1. APPLICABILITY

This Service Instruction applies to all AVStar manufactured carburetors: LVC-3-3A, LVC-3-3PA, LVC-5-4PA, LVC-5-5BPA, LVC-5-5PA, LHC-6-6BPA & LHC-6-6BA.

2. REASON FOR PUBLICATION

To relay precautionary information about the idle mixture screw defining the inspection criteria to ensure adequate engagement of the screw within the carburetor throttle body. This service information letter also provides information for setting up the proper idle mixture rise and serves as a supplement to the instructions in the Engine Operating Manual.

3. INSTRUCTIONS FOR COMPLIANCE

3.1 Refer to the engine manufacturers recommended operating temperatures. Ensure the engine is up to the recommended operating oil temperature prior to checking or altering the idle mixture settings.

3.2 Perform the mag-drop test as outlined in the engine manufacturers manual.

3.3 With the throttle control in the idle position verify the engine is idling at the engine speed recommended by the airframe manufacturer. If the airframer does not list a recommended idling speed, refer to the engine manufacturers recommendation. If neither provide a recommended idle speed, 700 +/-50 RPM is preferred. If any of the idle mixture adjustments (fuel) performed in the following instructions changes the engine speed appreciably, adjust the engine speed accordingly to the optimum speed as noted above using the idle speed screw located at the carburetor throttle stop. This adjustment controls the amount of intake air provided to achieve the idle speed required.

3.4 Once the engine idle speed has stabilized, move the cockpit mixture control lever with a smooth, steady and slow motion towards the idle cut-off position. Observe the tachometer for any changes to engine speed during the leaning process. Exercise caution to return the mixture to full rich should the RPM drop to a point where the engine begins to cut out.

3.5 During the leaning process, an engine speed increase of **no more than** 50 RPM is desired.

3.6 The ideal idle mixture setting will provide a fuel mixture sufficient for proper engine acceleration in most conditions and lean enough to mitigate spark plug fouling at idle. This will also provide the maximum RPM with minimum manifold pressure.

3.7 A rise of more than 50 RPM indicates the idle mixture is too rich. An immediate decrease in engine speed with no increase in idle speed indicates the mixture is too lean. An idle rise of between 10 to 50 RPM will satisfy most operating conditions.

3.8 If the mixture rise check does not satisfy the necessary requirements listed above, proceed to adjust the idle fuel flow by adjusting the idle mixture. Some model carburetors indicate on the mixture screw the direction to richen or lean the mixture. Turning the screw clockwise will lean the mixture, counterclockwise will richen the mixture.

3.9 ⚠ **WARNING:** It is considered best practice anytime the idle mixture is adjusted to verify it is secure. The needle is held in tension by means of a compression spring. If excessive adjustment is made in the rich direction, it is possible to lose compression in the spring which would then allow the needle to move, and in worst cases back out completely resulting in loss of engine power. Caution should be exercised following any adjustments to ensure the spring is still under compression.

3.10 If an adjustment is made to the mixture screw, run the engine up to approximately 2000 RPM to clear the engine. After returning to idle, observe the idle speed to determine if changes to the idle speed screw are necessary before repeating Step 3.4. To adjust the idle speed, turn the idle speed screw clockwise to increase idle speed, and counterclockwise to decrease idle speed.

3.11 The maximum idle speed achieved during the lean rise check is the engines “best power” setting at idle. The goal is the set the idle mixture slightly rich of this best power setting. Repeat this sequence as necessary to achieve a mixture that provides a 10 to 50 RPM rise.

3.12 Refer to AVStar’s published parts catalogs for part numbers if replacement of any items is necessary. Idle speed screw, spring, cup, o-ring and needles vary by model and carburetor setting part number. Never use any component without first validating its part number and applicability. The correct sequence and integrity of parts is vital for proper function.

3.13 In the event a mixture rise cannot be achieved, and the idle mixture needle cannot be adjusted any further rich because the spring would lose compression, it is recommended to adjust the idle speed. With the mixture needle in the same position, decreasing the idle speed will yield a richer air-fuel mixture as there will be less air for the same amount of fuel.

3.14 Should a lean rise still not be achieved following the instructions provided in this letter, please contact Product Support at AVStar Fuel Systems for additional troubleshooting and instructions

4. ADDITIONAL RECOMMENDATIONS

4.1 Following a successful idle set-up, additional adjustments should only be required as environmental changes warrant, be that temperature affects or different airport elevations.

4.2 Should the airframe be equipped, it is recommended to document and note all engine parameters available for future troubleshooting and set-up. If available, note engine manifold pressure and fuel flow at idle, as well as outside air temperature, elevation and atmospheric pressure. These values will assist in future adjustments as required, as well as lend helpful benchmarks for troubleshooting if necessary. If fuel flow values are not available, note how the mixture needle is set. Typically, the reference point is made by number of turns out the needle is from a seated or threaded all the way in position. Do not overtighten the needle when referencing the seated position. Damage to the needle or internal seat within the throttle body can adversely affect its performance. Over time, documenting the various settings over varying environmental conditions will aide and expedite the process in the future.