



(Photo by Jim Bede) EAA President Paul Poberezny and the BD-6 which he flew on Monday, April 22, 1974 at Newton, Kansas.

Flying The BD-VI

By Paul H. Poberezny
Sport Aviation July, 1974

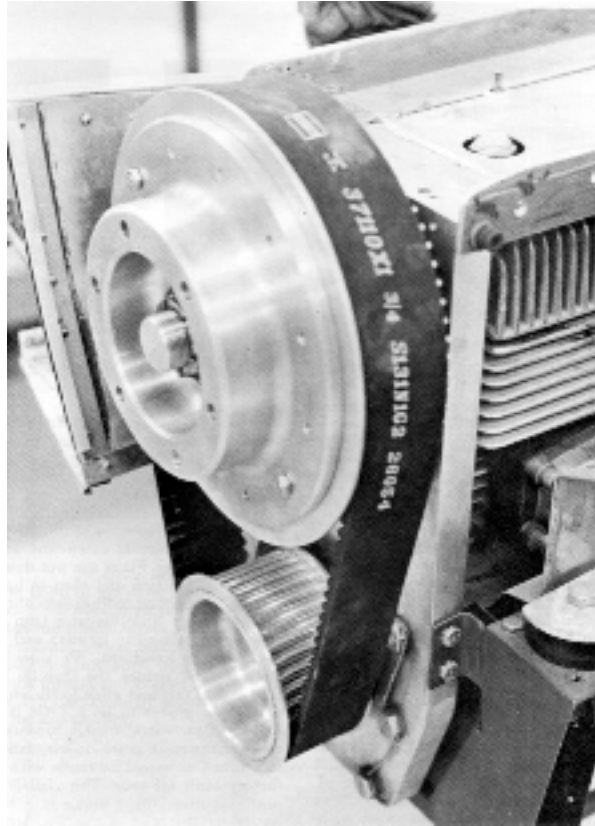
AIRPLANES COME IN various sizes, shapes, models and types. They come in many different configurations - without power plants, with power plants of different sizes, models and varying thrust. They are either comfortable to sit in or are not comfortable. While the feel of one machine may excite one pilot, the other may be disenchanted. But one thing is sure... if you don't pass enough wind across the wing, nothing will happen.

To write an objective article on the flying qualities of an airplane is not easy. It is kinda like writing about a lady... to one man she is beautiful, to another she is not. To each his own, I suppose, for whatever is most appealing to him.

Knowing that I have flown some 132 homebuilt airplanes, many people ask me what they assume is a simple question, "Can the average pilot fly (this or that) airplane?" How do you go about answering these questions when you know that what you say could possibly put a pilot in the cockpit of an airplane that is beyond his or her ability regardless of logged flying hours? Many pilots with varied flying experience, coupled with what some would term "natural ability", are able to jump from airplane to airplane type and adapt to the differing visual and muscular inputs necessary for smooth operation - after only a simple cockpit check. These pilots are able to acquire a feel of the airplane's handling characteristics quickly and can complete the flight with great professionalism, knowing when to move the stick or wheel, the rudders, application of power and the relationship of the airplane to that common indicator, the horizon. This is the challenge.

The BD-6 is a high wing, single place cabin airplane sporting a wing span of twenty-one feet six inches, a length of sixteen feet five inches and with an empty weight of 355 pounds. It is powered by a 42

h.p. Hirth 650cc engine that swings a wooden 51 x 46 propeller. Fuel capacity is 18 gallons and consumption is some four to five gallons per hour at cruise power.



(Photo Courtesy of Bede Aircraft) The BD-6's belt drive unit which produces a 2 to 1 reduction of the Hirth's high rpm output. The belt is a specially made 1 3/4 inch wide version of a standard timing belt. The belt is initially being given a conservative 2000 hour operation life.

My flight of some 45 minutes occurred at Newton, Kansas on April 22, 1974 at the Bede Aircraft home base. I had talked with Jim about flying the aircraft for some time, and my return flight from several EAA functions in the western part of the country made a stop convenient on this day.

The weather at the time of the flight was clear, temperature was 75° and the wind 10 to 15 mph - 20° cross from the left on the active runway. During the walk around, I noticed how easy it would be for the servicing of fuel in the shoulder high wing tanks. It was also noted that the smooth finish should add a bit to the airplane's efficiency.

The wide single door at the left side of the cabin made for easy entrance - just open the door, sit down and bring both legs into the cabin. No control stick to get a leg around or control wheel in front of you as the Six has the side mounted stick on the right. I was impressed with the roominess of the cockpit and the abundance of leg room, as can be seen in the accompanying photographs. I am 6 feet tall and weigh 185 pounds, so you can get an idea of the cabin space by how I fit in. Behind me was a reasonably large baggage compartment - larger than in most single place homebuilts.

I felt very comfortable in the roomy cabin and it felt a little "naked" not having a stick or wheel in front of you.

