



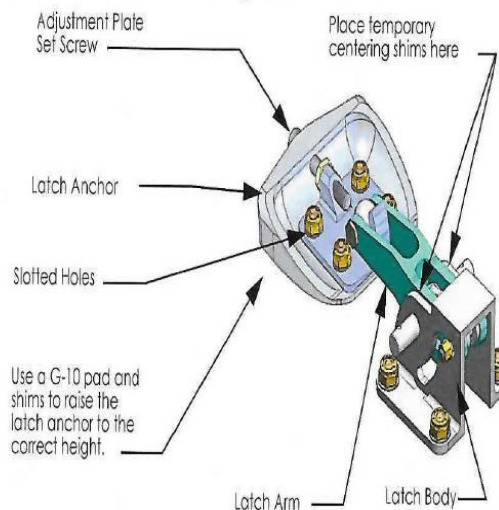
2159 SW 2<sup>nd</sup> Ct.  
Redmond OR 97756  
[REDACTED]

April 20, 2021

### Evolution Door Latch Advisory:

In the last several months there have been two incidents involving a door latch failure. One incident in late 2020 involved the subject Evolution door partially opening at FL280 resulting in significant damage to the door and another one in February 2021 resulted in the loss of the door at FL240. Previous failures of the door latch assembly appeared to result from door latch locking balls not coming into complete contact with their sockets in the latch anchor. Consequently, the latch did not carry the load and the adjacent latch carried the load and it subsequently failed. The original and redesigned latch bodies were made of aluminum. If all latch sockets are fully seated they will work as designed and will carry the load. However if the ball does not latch completely with its corresponding socket, then the adjacent aluminum latch body cannot fully carry both loads and could ultimately fail. Any door latch failure could result in a loss of cabin pressure, may require use of supplemental oxygen and necessitate an emergency descent. If the door completely departs in flight, damage to surrounding airframe structures could cause a loss of the aircraft.

Figure 15.2.D.3 Latch and Anchor Alignment

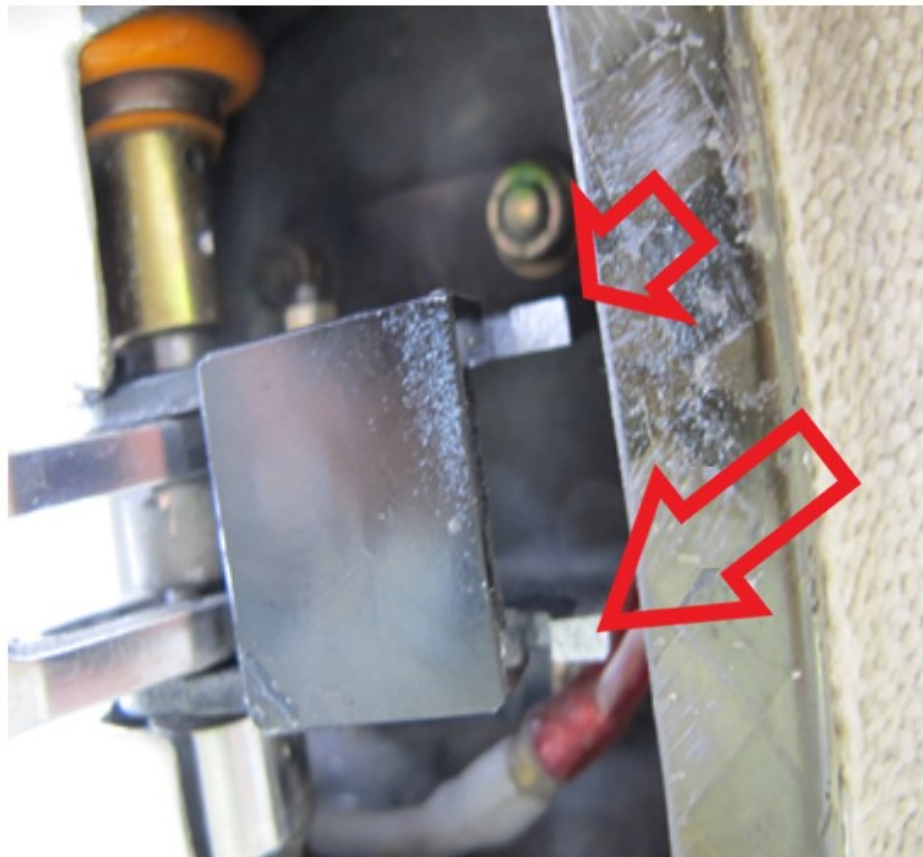


Latch body (above)

Before the next flight ensure that all seven latch balls fully seat in their sockets. You may have to remove the pilot seat to assess that they do seat properly. There should be no clearance

between the ball and socket. This can be determined using a feeler gauge and a flashlight. Be aware that temperature differences can influence the ball and socket fit—so if your locale experiences wide temperature swings ensure you check ball and socket fit again when temperatures swing.

