

Post-Paint>Fuselage>Interior>Controls>Fit rudder pedals

Objectives of this task:

To fit the rudder pedals and steering links to the aircraft, and fit the rudder cable to the rudder pedals and set the deflection of the rudder.

Materials required:

Card # 3J “Rudder”

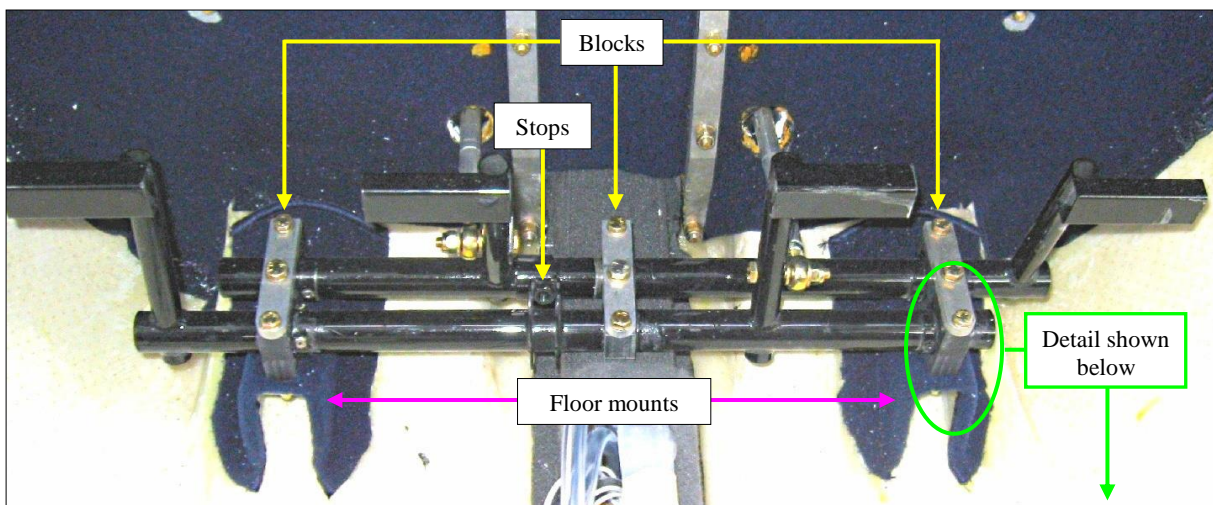
Card # 19J “Noseleg” for the steering yoke

Fit the pedals

The rudder pedal assembly will be fitted to 3 sets of bearing blocks, 2 on the moulded floor mounts and 1 on the lower front of the console. Sit the pedals in the lower mounting blocks on the mounts and clean the front and back holes in the mounts with a 3/16” drill. There are captive nuts in the centre holes in each mount so do not drill any centre holes.

Apply a thin layer of grease to the half-round cutouts in the upper and lower rudder pedal blocks and then fit the rudder pedals into place in the lower blocks. Seat the pedal assemblies in the blocks and fit the upper blocks and clamp plates and secure with an AN4-25A centre bolt to each block to hold it in place. Check for minimal side-to-side movement.

Place a flat washer under the head of each bolt.



Now fit the bottom clamp plates in place inside the floor mounts one at a time: start with the front AN3-25A bolt and Nyloc nut – the front nut can be awkward to fit but if it is super glued to the plate then the plate can be held in place and the bolt can be threaded down into it.

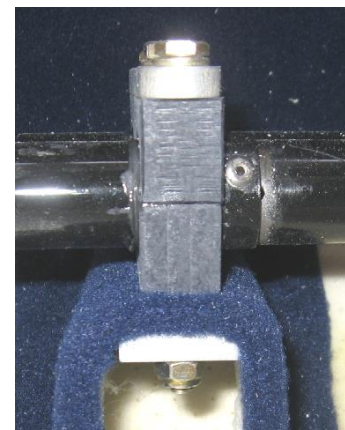
Fit the rear AN3-25A bolt and Nyloc nut all as shown at right.

When all bolts and nuts have been fitted, tighten each nut to safety and then tighten the centre bolts down firmly.

