SECTION/OPERATION

15

CHAIN OIL BATH

COMPONENT	PROCEDURE	PRINT #	TEMPLATE
CHAIN OIL BATH (E33-2000)	Install	E33-2000	E33-1 E33-2

NOTES

OIL BATH: It will be necessary to remove the chain and lift the main shaft and sprocket to final install the oil bath.

OIL SEAL: No seal is required in the oil bath bottom where the main shaft passes through. The total amount of fluid in the oil bath is 48 ounces (1 quart engine oil and 1 can of STP oil treatment). Because of the size of the oil bath the oil level is not high enough to spill out. If the oil bath leaks, it is probably due to one of the following:

A. Not enough sealant around the front and rear covers.

B. The rear oil seal was not installed after the oil bath was bolted solid to the airframe.

C. Moving parts are rubbing against the fiberglass. When mounting the oil bath, check to see if there is a gap between the main drive sprocket and the bottom of the oil bath. This can be done by pushing upward on the bottom of the oil bath and monitoring the amount of movement before contact. There is not very much clearance here; only a little is necessary to prevent a leak.

TOOLS REQUIRED FOR OPERATION 15:

Drift punch
Drill bits in the following sizes: 1/8"
3/16"
1/4"
#19
#40
File
Hammer
Hand drill (air or electric)
Metal cutting snips
Pliers
Pop rivet gun
Sandpaper
Screwdriver
Straight edge

Photo #1

Use print E33-2000, templates E33-1 and E33-2 when constructing this assembly. Parts as received from RotorWay International for the oil bath.

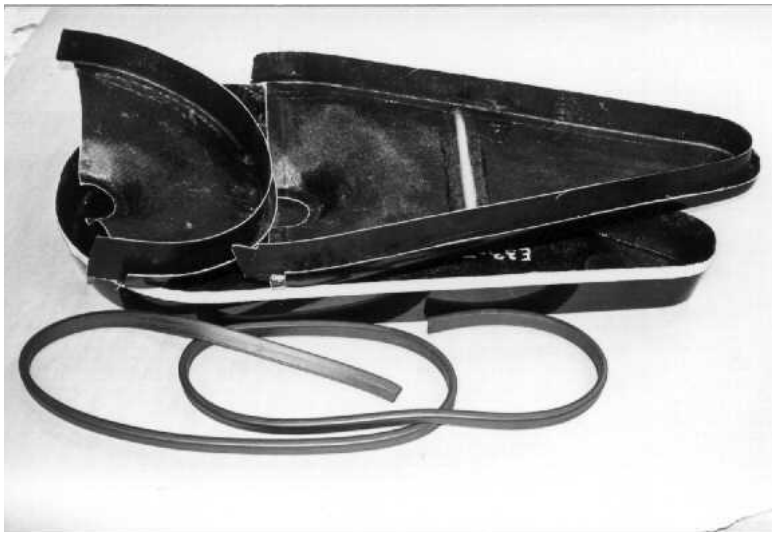

Photo #2

The parts seen here are the lower oil bath pan, both upper oil bath covers and the rubber oil gasket seal. Using medium grit sandpaper, sand the area (indicated by arrow) the same width as the rubber gasket all around the oil bath, both inside and out. Wipe the area clean with acetone or an equivalent solvent before gluing the rubber in place to achieve proper bonding.

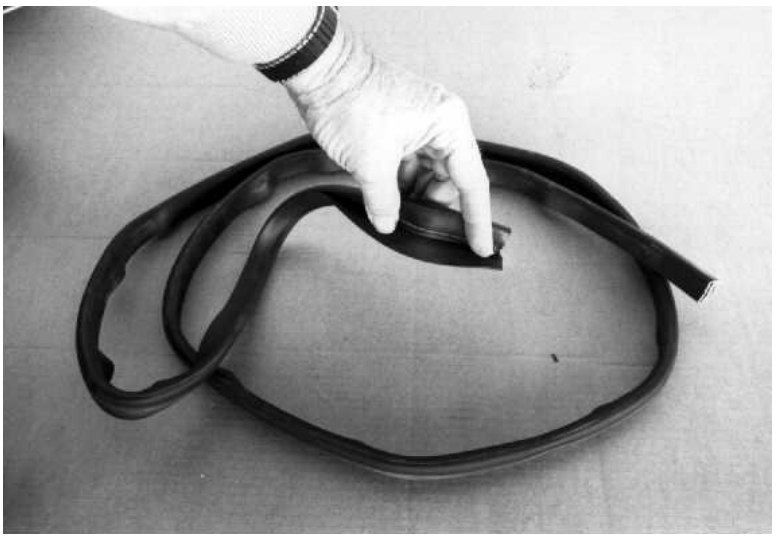

Photo #3

Open up the rubber gasket seal and wipe it clean with acetone or an equivalent solvent. The white shipping powder must be removed completely. After the powder has been removed, use sandpaper to scuff up the rubber to help it bond to the lower chain oil bath. The thin flat part of the rubber must be positioned inside.

