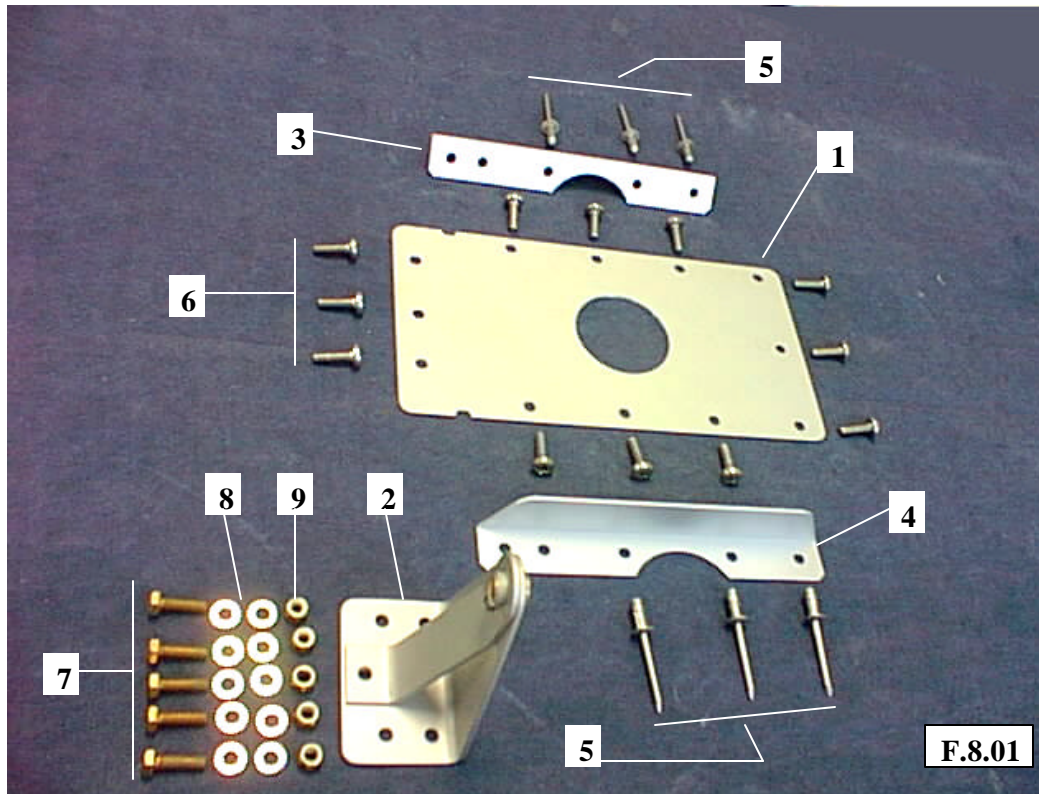


A.8. INSTALLATION OF RUDDER HINGE BRACKETS ON THE VERTICAL STABILIZER REAR SPAR

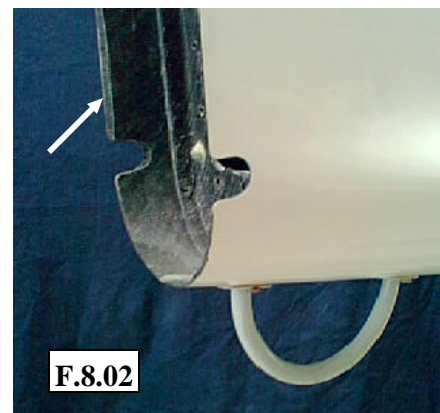


Ref.	Description	Code	Qty.	Note
1	Aluminum plate (tail cap)		1	F.8.01
2	Rudder lower hinge bracket		1	F.8.01
3	Left reinforcement angle		1	F.8.01
4	Right reinforcement angle		1	F.8.01
5	Blind rivet Ø4.9x14 (aluminum w/ stainless shank)		6	F.8.01
6	Stainless pan-head screw M5x15		12	F.8.01
7	Hex head bolt M5x15		5	F.8.01
8	Washer Ø5x10 mm		10	F.8.01
9	Self-locking nut M5		5	F.8.01

The first task is to sand 45° chamfers along the inner surfaces of the vertical stabilizer's trailing edges. Do this along the full length of each edge as shown by the arrow in photo F.8.02. Use a flat sanding block with 40-grit sandpaper.

