

the electric fuel pump on and with the mixture in idle cut-off. For priming, the lever is moved forward until a fuel-flow reading appears on the gauge and then returned to cut-off. The starter is engaged by turning the magneto to switch through the mag positions, depressing and continuing to turn. As the engine fires, the mixture is pushed to full rich. A hot engine is started without priming, and a flooded engine is started with fuel pump off and throttle wide open. The starting reliability of this system is reportedly good.

Recommended pre-take-off checks include exercising the propeller control at least three times when cold (care is needed as the control action is very sensitive), to ensure oil circulation; and a period of running without the electric pump to check the mechanical one (the pump should be "on" for take-off).

The normal take-off is without flap, though the second notch setting of 25° is recommended if the run is to be minimal for any reason. Recommended lift-off speed is 60-70 m.p.h. On the evaluation flight—medium weight, two up, and with the trim set towards the back of the take-off range on the indicator—the Arrow lifted cleanly at just over 65 m.p.h. Like its namesake, the machine ran true, with no tendency to swing; the ride was well damped, quiet and stable on the roughish grass at Kidlington. Best rate of climb, according to the book, is 100 m.p.h., with 90 m.p.h. for best gradient.

For best take-off performance at light weight one would probably wish to override the undercarriage automatics, which normally keep the gear down until 85 m.p.h.—this is quite easy, though it does occupy one hand all the time at below 85 m.p.h. With the gear in transit the three greens go out and an amber light appears. An adjacent red light shines when the gear is up and locked.

Initial rate of climb, gear and flaps up, is a sprightly 800ft/min or so plus; and the book claims that, from a gross-weight lift-off, the Arrow will climb to over 15,000ft—higher than one would care to go without oxygen. The IO-360 is continuously rated at 180 h.p. though, of course, power decreases steadily from sea level upwards.

**Level speeds** At 3,000ft (10°C—bang on ISA) I checked the level speeds. First of all, at 75 per cent power (given as 2,400 r.p.m. and 24in manifold pressure in the book power-setting table) the Arrow settled down to 155 m.p.h. indicated (162 m.p.h. true)—almost 10 m.p.h. more than is claimed at gross weight. At 65 per cent (2,300 r.p.m. and 22in) the speed was 135 m.p.h. IAS (140 m.p.h. TAS)—a few m.p.h. below book. Then at 55 per cent the performance went back into credit with 124 m.p.h. IAS (130 m.p.h. TAS)—some 5 m.p.h. over book. With both a fuel flow gauge and an EGT (exhaust-gas temperature gauge) 'XF was very well equipped for getting optimum fuel flow. For best power mixture one is advised to lean-off until the peak EGT is reached and then to enrich until the temperature drops a minimum of 25°F. For best economy it is recommended to continue leaning beyond max EGT until a 25°F drop is reached.

**Trim changes** The fairly wide speed range of the Arrow demands a wide range of fore-and-aft trim, and though none of the configuration changes (gear, power or flap) involve much in the way of stick loads, a change of speed does. The electric

trimmer is quick and handy for the constant to-and-fro of tiny changes one needs to make during the cruise, and for the much bigger shifts during acceleration and on slowing. At all normal speeds and attitudes the Arrow is stable and well damped in pitch, and neutral laterally. The ailerons were well co-ordinated at high speed but produced some waviness by the nose at low speed. Used with determination, the ailerons give the Arrow a quite respectable rate of roll at all speeds.

**At the Stall** Befitting its trainer heritage, the Arrow offers safe, simple behaviour at the stall. By overriding the automatic gear lowering I found the clean stall began with a warning light glowing at 65 m.p.h. and a nose-drop with simultaneous light buffeting at 53 m.p.h. With flaps right down and undercarriage lowered, the power-off stall was at 40 m.p.h.

Another foolproof feature of the undercarriage is the maximum permitted lowering speed—this is 150 m.p.h., or very nearly the highest cruising speed (the maximum speed for raising the gear is 125 m.p.h.). There is barely any noticeable trim change on lowering the gear at 150 m.p.h.—merely a slight nose-down change of attitude to maintain speed after a funny little jig from side to side as the legs come down unevenly.

**Comfort** The Arrow is much nicer to fly in than any previous Cherokee that I have seen. The new panel is very good indeed, and the power lever quadrant is well placed and the lever action is precise and foolproof. The old fashioned lever on the floor for the flaps is nevertheless light and easy to use. Outward visibility is fairly good, though the screen pillars block off quite a lot of important directions and the fixed visors are a bit obstructive at times (they ought to swivel, in order to blot out dazzle from a low sun at the side). Rearward view is the better for the additional side windows, which also make the inside seem larger. The big seats should please most people, for they show signs of having been designed to give firm and confidence-inspiring support to their occupants. A fraction under six feet in height, I found ample fore-and-aft adjustment. The seats do not raise or recline, nor are the rudder pedals adjustable.

General noise and vibration levels are commendably good, and I think one would be quite happy to go a long way in this aeroplane. But I am afraid that back-seat passengers, unless they are smaller than average, will find themselves cramped; there was just 6in of knee room with the pilot's seat in the most comfortable position for me. Cabin amenities include a cigar lighter, four ashtrays, four pouches, and an effective and silent heating and fresh-air system.

**Descent and landing** The airspeed indicator is yellow lined above 175 m.p.h. and there is a never-exceed red line at 212 m.p.h. Both are well above the normal maximum cruising speed. The most effective way to achieve a rapid rate of descent is power off, gear down at the limiting speed of 150 m.p.h. The flaps can be lowered below 125 m.p.h. Recommended approach speed is 90 m.p.h., though at low weight and in smooth air 80 m.p.h. seemed a practical speed if the landing distance available happened to be short. From a 90 m.p.h. approach with a trickle of power, the merest hint of a check back and a slow reduction of power are all that is needed for a three-pointer.

An electro/pneumatic/hydraulic device prevents premature undercarriage retraction, and automatically lowers the gear upon throttling back and reducing speed for the landing approach

