

CAA-FILE

CULVER AIRCRAFT CORPORATION
WICHITA, KANSAS

CIVIL AERONAUTICS ADMINISTRATION

General Inspection Division

District Office

NO. 1

MEMORANDUM TO CULVER LCA & LFA OWNERS.

SUBJECT: CARE AND OPERATION OF RETRACTING LANDING GEAR.

1. The landing gear on your Culver was designed to retract in order to give you the advantages of higher cruising speeds with a consequent saving in time and operating cost which naturally result. At the same time, it must be realized that the addition of the extra controls and mechanism requires an understanding on the part of the operator of the proper operation, inspection, and maintenance of this equipment. The Culver Aircraft Corporation considers it advisable to issue this memorandum.

2. Operation of Gear.

The landing gear is controlled from the cockpit by means of a mechanical hook-up. The lock pins are operated by a knob on the top of the retracting unit. This knob also operates the latch which holds the gear in the retracted position. The hand wheel is used to retract the gear or to return the gear to the extended position, if gravity is insufficient to fully extend it. A throttle inter-connection is fitted to the lock pin control so that the engine can not be throttled for a landing unless the gear is down and the lock pins are in place. On the ground the lock pin control must always be in the "Lock" position on the left limit of travel.

After taking off and climbing to a safe height, the lock pin control is moved to the "Retract" or center position after which the gear may be retracted by pulling on the right rim of the retracting wheel for just under two full turns. The wheels may be observed at all times through the windows in the top of the wheel wells.

To extend the wheels the lock pin control is moved to the "Extend" or right position and the gear will fall of its own weight, with the hydraulic dash pot limiting the extension to a slow rate of speed. If the retracting wheel is pulled just before moving the lock pin control to "Extended", it will be found that the control works much easier since the load on the latch is thereby relieved. The retracting wheel is next pushed down on the right side against the stop which lines up the lock pin holes. The lock pin control is then moved back to the "Lock" or left side, and the landing may then be made. The lock pin control can only be moved to the "Lock" position when the gear is down and in position for locking.

It is good practice for the operator to develop the habit of checking the retracting wheel motion with his right hand each time the gear is extended and if the gear tends to fall fast for one turn, oil should be added to the dash pot. If the oil is apparently low the operator can snub the wheel motion with his right hand until oil can be added and thus never run the chance of dropping the gear unrestrained with the dash pot low, thereby straining the mechanism. Another advantage of this practice is that the right hand is in position to push the gear against the stop, preparatory to locking.

The landing gear should never be unlocked when the engine is throttled back to idling as the interconnection control plunger bends the quadrant on the throttle arm.

3. Inspection of Gear.

We recommend that the gear be inspected frequently by a qualified person and that the ship be blocked up occasionally and the gear operation checked. Particular care should be taken to check for proper setting of the stop and to see that both lock pin holes line up. Also, be sure to keep the hydraulic dash pot nearly full of SAE #30 motor oil.

4. Maintenance.

Should either stiff operation or inspection reveal the need for maintenance work, never change the adjusting links until the exact need for such action is definitely located. First thoroughly clean and oil the locking pins, guides, and operating mechanism. Should the pins still not freely enter the holes examine the retracting links for damage due to dropping the gear hard against the stop and also check the stop. If all parts are satisfactory and the pins are only slightly off ($1/32$) when the stop is adjusted correctly, it is then permissible to readjust for alignment by means of one of the adjusting links. Should the hole be appreciably more than $1/32$ " out of synchronization, the parts should be removed and inspected thoroughly to locate the reason, and the responsible member repaired or replaced. To neglect the warning implied by stiff operation is to invite trouble. With proper instruction and practice the gear may be easily and quickly operated by the right hand and becomes a matter of subconscious habit.

The oleo springs and oil level should be inspected each time the airplane is raised for checking the gear. The springs should always completely extend the gear when off the ground. If a set is indicated they should be replaced, or reset by a qualified spring dealer. With the gear completely extended, the oil level should just be even with the check screw in the top of the oleo. If the level is low, bring back up to the hole with SAE #40 motor oil making sure that not more oil than this is used.

On some airplanes there is no easy method of filling the dash pot with oil. On these airplanes the following alteration should be made: Remove the dash pot from airplane and disassemble. Drill a $1/8$ " dia. hole $1/4$ " from end in the threads of threaded end of the cylinder on the side which is up when installed in the airplane. Remove drilling burrs from inside and from threads. Wash out carefully to remove all metal chips. Assemble and fill with SAE #30 motor oil. Install on airplane.

To refill dash pot it is only necessary to unscrew cap until hole is uncovered. Fill with squirt type oil can then screw cap back over hole

5. Conclusion:

This memorandum is detailed enough to give the operator full information to insure satisfactory operation of his gear. We can not too strongly urge that each prospective pilot be required to study this memorandum since the additional control, new to most pilots, is at least as important as a flight control and practically all troubles can be traced to improper operation or a lack of understanding of such operation.

All suggestions or questions are welcome.

ENGINEERING DEPARTMENT

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