Check for free fore and aft movement of the rudder pedals.

It may be necessary to adjust the tension on the bolts slightly if the pedals are binding.

Fit the ¼” UNF Allen head cap screws through the pedal travel stops beside the pilot’s side right rudder pedal on the rear bar and fit ¼” UNF plain nuts behind. These will be set later in this task.



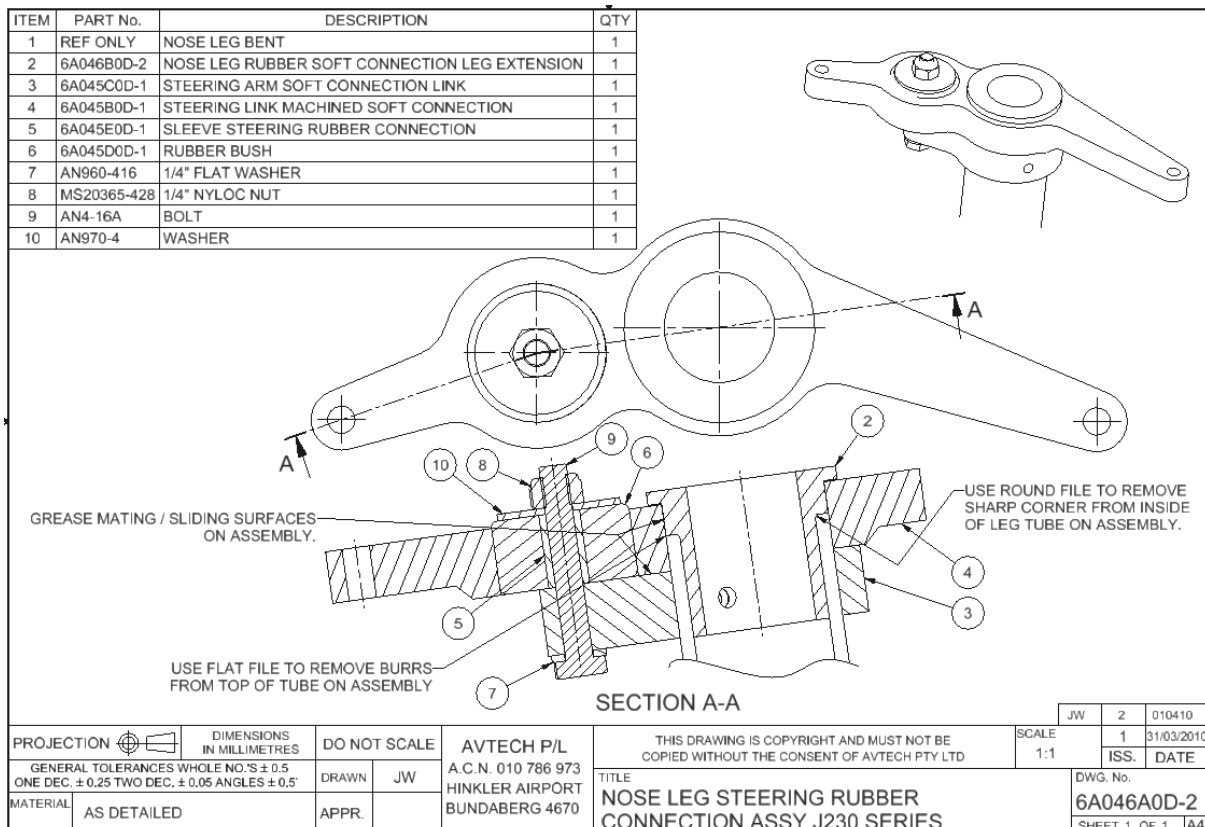
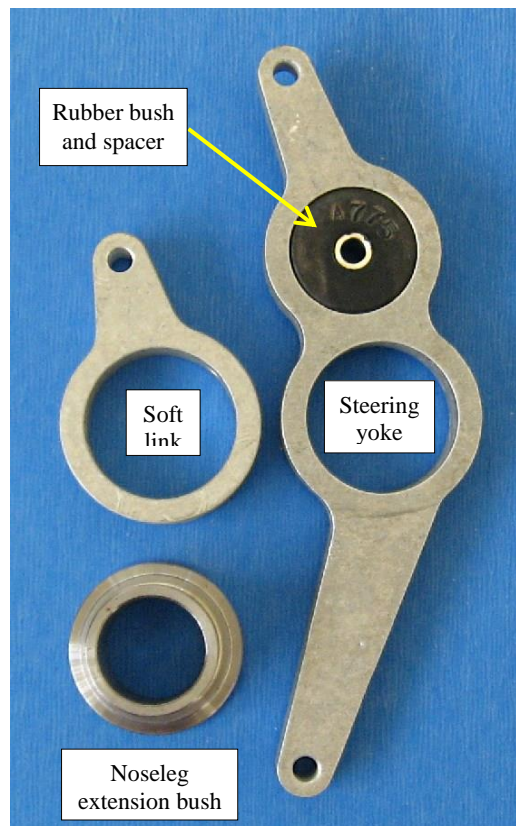
Assemble and fit the steering yoke

