

Date. 29/4/88

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SUBJECT:

Implementation of modification 0022, which is the change of camber for outboard upper battens 7-10 on Q-wings to increase high-speed yaw stability at light wing loadings.

MODELS AFFECTED:

Pegasus XL-Q, XL-Q-LC

SERIAL Nos AFFECTED

Q-wings serial No's:

SW-WQ-0018, 0003, 0027, 0011, 0004, 0035, 0024, 0023, 0013, 0005, 0022,
0021, 0016, 0010, 0017, 0001, 0009, 0002, 0008, 0007, 0012.

SW-WX-0013, 0010, 0001, 0003, 0011.

COMPLIANCE TIME:

Before next flight.

PURPOSE:

Brand-new Q-wings when fitted with the original issue "A" batten profiles have a tendency to dutch roll at high speed. Dutch roll is a combined rolling and yawing oscillation. The dutch roll is only apparent when a new wing (20hrs or less) is flown at high speed (65mph+) with more than 3/4 open throttle and a cockpit loading of under 90kg. The dutch roll is caused by lack of effective fin area. The effective fin area due to washout and billow of the wing is at a minimum when:

- a) the wing is very new and tight
- b) the aircraft is lightly loaded, and
- c) the tip camber is the original issue "A" flat profile as printed on the inside of the wing bag.

A new tip batten profile, issue "B", has been designed which is more cambered. The increased camber improves the yaw stability so that the dutch roll is damped even with new wings at light weight/high speed/high power. The new tip camber also tends to increase the hands off trim speed by about 5mph so new wings should be rigged on the rear hang point with this modification.

INSTRUCTIONS:

- 1) Move the hang point to the rear position.
- 2) Ensure that the battens conform to the issue "B" Pegasus Q-Wing batten plan.
- 3) Fit the new tip battens 7,8,9,10 to the wing (both sides !)

FLYING:

The wing should be flown solo in smooth air to the following schedule:

- 1) Climb out to at least 700' QFE maintaining the best climb speed of 40-45 mph. Some push-out force will be required to maintain the correct speed.
- 2) Gradually reduce the push force until the "hands off" trim speed is found which should be within the range 50-55 mph power on or off on the rear hang point with a brand new wing. If the speed rises to 63mph and trim speed is still not attained, then allow the speed to rise no further and land the aircraft. Contact the factory for advice before flying again.
- 3) If the trim speed is satisfactory, then climb to at least 2000' QFE. Increase the speed gradually in level flight noting the pull-in control force which should increase with increasing airspeed. Do not exceed VNE 90mph.
- 4) Providing that the aircraft trims correctly and the pitch is stable as described above, then check the handling of the aircraft generally starting with gentle turns. Do not exceed the placarded flight limitations, and in particular, avoid reversals of very steep banks at high airspeed.

As the wing beds in during the initial 20 hrs or so of flying, the washout will increase, the directional stability will increase, and the trim speed will reduce by about 5mph. If the trim speed has dropped to 50mph or less, then the front hang point hole may then be used which will increase the trim speed by 3-5mph.

ADJUSTMENT OF TIP CAMBER FOR ADJUSTMENT OF TRIM SPEED.

In the tuning section of the operators handbook there is a warning to stop owners changing the tip camber to adjust trim speed. In fact, the tip battens can be used in this way providing there is a full understanding of the limits.

Too much tip camber will reduce the positive pitching of the wing below an acceptable level. For this reason it is **not recommended** to increase the camber on a brand-new wing. However, if an old wing (200 hours+) is trimming too slowly because of too much washout, then the tip camber may be increased to bring the rear-hole trim speed back to the 50-55mph range.

Too little tip camber will affect the directional stability on new wings at light loadings. However, once the aircraft has bedded in over 20 hours or so, the camber may be reduced if a trim speed of 48-50 mph on the rear hole is desired rather than 55. This is because once the wing has bedded-in, the dutch roll disappears due to the increased directional stability caused by washout.

SUMMARY:

(i) This letter contains information on testing for dutch roll, means of recovery, and limits to be observed when tuning the wing in pitch by use of the outboard battens.

(ii) If in doubt contact Solar Wings Direct
on:

Marlborough (0672) 54414