar date currency of the batteries installed in accordance with FAA Advisory Circular 91-44 current revision.

Notes and explanation of unairworthy items found:

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