Trim off the small moulding lip from around the hole in the rubber bush with a sharp knife if required before fitting. Press the rubber bush into the smaller hole in the steering yoke as shown and apply a smear of grease to the mating surfaces between the soft connection link and the steering link as well as the area where the noseleg extension bush will be fitted. Press the spacer tube into the rubber bush.

Fit the soft connection link over the top of the noseleg with the arm facing the left. Fit the steering yoke to the top of the noseleg and then fit the leg extension bush down into the top of the noseleg. Refer to the drawing below and the photos on the next page for detail.

Connect the soft link to the steering yoke with an AN4-16A bolt and large flat washer and secure with a washer and Nyloc nut and tighten the nut to safety.

If the noseleg is not drilled, then centre the front wheel so that it is pointed exactly straight ahead, move the steering yoke assembly so that both arms are an equal distance from the firewall and then drill a 3/16" hole through the hole in the soft link and all the way through the noseleg and fix in place with an AN3-22A bolt, washer and Nyloc nut and tighten the nut to safety.



Fit the steering pushrods

Assemble the pushrods: thread a rod end with a plain nut to each end of each pushrod. Do not tighten the nuts until the pushrod lengths have been adjusted later in this task.

Cut 2 pieces of rubber sheet approximately 40mm square and punch a hole in the centre of each just big enough to pass the pushrod through. These are the dust covers and they will be fixed to the firewall at the end of this task. Slip one over each pushrod for now.

