# REVISION LIST

## CHAPTER 10: CENTER WING SECTION INSTALLATION

The following list of revisions will allow you to update the Legacy construction manual chapter listed above.

Under the “Action” column, “R&R” directs you to remove and replace the pages affected by the revision. “Add” directs you to insert the pages shows and “R” to remove the pages.

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<td>0/02-15-02</td>
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<td>10-12</td>
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<td>R&amp;R</td>
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Chapter 10: Center Wing Section Installation

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1. PARTS LIST

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<thead>
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<th>#</th>
<th>PART NO. (P/N)</th>
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Note:

Optional Parts available through:
(*) Lancair Avionics
(**) Kit Components, Inc.
2. CONSTRUCTION PROCEDURES

A. Bonding the Center Wing Section

The actual bonding of the center wing section is quick and easy. The time spent is trimming the parts to fit each other. In fitting the parts it is important that you should understand how they should come together so that you can make the judgement as to how much to trim. Note that there are no numbers assigned to the steps you will perform in this section. It is a back and forth fitting and trimming process. This section consists of three (3) parts:

1) Fit and trim the parts.
2) Final alignment and drilling holes for clecoes.
3) The bonding of center wing section.

The fuselage will have to be repetitively raised and lowered for checking and trimming. We suggest a three (3) foot tall saw horse for the purpose of supporting the front end of the fuselage when raised.

The Fuselage and the Center Wing Section Bond

1) Along the aft edge of the center wing section,
2) At the aft spar,
3) At the main spar,
4) Along the front edge of the center wing section.
Trimming Joggles Wing Fillet Area
Fig. 10:A:2

Let’s call this the inboard section of the joggle.

Let’s call this the outboard section of the double joggle.

Trim the outboard section of the double joggle to 1”.

Remove the section of the lower wing section joggle inboard of where it makes contact with the outboard section of the double joggle.

Remove this section where it makes contact with the inboard end of the flap cove.

Trim the excess material past the joggle.

Note: It may be necessary to trim the lower edge of the seat back. Trim as necessary.
Fitting Joggles Wing Fairing Area  
Fig. 10:A:3

The fuselage and the center wing section form a butt joint in this area. Trim as necessary. The dashed line represents a typical fit for kits with serial number 1001 (F.B. #100) through 1023 (F.B. #127). The gap is typically 1/4". This will be adjusted later. See figure 10:A:8.

Note how the joggle aligns.

Note how the flap cove fits into the slot cut in the outboard section of the joggle.
INITIAL CENTER WING SECTION JOGGLE TRIMMING

Before

After

Trim this section to the nose gear tunnel.

Trim joggle as necessary.

Remove excess joggle interfering with core.

Trim joggle as necessary.
Wing Skin to Fuselage Fitting
Fig. 10:A:5

Check fit of upper skin to fuselage
Using a straight edge check the fit of the upper wing skin to fairing. The wing skin should be level or 0.06" above fuselage. Adjust with shims as necessary between wing fairing and spar.

Weight skin down with shot bags as necessary.

Install the outboard wing sections.

Check that fuselage is leveled within 0.1".

Check that both fuselage and center wing section are level. If necessary refer to Chapter 7.

Once the upper skin is aligned, drill a couple of cleco alignment holes.

Place a couple of shot bags on the floor of the baggage compartment.

Check for proper fit here.

Gap: 0 to 0.06" is ideal.

CENTER WING SECTION - UPPER WING SKIN

MAIN SPAR

FUSELAGE

Shim

View AA
Drill cleco holes every 2 - 3 inches or more if necessary.

Cleco Holes
(Bottom View)
Fig. 10:A:6
Mound up epoxy/flox in all shaded areas.

Approx. 3/16"

NOTE: Refer to chapter 1 for proper bonding procedures if necessary.
We mentioned in figure 10:A:3 that kits with serial numbers 1001 (F.B. # 100) through 1023 (F.B. # 127) have a slight mismatch in the leading edge of the wing at the fuselage junction. The construction procedure is essentially the same. The differences are pointed out below.

### Kits with F.B. # 100 through F.B. # 127

1. Fill with micro as shown. Shape w/ sandpaper.
2. Apply a 2 1/2" wide BID also refer to Fig. 11:A:9
3. Reshape the leading edge as shown.
4. Apply 2" wide 2 BID

### Kits with F.B. # 128 and on.

1. Apply 2" wide 2 BID
2. Apply 2" wide 2 BID
All reinforcements are 2 BID.
Seat Back BID Reinforcements
Fig. 10:A:10

- Apply 3 BID along aft edge of seat back.
- Apply 3 BID in front of seat back.
- Form a micro fillet to form a radius for the BID.
- 3 BID securing seat back in front and along the back.
B. Installing Load Pads

The Load Pads are located at the inner sides of the cockpit area, surrounding both main spar and aft spar.