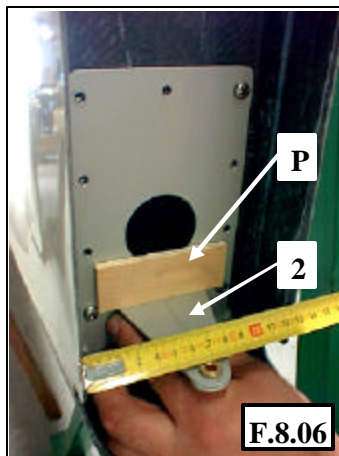
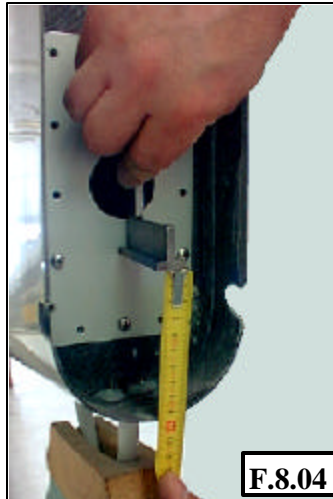
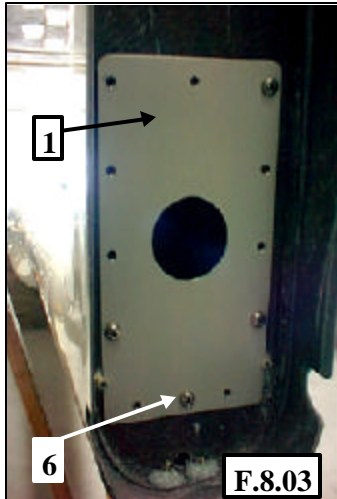
The following tasks determine the position of the rudder and should be performed with care.

Straighten the fuselage and rigidly support it and the vertical stabilizer (see Photo 8.0.9). Verify that the axis of the vertical stabilizer is exactly vertical.



Retrieve the aluminum tail cap plate (ref. 1) and temporarily fasten it to the rear spar with 4 of the 12 M5x15 screws (ref. 6), as shown in photo F.8.03. **Caution:** the plate is stamped “INT”, which must be placed towards the interior, and is also stamped with “↑” to indicate the end to be oriented upward.

Using a small square and a measuring tape or ruler, measure a distance of 95 mm (3.74”), from the lowest edge of the tail (outside edge) to the location of the lower hinge bracket (ref. 2): draw a line across the center of the plate (photo F.8.04 and F.8.05).



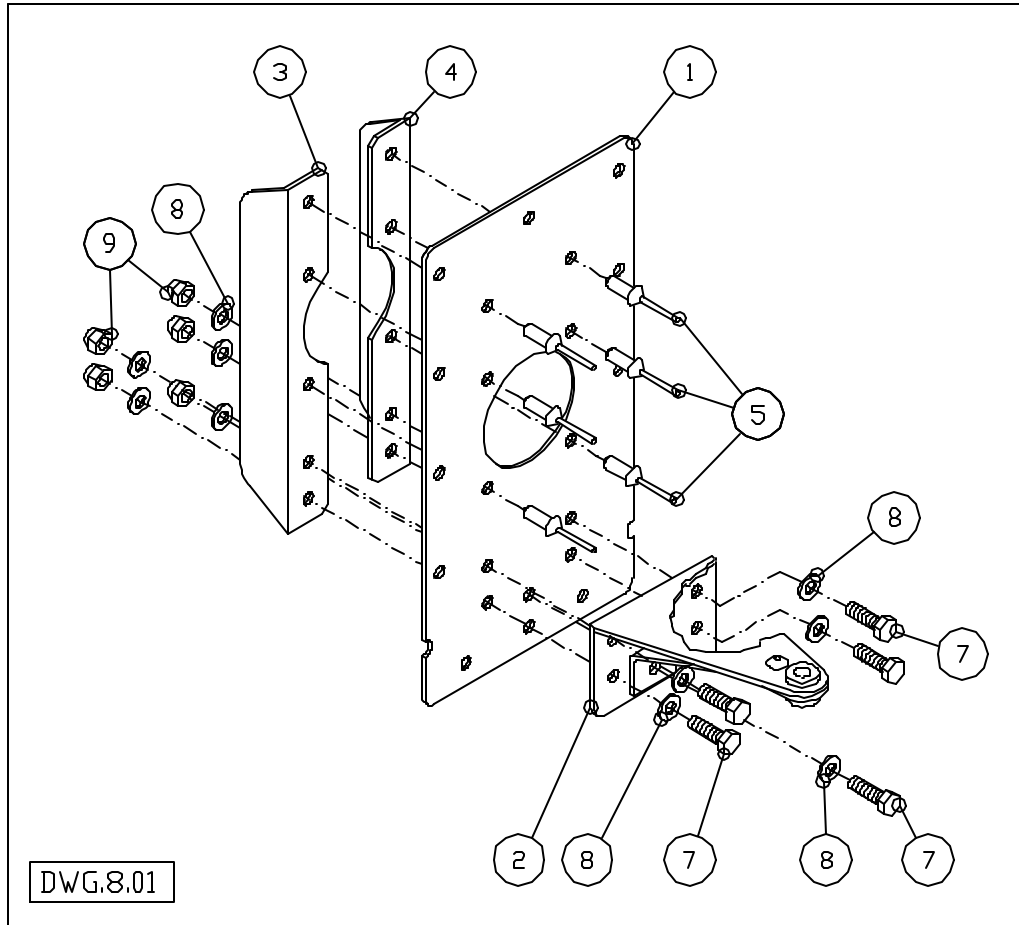
Carefully observe photos F.8.06 and F.8.07. Stick (using some double-sided tape) a wooden plate (P) or aluminum angle at the location of the line that was marked in the previous step. **Position the plate so that its lower edge is perpendicular to the axis of the vertical stabilizer.** (Caution: the centerline of the aluminum cap plate might not correspond exactly with the vertical axis of the stabilizer. Do not use the plate axis as a reference).