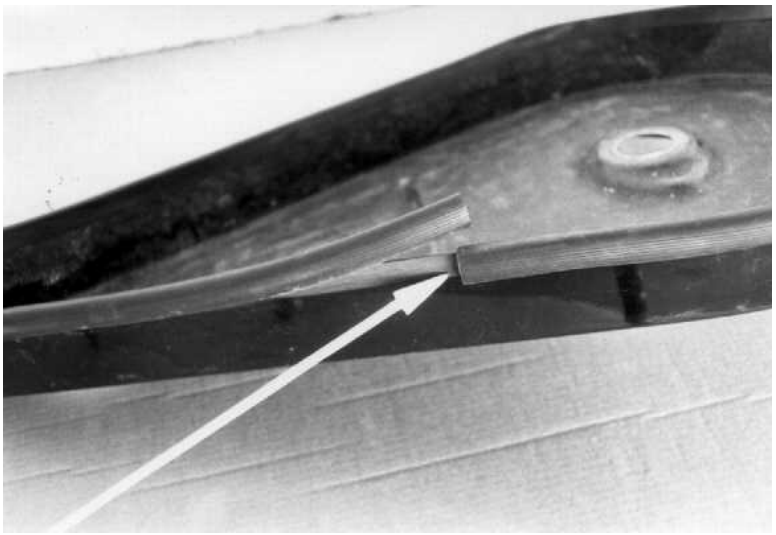

Photo #4

Fit the rubber seal and cut it to length.
Note: A few small notches on the inside of the rubber at the small end of the oil bath will help it bond tightly. Apply 3M bonding glue to both pieces and hold in place with tape or clamps as necessary to keep the seal tight while the glue is drying. A good idea is to place the oil bath upside down on a flat surface so that the glue remains in the rubber gasket.

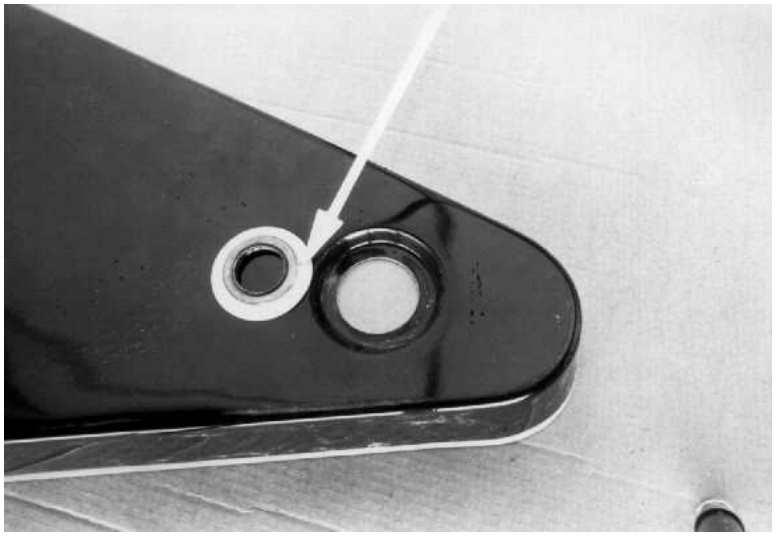

Photo #5

Open the hole in the lower oil bath pan to accept the rear oil seal. Only the aluminum mounting ring on the oil seal should touch the fiberglass pan. The seal glues on the inside of the oil bath.

Photo #6

Position the lower oil bath pan centered over the secondary shaft and the lower main shaft bearing flange.

Photo #7

Drill 3/16" holes at the two points shown to secure the lower oil bath pan to the fore/aft square drive mount tube on the airframe.

Photo #8

Use a large fender washer between each of the 3/16" bolts and the fiberglass surface. On final assembly, apply a generous amount of silicone sealant to prevent oil leakage through these holes.

Photo #9

Do not install the rear oil seal until the airframe has been painted and the lower oil bath pan is installed for the final time. Ensure that the mounting bolts on the upper and lower secondary bearing housings are final tightened. The position of the secondary shaft must not change after this point, or there may be leakage at the oil seal. Clean the fiberglass with acetone.

Photo #10

Use sandpaper to roughen the surface of the aluminum ring around the oil seal to help ensure a good bond. Also sand the mating surface of the oil bath. This area must be flat. Clean the sanded areas carefully with acetone. Apply a light coat of oil to the rubber seal, being careful not to contaminate the bonding surface.