Engine instruments were standard except for the absence of an oil pressure gauge - the oil and fuel are mixed. A VHF radio was mounted conveniently in front of me, just below the instrument panel. The throttle is mounted in the door to your left. A flexible cable through the door and cabin structure leads to the

single carburetor. Elevator trim a la auto window crank is mounted forward of the pilot at the top of the cabin.



(Photo by Jim Bede) This head on shot shows the relative cleanness of the BD-6. The spinner and wheel pants were off when Paul flew the plane. A small performance gain could be expected with them in place.

(Photo by Jim Bede) Paul found the BD-6's cabin to be quite roomy and comfortable. The side mounted stick leaves an unencumbered floor in front of the pilot. Paul rated the visibility as excellent for a high wing aircraft.

Starting procedure is simple - the same as for a snowmobile. Fuel on, mixture set, turn the key to start and the engine is running.

As the engine was warming up, I again checked the fuel quantity in the clear plastic tube next to my right knee and went through the three flap positions for familiarity. The flap handle is a mechanical lever located at the top left portion of the cabin roof.

Adding a little power and releasing the toe brakes, the Six and I taxied out for take-off. Ground handling was very good - the casting, full swiveling nose wheel made directional control easy and a pleasure. I had often wondered about those little wheels - were they too small? I found them to be more than adequate and the fiber glass landing gear made ground operation smooth. The empty weight of the BD-6 is only 355 pounds and sod field operation should pose no problem.

Ground visibility while taxiing out was very good, as would be expected with all the glass around the cockpit, and being single place, a swing of the head gives you a view of both stabilizers. With your head near the trailing edge of the wing visibility upwards is greatly improved over most high wing airplanes. A tinted glass window in the cabin roof will be added, says Jim.

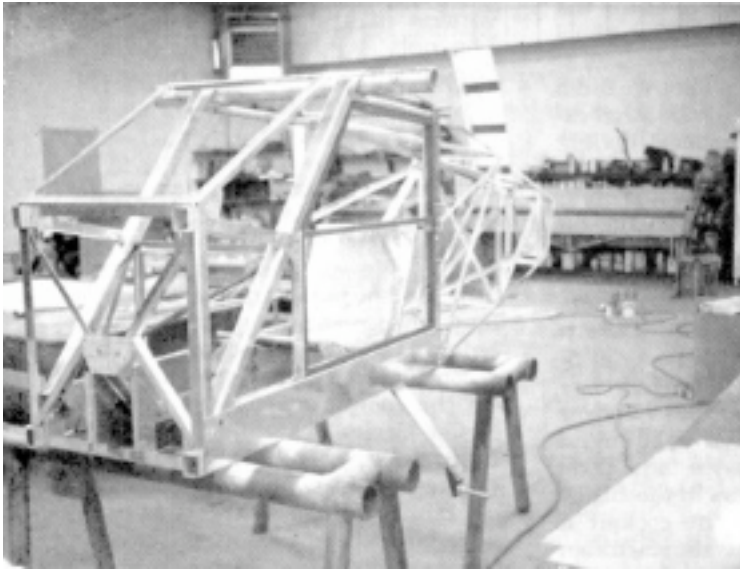
We arrived at the take-off point and a check was made of the instruments, trim was set, and flaps were set to the take-off position - one notch. It doesn't look like much flap. No one on final, so taxi out on to the paved runway, open the throttle and watch the tachometer read 6000 engine rpm! Letting go of the brakes, I was pleasantly surprised with the acceleration. The rpm increased to 6200 as our speed increased and we were off in approximately 450 to 500 feet. An 80 mph climb was established which showed between 600 and 650 feet per minute rate of climb.

I had forgotten about my concern over the side mounted stick - I soon found that a little wrist movement was all that was needed for attitude changes. In fact, I found that there is less over-controlling

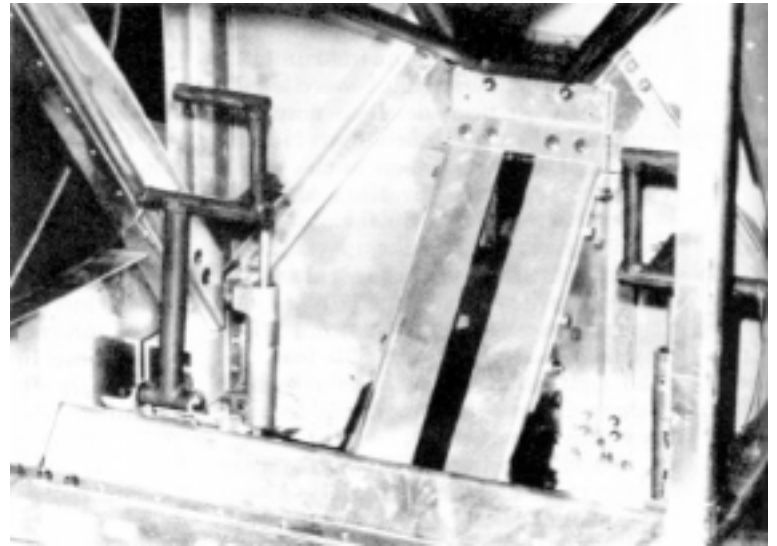
tendency with your forearm and elbow resting on the side cushion. One has a lot more over-controlling momentum available when the full arm as well as a little body english is added to it in the operation of the normal stick or wheel control.