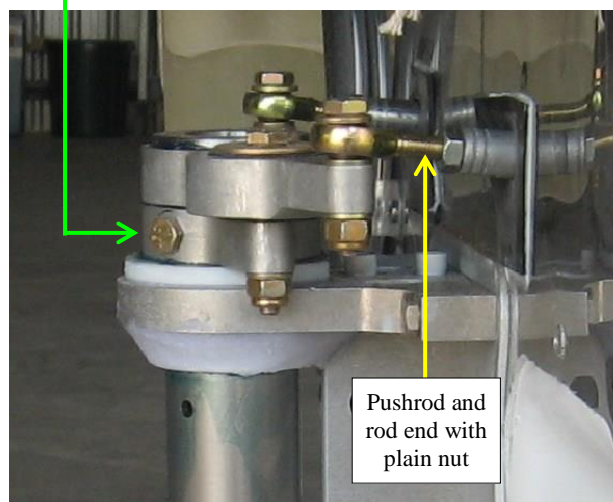
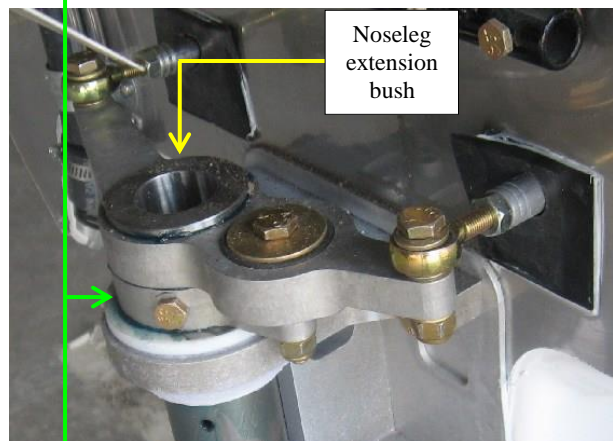
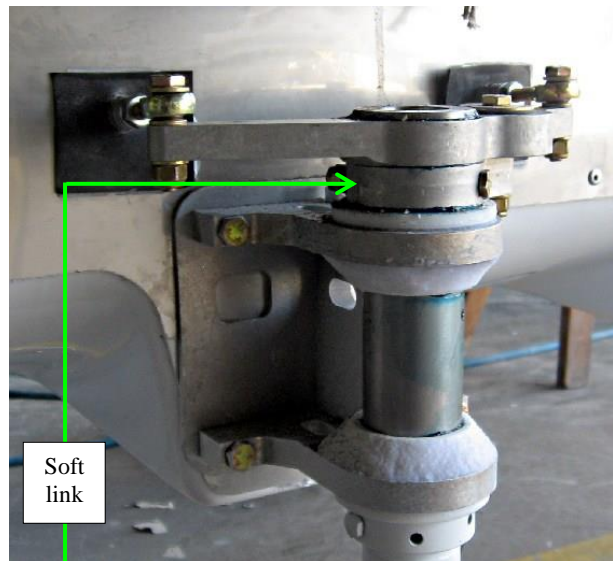
The pushrods are different lengths: the longer pushrod fits to the right-hand side of the steering yoke and the shorter pushrod fits to the left-hand side of the steering yoke.

Fit the pushrods through the holes in the firewall and then connect them to the steering yoke with AN4-13A bolts as shown in the photos at right.

Each bolt is fed down from the top of the yoke with an AN960-516 flat washer fitted under the head of the bolt, then the rod end and then a AN960-416L flat washer fitted between the rod end and the yoke and a regular AN960-416 flat washer and Nyloc nut fitted below the yoke as shown at right.

Tighten all of the Nyloc nuts to safety and mark each with *TorqueSeal*.

The dust covers are shown fitted in the photos above, however they will not be fitted until the end of this task, which is when the photos on this page were taken.



Adjust the push rod lengths and connect

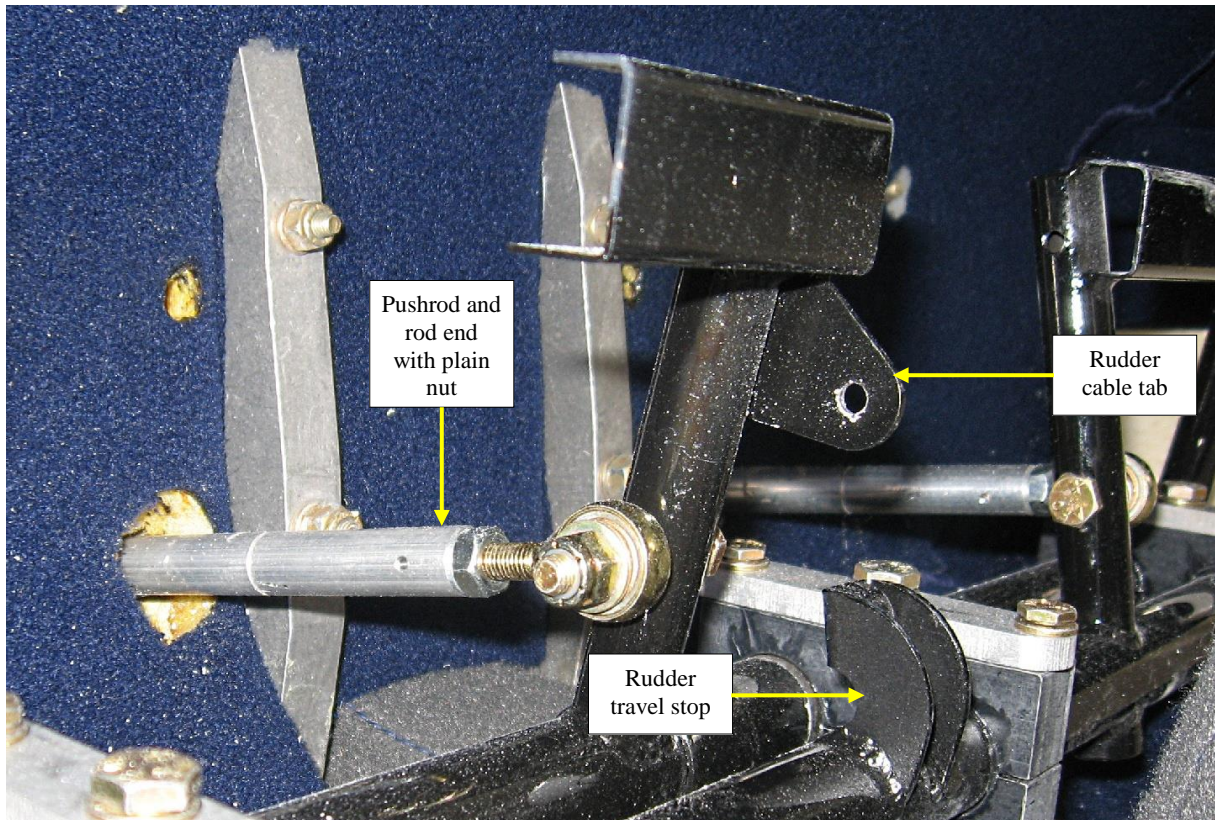
Now the pushrods can be adjusted to length and connected to the rudder pedals.