Place the lower hinge bracket (ref. 2) against the wooden plate and, with the assistance of a measuring tape, center the bracket's bushing between the outer surfaces of the vertical stabilizer.

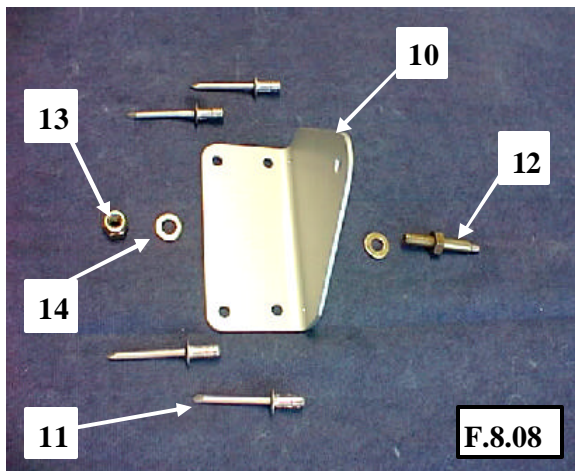
Hold the bracket in place and, using a permanent marker, trace the outline of the lower hinge bracket onto the aluminum tail cap plate.

Remove the aluminum tail cap plate from the rear spar and place it on a workbench. Reposition the lower hinge bracket on the plate, placing it within the traced outline. Trace the five bracket holes onto the aluminum plate. Remove the hinge bracket and drill the five $\varnothing 5$ mm (0.197”) holes. Alternately, clamp the hinge bracket to the plate and match drill the five holes. De-burr the holes after drilling.

Review drawing DWG.8.01 before attaching the lower hinge bracket (ref. 2), the left reinforcement angle (ref. 3), and the right reinforcement angle (ref. 4) to the aluminum tail cap plate (ref. 1). Attach the three pieces to the aluminum plate with five M5x15 bolts (ref. 7) and five self-locking M5 nuts (ref. 9). Position the ten 5x10x1 washers as shown in the drawing. Turn the plate over and match drill the six $\varnothing 5$ mm (0.197”) holes already present in the left and right reinforcement angles (3 holes in each angle). De-burr the holes and install the six blind rivets (ref. 5).

