

# HANDS-ON A 32F-HX

John Bottomley tries the O.S. latest in his Baby Baron

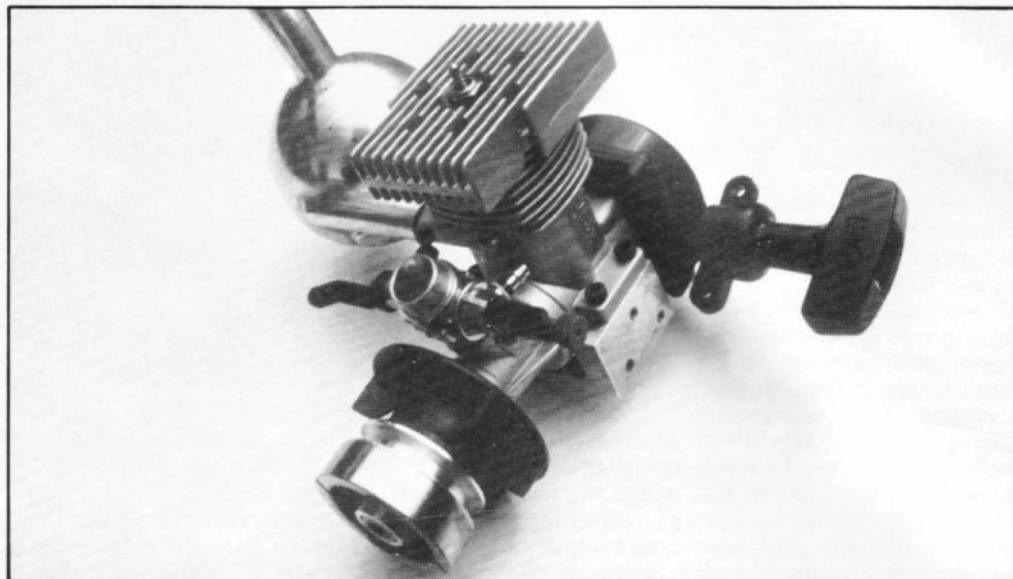
Murphy's Law is a wonderful thing! After months of putting off the inevitable rebuild of my trusty OS28, I finally succumbed and rebuilt it courtesy of parts and advice from John Haytree (see elsewhere for details). In very short order the '28' was back in my Baby Baron being gently flown/run in — part way through this I learnt of the existence of a pull start OS32! After a quick chat (A.K.A. hours of grovelling and begging!) it was agreed I could install it in my Baron 20 and subsequently a Shuttle. Of course, at this point I thought that it was going to be a simple bolt-in installation. Examination of the engine, the Baron Helicopter, and the Shuttle revealed that the engine was designed to fit the Shuttle first and foremost. However a couple of evenings work and the task was completed. The accompanying drawings and photos show the modification required, but there are some detail modifications that are not quite so obvious.

The basic problem with this installation is due to the pull start system being  $\frac{1}{8}$ " (3mm) wider than the side frames are apart. Also the pullstart cord and guide bush exit the engine in line with the side frame flange thus necessitating a cut out in the left hand sideframe.

Assuming that we are working with a complete Baron 20/MX proceed as follows.

1) Remove existing engine, and dismantle the fan/pulley/clutch assembly from the engine. The existing muffler may be reusable if it is compatible with the exhaust stack on the OS32 (There is complete interchangeability of exhaust fittings between the OS28/32 and the Enya SS30 range).

2) Remove undercarriage, rear cross brace, and carefully unbolt the rear fuel tank support bracket. Also remove the bolts which attach the RX platform stays to the sideframes.