Set the nose wheel so that it is facing straight ahead – move the aircraft back a few meters and then move it forward in a straight line so that the nose wheel will align correctly.

Set the rudder pedals so that the tops of the pedals are all in line when viewed from the side, as shown in the drawing at the end of this task.

Adjust the length of the left-hand pushrod by screwing the rod ends in or out an equal amount at each end of the pushrod until the rod end lines up with the hole in the pilot's side right rudder pedal arm without altering the position of the nose wheel and then fit the rod end to the outside of the rudder pedal arm with an AN4-14A bolt through the pedal arm then an AN960-416L flat washer and then the rod end followed by an AN960-516 flat washer and Nyloc nut.

Repeat the length adjustment procedure for the right-hand pushrod, still keeping the tops of the rudder pedals all in line, then fit the rod end to the outside of the co-pilot's side left rudder pedal arm with an AN4-14A bolt through the pedal arm then an AN960-416L flat washer and then the rod end followed by an AN960-516 flat washer and Nyloc nut.



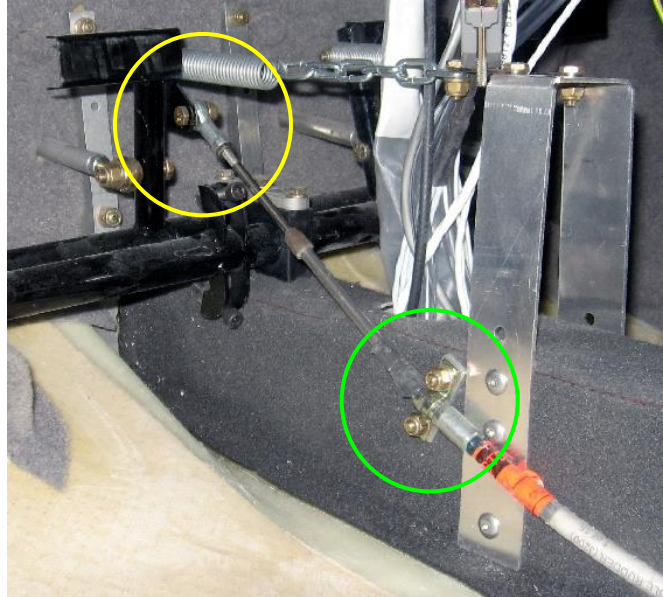
Check that the rudder pedals can move the nose wheel freely from side to side and make any fine adjustments that may be needed to have the tops of the rudder pedals all in line with the nose wheel tracking straight ahead.