Before takeoff on every flight ensure that the balls are correctly seated (refer to your Pilot Operating Handbook). Additionally, ensure no clothing, cords, or other items become trapped between the ball and socket when you close the door. This interference will also contribute to a latch failure. Additionally make sure that you do not inflate your door seal prior to fully engaging the door lock system.



A few original Evolution kits had a non-adjustable latching system. Later Evolutions have an adjustable latching system so that if one ball is not seating properly then it can be adjusted independently of the others by your maintenance shop. The original system cannot be adjusted. A retrofit to the latest Evolution adjustable door latching system is recommended. Determine which system you have.



Original spline drive pictured on top. Current, preferred, coupler system on bottom.

Annually, during your condition inspection, have your maintenance shop carefully check your door latch system by noting the contact between the ball and socket with a feeler gauge and make adjustments to ensure a proper fit in accordance with Evolution Build Manual page 15-10, paragraph 5). Additionally, since your two door hinges are part of the door system, they should be removed and the pin should be removed and inspected for wear. Replace worn hinges.

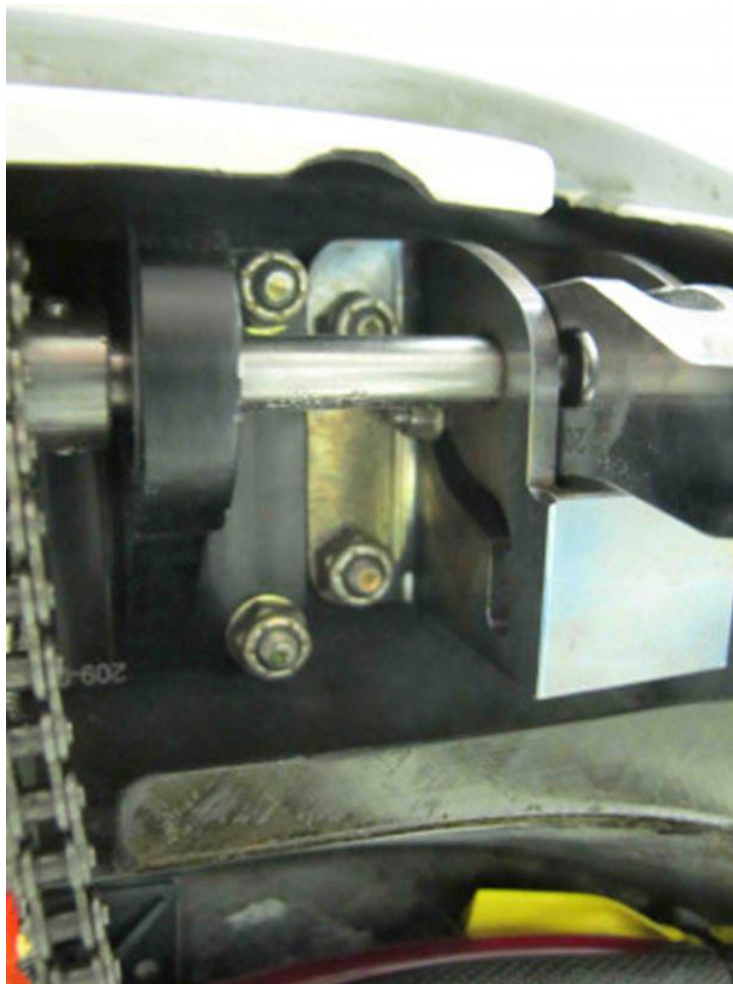


Worn hinge pin pictured.

You or your shop should also inspect the spline connections that drive the over center latch mechanism for wear. Failure of the spline mechanism can lead to a door latch not engaging and a resulting door failure inflight.



Evolution Aircraft Company has designed and produced a stainless steel latch base with a significant increase in ultimate tensile strength. It is recommended that the aluminum latch bases be replaced at your next condition inspection.



Stainless steel latch body installed (above)

If you would like to replace your door latch bases to stainless steel, contact Kim Lorentzen at [REDACTED] It is recommended that you have a qualified shop complete this installation.



Latch system (above). Above photo is of an earlier Evolution kit.