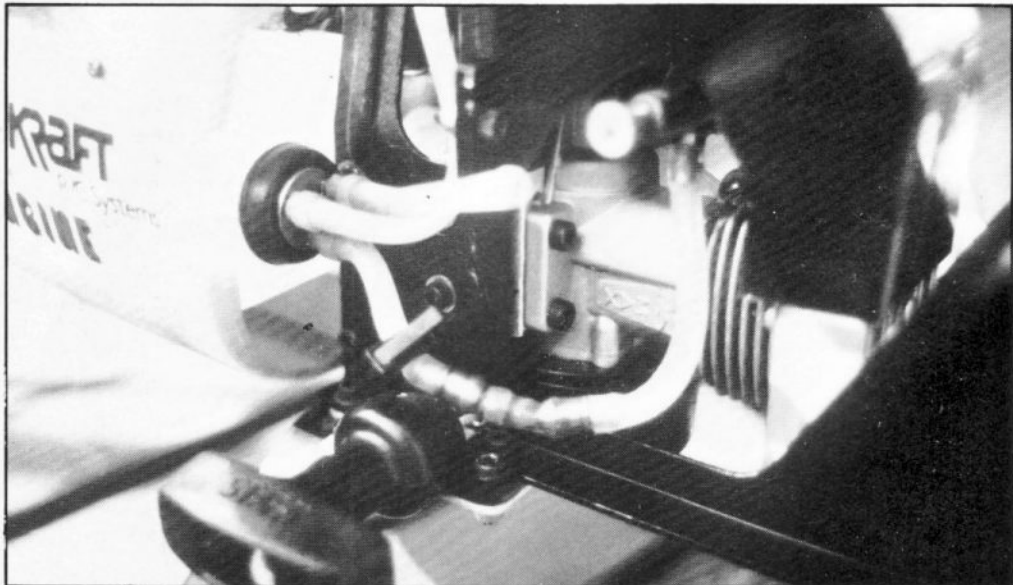
3) Transfer the aluminium engine mount from the existing engine to the '32' — once again the engine mounting lug holes are identical to the OS28.

4) With reference to figures 1 and 2 manufacture 2 motor mount spacer plates and 1 guide bush mounting bracket. Depending upon the age of the helicopter there may be variations — so carefully check the dimensions on the drawings to your machine.

5) Obtain eight (8)  $\frac{1}{16}$ " (1.5mm) thick washers with M3 inside diameter. These are used between the various brackets and stays to compensate for the wider spacing of the sideframes.

*The completed installation. The pull start handle is ideally situated for convenient use. Despite not using muffler pressure as advised in the instructions starting usually occurs within 2 or 3 pulls.*

*Possibly the ultimate small helicopter power unit! The O.S. 32 HFX — disguised on the occasion with the addition of a "Mac Heloball" muffler (available from Irvine Engines), and a Baron 20/20MX fan/pulley/clutch assembly. The one piece clutch assembly is an aftermarket item available from "Helimprovements".*



# OS

11) Redrill oversize or elongate laterally the mounting holes in the undercarriage cross members, then refit the U/C assembly.

12) Replace muffler, carb, fuel lines, etc in the normal way.

### Operating Notes

I usually bench run any new helicopter engine, using various propellers, however this was not possible on my test stand with this pull start version. I therefore decided to run the engine in whilst flying the helicopter. This proved totally uneventful. The first tank of fuel was used performing momentary hovering manoeuvres and ground running. The idea was to constantly vary the speed of the engine and the load. Subsequently the engine was leaned out slightly and the duration of the hovering increased. After about a dozen tanks of fuel (2 to 3 hours airtime) the engine was developing vertical climbouts. Starting was invariably a one or two pull affair, despite not running muffler pressure as advised in the instructions. A word of explanation is in order here. The instructions include a procedure for priming the engine and thus make for rapid starting using the pull start instead of the belt or rear cone start and electric starter. It is suggested that the exit of the silencer be blocked using say a finger whilst operating the pull start. In this way the engine pressurizes the fuel tank and fuel flows in to the carb. This method does work and very well too; however I have had just as good results by allowing the engine to draw fuel in via the pull start. □

6) Offer the '32' (basically as shown in photo 1) but less muffler and carburettor into the side frames and mark the position of the pull start cord relative to the sideframes. Using a motor-tool grind a cut out in the sideframe as shown in photo 2a. Deburr and fit the guide bush mounting bracket (photos 2a and 2b).

7) Remove pull start handle from string, and being careful not to allow string to disappear inside pull start also remove the guide bush. The guide should be modified as detailed in Fig 3. The small, round, black plastic spacer is not required on this installation.