When the final adjustments have been made then all the plain nuts on the rod ends can be locked off, all the Nyloc nuts can be tightened to safety and all nuts can be marked with *TorqueSeal*.

Connect the rudder cable

Move the rudder cable to half travel and then set the rear of the rudder to a position 5mm to the right of the aircraft centreline (refer to the photos at the bottom of this page that show a rudder position/deflection jig in place under the rudder) and hold it in that position with some cloth tape or have someone hold it in place for you. Set the rudder pedals to the neutral position, with the nose wheel facing straight ahead and the pedals all lined up along the tops.

Connect the rudder cable rod end to the right of the tab at the top of the pilot's side right rudder pedal (circled in yellow at right) and secure with an AN4-6A bolt through the pedal tab then an AN960-416L flat washer and then the rod end followed by an AN960-516 flat washer and Nyloc nut. Tighten the Nyloc nut to safety and mark with *TorqueSeal*.



Fit the notched saddle clamp over the outer rudder cable. Position the outer cable so that it runs in a smooth a line as possible from the cable entry cut-out in the console to the rudder pedal tab and then mark and drill the 2 x 3/16" holes through the clamp and console (circled in green at right).

Clamp the outer cable to the console with the notched saddle clamp and backing plate and secure the clamp in place with 2 x AN3 bolts fitted from the inside of the console and Nyloc nuts with flat washers under them. Tighten the nuts to safety and mark with *TorqueSeal*.

Adjust the rudder deflection

The rear of the rudder should be able to be move 98mm to the left and 98mm to the right from a neutral position that is defined as being 5mm to the right of the aircraft centreline.

This range of movement is controlled and limited by movement of the rudder pedals.



The photos above show a rudder position/deflection jig in place under the rudder.

The limits are adjusted by the rudder stop screws beside the pilot's side right rudder pedal: adjust the pedal travel by using the Allen head cap screws until the rudder deflection is correct. Lock off the Allen head cap screws with the plain nuts, recheck all deflections and mark the lock nuts with *TorqueSeal*.

Fit the centring springs

The centring springs are attached to the top of the 2 centre rudder pedals with AN3-11A bolts and Bundy tube spacers and then anchored by chain links and link tabs to an aluminium bracket that is riveted to the lower console – refer to the photo at right for detail.

Place the aluminium bracket over the console as shown and connect the springs to the middle position using AN3-5A bolts and Nyloc nuts and then apply a firm rearwards pressure to the top of the bracket then drill and rivet it to the console, making sure that the bracket is vertical. Use 3 x 7/32" TLR rivets per side as shown above.



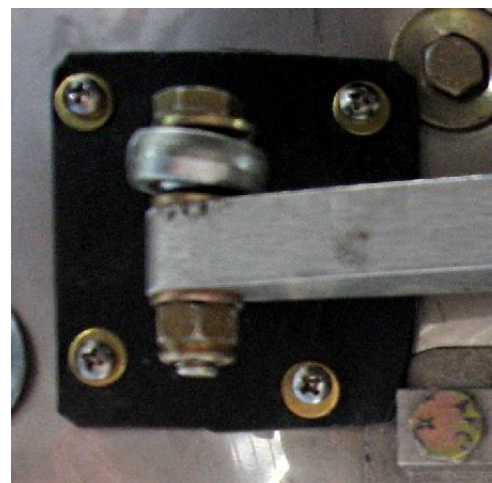
Use pliers to bend the hooked ends of the springs so that the springs cannot easily or accidentally be removed.

Adjust the spring tension by altering the position of the anchor bolts so that the nose wheel will return to centre when there is no weight on the nose wheel (hold the tail down to do this check). When adjustments are complete tighten the anchor bolts and nuts.