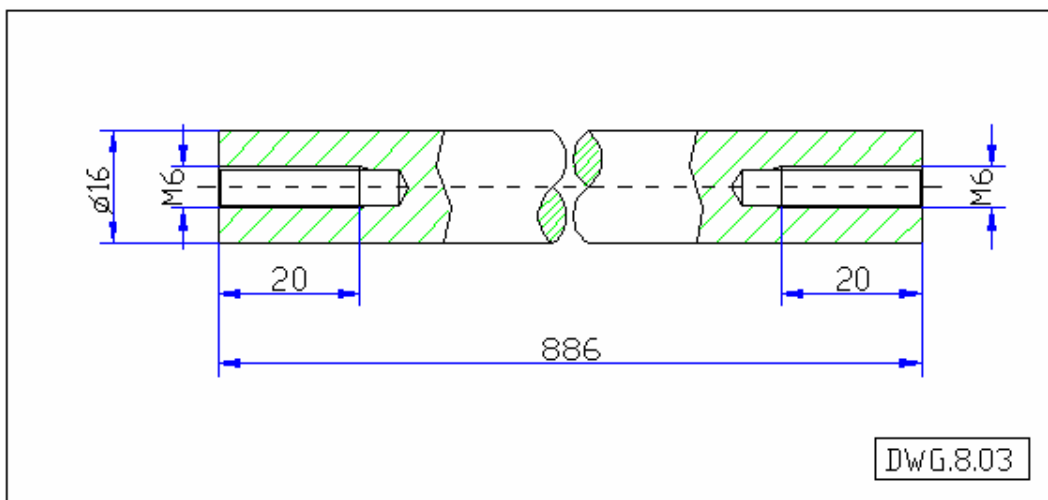
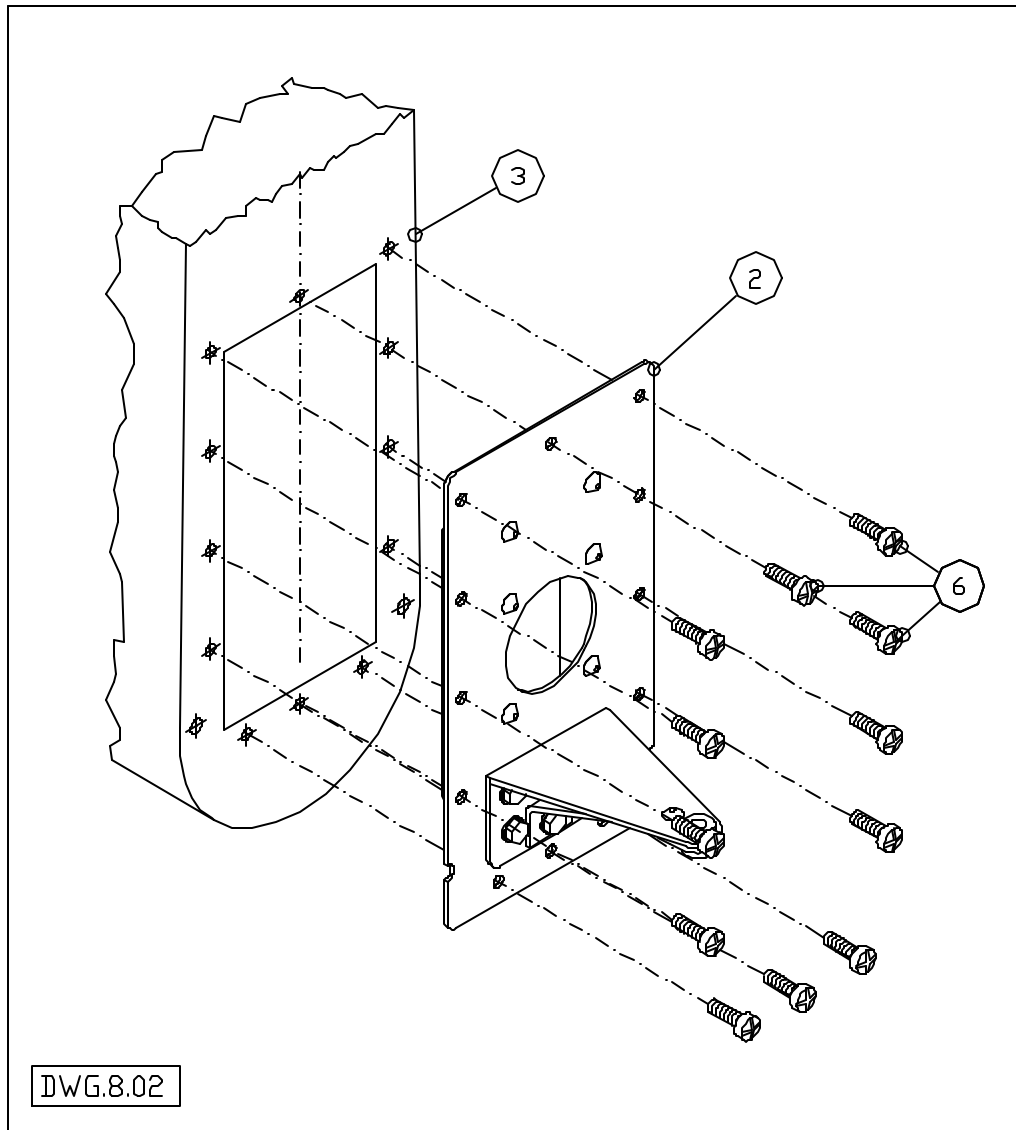