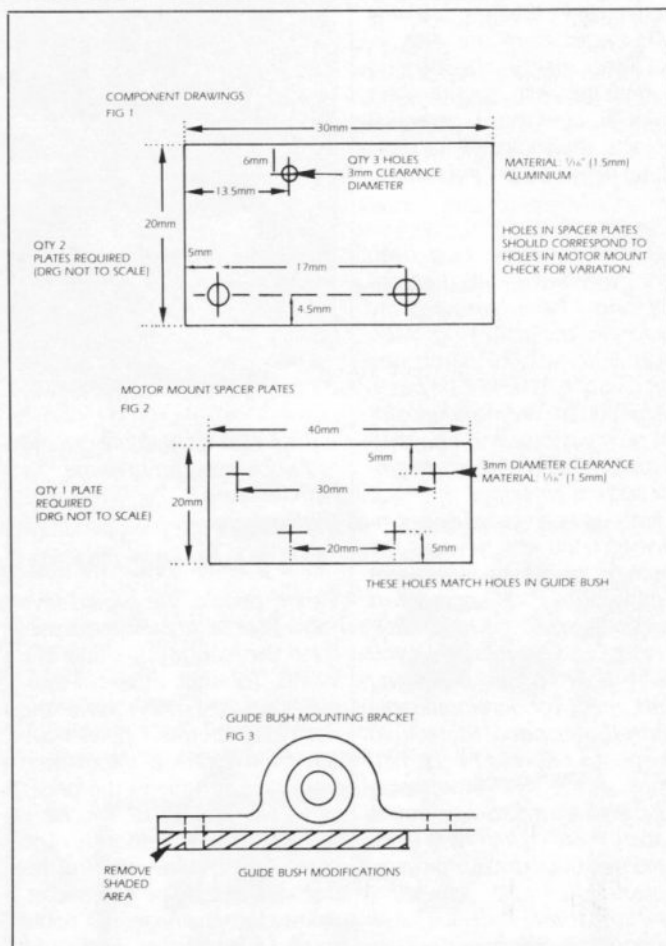
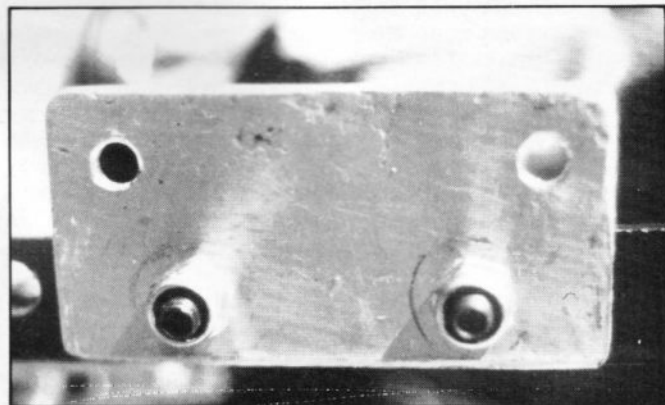
8) Re-assemble pull start cord, guide bush, and handle.

9) Install motor inside the sideframes, inserting one spacer plate either side. Align the motor as per usual. There is of course no need to install the starter belt!

10) Refit the bolts holding the rear cross brace, rear fuel tank support bracket, and Rx platform stays; putting a  $\frac{1}{16}$ " (1.5mm) thick washer each side between the sideframe and the brace etc. This is necessary to prevent distortion of the sideframes due to the now wider motor mount.

*Detail shots of the pull start rope guide mounting bracket. Manufactured from  $\frac{1}{16}$ " (1.5mm) aluminium, this bracket allows the guide to be*

*positioned for optimum alignment of the starting rope. This is necessary to minimise wear on the rope. See text for details.*



### Product Availability

OS32FX: OS Products, see Irvine Eng. for address and telephone number.

"Heloball" Muffler: Irvine Engines, Unit 2, Brunswick Ind. Park, Brunswick Way, New Southgate, London N11 1JL. Tel. 01-361-1123.

*Underside view. The rectangular backplate of the pullstart system requires the side frames to be spaced apart by a further  $\frac{1}{8}$ " (3mm). See text for details.*