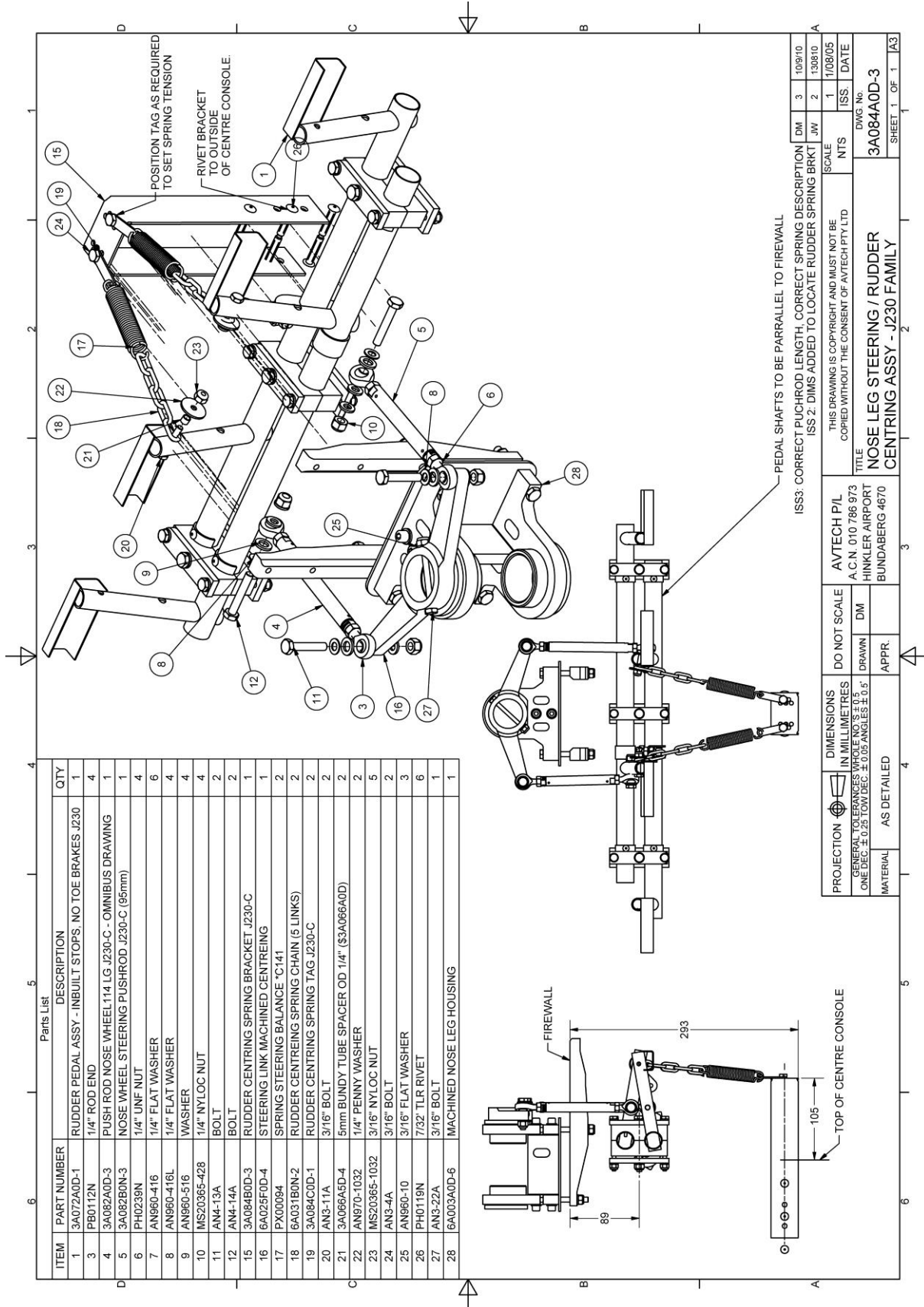
Fit the dust covers

The last step is to fit the rubber dust covers into place – hold each cover so that it is square and level and fix it in place by means of either contact adhesive or small screws and washers.

The photo at right shows a dust cover fixed in place with silicone sealer and 4 small stainless steel self-tapping screws and flat washers.



The next page of this task shows a drawing of the rudder pedal and steering assembly.



This completes the *Post-Paint>Fuselage>Interior>Fit* rudder pedals task.