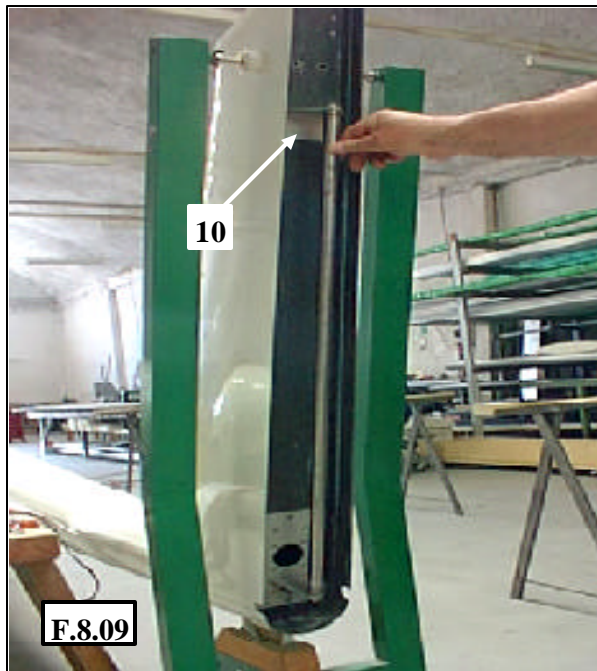
After reviewing drawing DWG.8.02, temporarily attach the complete plate assembly to the stabilizer rear spar using only four (4) of the twelve (12) M5x15 stainless pan head screws (ref. 6).



The next task is to install the rudder upper hinge bracket (ref. 10) on the vertical stabilizer rear spar. An installation tool made from a rod is required to install the upper bracket. See drawing DWG.8.03 (the tool will also be used later to position the rudder hinges). A metal tool is shown, but a wooden one is sufficient. Obtain a piece of $\varnothing 16$ mm ($5/8''$) or larger hardwood rod (aluminum or steel can be used) and trim the ends to a length of 886 mm (34.88"). The ends must be perpendicular to the axis. Tap a centered M6 hole in each end of the rod. If using steel or aluminum, use of a lathe is recommended.

Ref.	Description	Code	Qty.	Note
10	Rudder upper hinge bracket		1	F.8.08
11	Blind rivet $\varnothing 4.9 \times 14$ (aluminum w/ stainless shank)		4	F.8.08
12	Hinge pin (with threaded shank)		1	F.8.08
13	Self-locking nut M6		1	F.8.08
14	Washer $\varnothing 6 \times 12$ mm		2	F.8.08



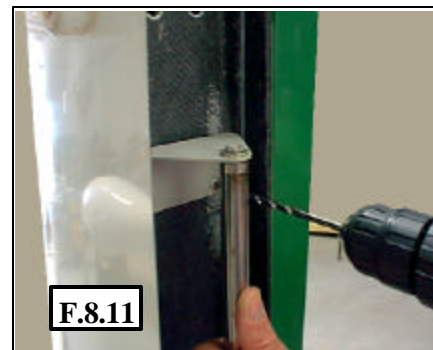


F.8.09

Attach the upper hinge bracket (ref. 10) to the rod tool with an M6x10 bolt and washer as shown in photo F.8.09. Place the opposite end of the rod against the bronze bushing of the lower bracket and install an M6x20 bolt and washer.