Photo #11

Refer to print E33-2000 for proper position and orientation of the oil seal. Make sure that there are no sharp edges on the secondary shaft so that the seal is not damaged when placing it on the shaft. (If necessary, sand a light radius on any sharp edges of the shaft using 400 grit sandpaper. Then clean the shaft with acetone.) Apply a layer of 3M bonding material to both surfaces to be bonded. Carefully install the seal over the shaft and press it in position.

Photo #12

Wipe off excess bonding material, leaving a little in the radius to ensure a complete seal. Once the seal has been bonded, do not rotate the secondary shaft until the bonding material has hardened (12 hours). After this, apply an additional amount of oil to the seal before rotating the secondary shaft. If these procedures are followed carefully, the rear oil seal should not leak.
Note: There is no seal on the main shaft. The oil level will not be high enough to spill out around the raised area in the bottom of the lower oil bath pan. This is sufficient to prevent leakage.

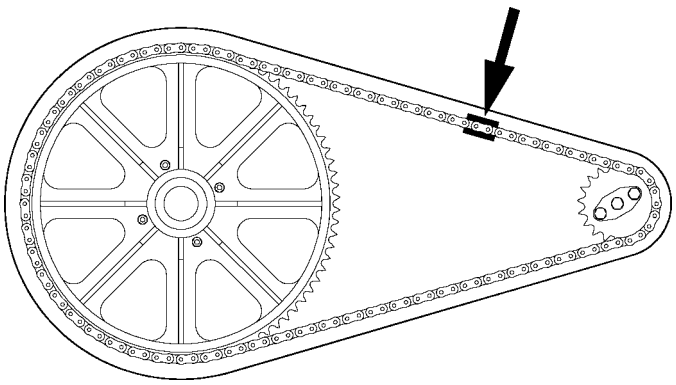

Photo #13

Re-install the main drive chain and the two sprockets (refer to section 11, photo #12 onward). After the correct chain tension and sprocket alignment is achieved, safety wire the bolts and Loctite the bearings as indicated. Cut out the small window for the master link insertion plate in the lower oil bath pan, shown here by the arrow. Use template E33-1 to cut out the insertion plate, and install per print. Seal the plate with silicone on final installation.

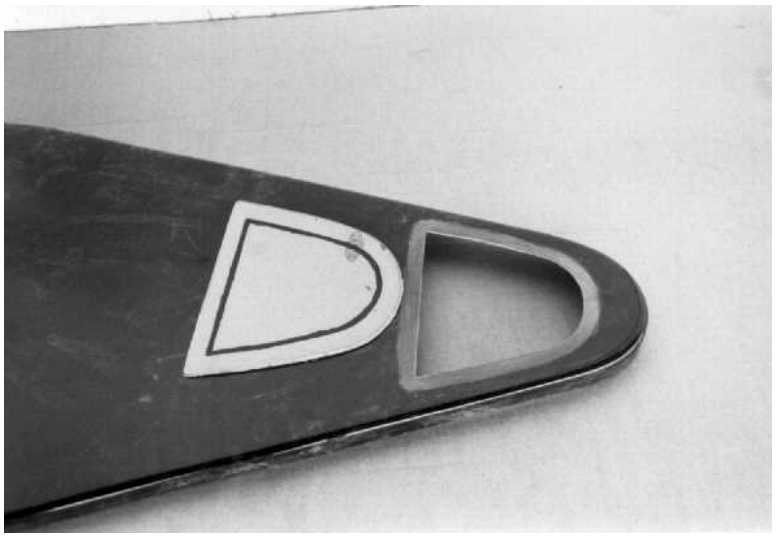

Photo #14

Cut out and glue the inspection windows in the top rear cover. These are installed to allow inspection of the master link, which is a pre-flight check item. The small window should be approximately 1/2" wide and 3" long on the pilot side, midway between the sprockets, to allow the chain tension to be checked (see also photo 19). The large window allows greater visibility of the chain and oil.