B1. The load pads transfer the forces between the wings and fuselage. In addition, the load pads seal the cockpit from the gear well. There are three pre-molded load pads per side. We suggest installing one load pad at a time and working your way forward.

Installing Load Pads
Fig. 10:B:1

Note:
(*) Optional Parts available through Kit Components Inc.

Aft Left Load Pad, 4232-01 (1 pc)
Aft Right Load Pad, 4232-02 (1 pc)
Center Left Load Pad, 4026-01 (1 pc)
Center Right Load Pad, 4026-02 (1 pc)
Forward Left Load Pad, 4025-01 (1 pc)
Forward Right Load Pad, 4025-02 (1 pc)
Left Load Pad Access Panel, 4025-03 (1 pc)
Right Load Pad Access Panel, 4025-04 (1 pc)

Panhead Screw, AN525-832-R6 (Ref.)
Rudders Nylaflow Tube Exit
Nutplate, K1000-08, (Ref.)
Rivets, AN426A3-5 (Ref.)

We suggest using a bar clamp between the hydraulic cylinder passage hole and the over center link rib to pull the rib into position.

WARNING!!!
Do not drill holes through the rudder nylaflow tubing embedded in the fuselage.

A/C Up
Outbd
Fwd

Rib must be firmly up against the inboard end of the joggles as shown.

We suggest using Velcro to hold it in place.

Optional Parts available through Kit Components Inc.
Installing Load Pads
(Cross Section)
Fig. 10:B:2

We suggest using clecoes for rib installation but you must not drill through the nylaflow tube.

Form a fillet around the perimeter of the rib.

The gap between load pads are filled during bonding.

The rib must be flush with the gear door joggle.

Fill with epoxy/flox during bonding.

Other Notes on installing the Aft Load Pad

1) Load Pad Alignment
   a) Load pad should be flush with the gear door joggle.
   b) The load pad must be positioned as far forward as possible up against the spar. You will notice an approximate 1/4" gap between rib and aft spar. This is to allow clearance during installation. Fill gap with flox during bonding.
   c) Align rib prior to bonding with clecoes, clamps and whatever is necessary.
   d) Bond using a slightly runny epoxy/flox mix following approved bonding procedures.
C. Installing the Aft Closeout Rib

Installing Aft Closeout Rib
Fig. 10:C:1

The closeout rib installs just aft of the aft spar as shown. The purpose of the rib is to seal the cockpit from the outside. Exact location is not critical. Install from inside the baggage compartment.

Approx. location of the rib.

Be sure to leave some clearance between hardware and rib.

Left aft Closeout rib
4036-01 (1 pc)
D. Closing the Center Wing Section

In this section you will close the inboard wing sections. Prior to closing out we suggest that you complete all systems of the center wing section (such as landing gear installation, hydraulics and the fuel system).

The inboard wing section is aligned to:
1) The fuselage joggle.
2) The outboard wing section. The outboard wing section must therefore be installed for this wing section. Install the two (2) bolts of the main spars and the one (1) bolt for the aft spar per side for proper alignment.

Note: You may bond the trailing edge if you install the flaps and verify the fit as explained in chapter 21.

Suggestion: Paint the inside of the gear wells with Jeffco fuel tank sealant (9700-1G). It makes keeping the gear wells clean much easier.

The trailing edge is bonded in chapter 21.
Aligning Center Upper Wing Section Upper Skins

Fig. 10:D:2

**D 1.** Using a long straight edge check the alignment between the center and outboard wing sections. Note: If the center wing section is a little low (within 0.05") this will be corrected during closing. If high it will be necessary to remove material off the release. Carefully use a palm sander as necessary.

**DO NOT SAND INTO STRUCTURAL MEMBERS!**

**D 3.** Align the joggles.

**D 4.** Once aligned, drill cleco holes through the double joggle every 3” - 4”.

**WARNING:** DO NOT DRILL CLECO HOLES THROUGH THE MAIN SPAR OR AFT SPAR!

**D 2.** There should be a light even gap between skins. Note: Eventually install leading edge tape.
Closing Center Wing Section

Fig. 10:D:3

Inspect leading edge during bonding. Install more clecos and/or use duct tape as required.

WARNING (AGAIN) DO NOT DRILL HOLES INTO SPAR!!

Use any combination of straight edges and weights to achieve proper results. Inspect using straight edges as shown in Fig. 10:D:2. Suggestion: Remove adhesive “squeeze out” from the gear wells prior to cure.

Form a nice inverted “V” shape

Typical internal member

Note: Refer to chapter 8 for more information regarding closing procedures.

Shown: “U” channel

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Apply 2" wide 2 BID to the joggles.

Butt the 2 BID - no overlaps.