F.8.10



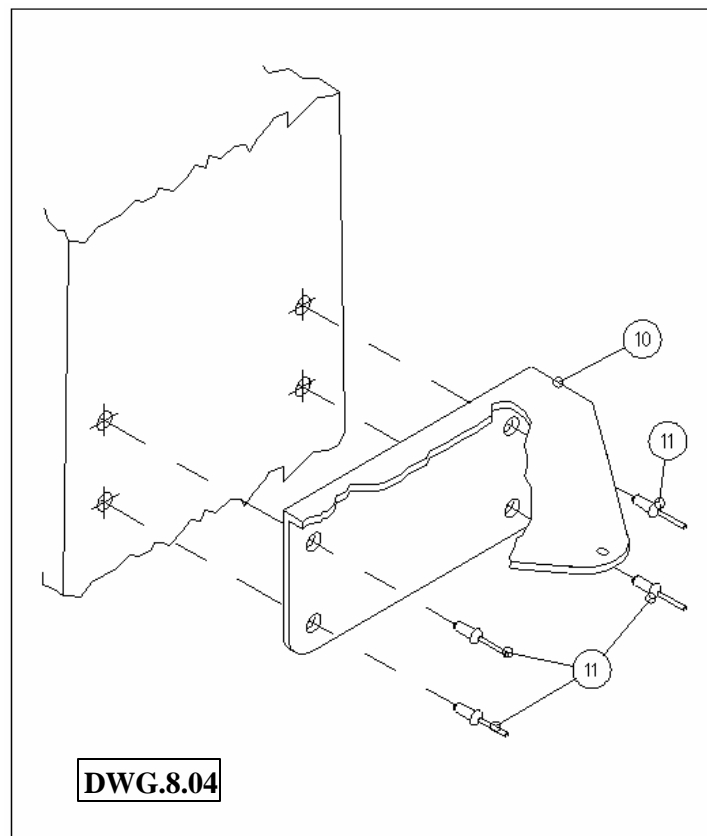
F.8.11

Center the upper bracket between the outer surfaces of the vertical stabilizer as shown in photo F.8.10.

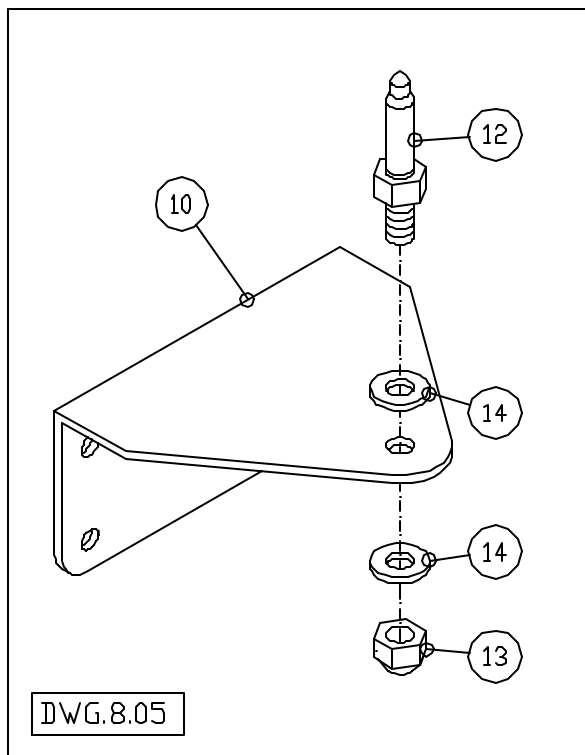
Hold the bracket firmly against the rear spar and match drill the first $\text{Ø}5$ mm (0.197") hole (use a long drill bit).

Temporarily insert a blind rivet (ref. 11) into this hole, without pulling it. Drill the remaining three $\text{Ø}5$ mm (0.197") holes.

Remove the rod tool and rivet the upper bracket (ref. 10) to the rear spar using four 4.9x14 blind rivets (ref. 11) as shown in drawing DWG.8.04.



DWG.8.04



Install the hinge pin (ref. 12) onto the upper bracket (ref. 10) using the M6 self-locking nut (ref. 13) and the two 6x12x1 mm washers (ref. 14), as shown in drawing DWG.8.05. Tighten the nut securely.

Now advance to the rudder hinge installation tasks of Chapter A.09.

Once the tasks described in Chapter A.09 have been completed, remove the aluminum tail cap plate from the vertical stabilizer rear spar and store it safely along with the twelve M5x15 stainless steel pan-head screws (ref. 7).