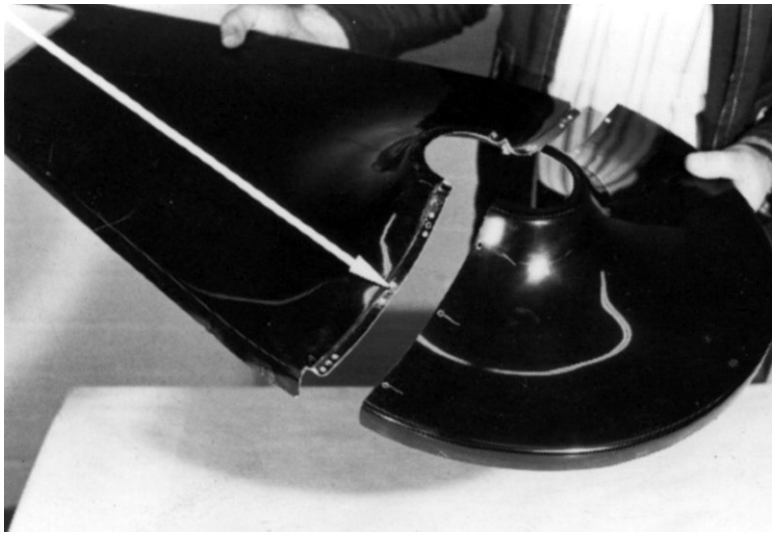

Photo #15

Place the two top cover pieces over the lower pan. Trim the top front cover flange as necessary to achieve a snug fit. Locate the nut plates according to the dimensions on the print. Note: Be sure that the nut plates do not interfere with the chain when rotating.
Install the rivets used as spring grommets according to the print. Push out the shank of each rivet so that the ends of the springs will fit through.

Before sealing the top cover check the following:

1. Chain tension.
2. Correctly installed master link and master link insertion plate.
3. Safety wire secondary retainer plate bolts and sprocket hub to shaft bolts.
4. Safety wire sprocket to sprocket hub bolts.

Before starting the engine, make sure oil has been added to the oil bath. The correct amount is 1 quart of engine oil and 1 can of STP oil treatment. Note: Mix the two oils together before pouring them into the chain oil bath.

Photo #16

Clean the top oil bath covers and the mating surface of the lower oil bath pan with acetone or a degreaser. Lay a bead of silicone approximately the size of a pencil on the inside corner of the covers. Carefully install the covers, then install the screws and springs.

Photo #17

Use a small amount of silicone over the seam where the two halves of the cover join to prevent splash leakage.

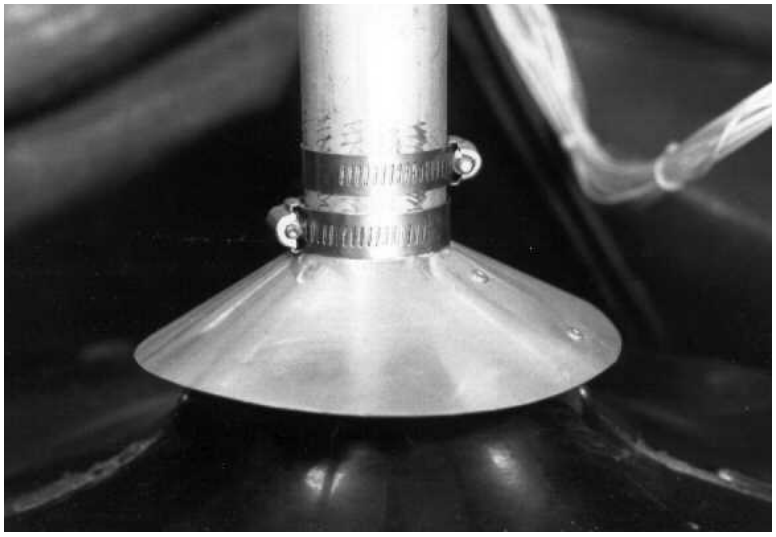

Photo #18

Using template E33-2, fabricate the rain guard and install it with the hose clamp provided. Note: Be sure that the rain guard does not rub on the top of the oil bath when the shaft is turning.

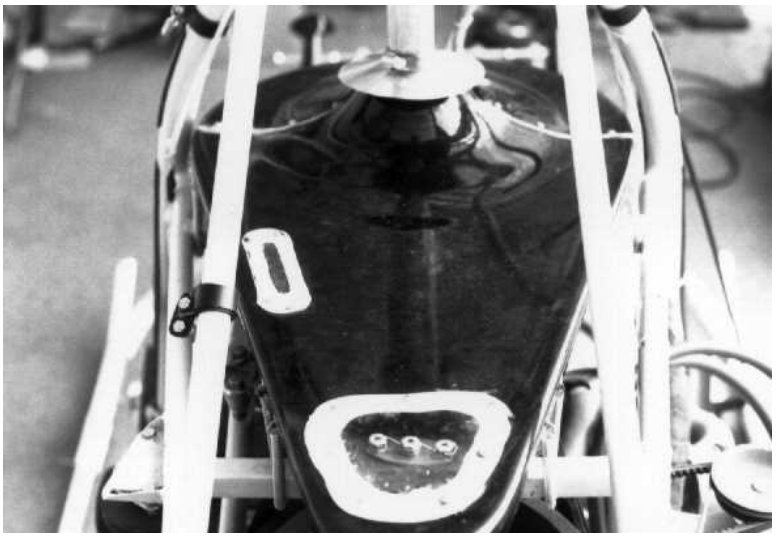

Photo #19

Finished oil bath in place on the airframe.