On the climb to 3000 feet we did a number of turns and coordination exercises. The airplane was a delight to fly. Leveling off at 3000 feet, the mixture was leaned just a bit to smooth out the engine. Reducing the engine rpm to 5900 resulted in a propeller rpm of 2950 due to the 2 to 1 belt drive reduction unit. The airspeed increased and settled down to 120 mph indicated - pretty good for a snowmobile engine of only 42 max. h.p. with single carburetion and an untuned exhaust. Jim says the engine will put out 55 h.p. with twin carbs and a tuned exhaust (as in the BD-5).

The noise level in the cockpit is about the same as the standard four cylinder air cooled aircraft engine, possibly a little less. For those on the ground, the noise level is about 30% less than for four cylinder aircraft engines. I saw Les Berven off to my right flight testing the BD-5 with a Japanese 40 h.p. water cooled engine. We wagged wings at each other and he pulled in alongside me as we had prearranged in a briefing before take-off. I noted the little air scoop under the fuselage that picks up the cooling air for the radiator. A few circles of the field and a flyby and Les goes back to the work of a test flight.



(Photo Courtesy of Bede Aircraft) Fuselage structure of the BD-6. Aluminum channel is bolted together just as in the BD-4.



(Photo Courtesy of Bede Aircraft) Rudder pedal/toe brake system and nose gear support structure.

I climb back to 3000 feet to begin several stalls. The airplane was trimmed for hands off level flight and the machine flew along with wings level. It would appear to offer good stability while map reading - and in the Six you can lay the maps on your lap or the floor without a stick being in the way. The large vertical fin, I'm sure, helps with the stability. The elevator trim needs only slight changes for the desired results.

A 90° turn to left and then to the right to clear the area below us for a no-flap stall is accomplished with slight rudder pressure. The engine is throttled to idle and a no-flap stall in a landing attitude is accomplished. The stall is clean and straight ahead at an indicated airspeed of 63 mph. Several others

are accomplished with half flaps, the break coming at 57 mph, and with full flaps it paid off at 51 mph. Full flaps are quite effective. In each case forward pressure on the stick restored control effectiveness and caused a three or four mile per hour increase in indicated airspeed.

Now for the landing. The traffic pattern is entered at a 45° angle to downwind, a turn to downwind and another to base. Flaps are put down to take-off position and then to half flap with a turn on to final indicating 95 mph. Very little elevator trim is needed and visibility forward and to each side is excellent. We slow to 85 mph and reduce the throttle to idle at 300 feet and glide to the runway. This proves to be a little fast and we float some, finally touching down on the main gear - an easy landing, much as would be made with a factory built tri gear. The visibility and response would make it a bit easier for the pilot of the Six, however.



(Photo Courtesy of Bede Aircraft) The BD-6 at an early stage of construction. Aluminum skins are bonded to the simple fuselage framework. By buying a few components from Bede Aircraft such as the rudder/ brake pedals and engine mount, the aircraft can be built without having to do any welding.

The throttle is opened and with half flaps, we are off sooner than expected. Another circuit of the field and this time we will try for a full flap landing. Same procedure on final except with full flap our descent is steeper and slower - we are holding 75 mph on final. The round out and touch down are easy and I am able to stop within 600 feet of touchdown. A few more landings were made with the same results - in fact, if it had not been necessary for me to make Hales Corners before midnight, I could have flown for several hours. As it was, I put in 45 minutes and signed off the 75th hour the little airplane has flown.

I feel my flight experiences with the BD-6 are representative of the little airplane's capabilities in its present prototype form... and I hope of things to come for whomever ventures into the world of recreational airplanes using the vast storehouse of knowledge available to us and by using vision, free thinking, hand and mind and man's creative ability. But, again, keep one thing in mind if you don't pass enough wind over the wing of any aircraft, you can get into trouble. If you don't fly often enough, don't expect your capabilities to match those who do. The accident rate is not what is wrong with aviation. It is the lack of useability of the beast that is one of our biggest problems. How proficient an automobile driver would we be if we only

drove 50 to 75 hours per year and then only during daylight and on dry roads? In actual practice, most of us drive in daylight and darkness, in fog and rain and in much of the country, snow and sleet... and one can readily tell the difference between drivers who have and those who have not had this varied experience. Did you ever see how well great grandma in Ely, Minnesota does - at the age of 78 - in a winter blizzard as compared to a 25 year old hot rodder with a quarter inch of snow in Washington, D. C.?

Training, experience and frequency of operation are some factors to consider... no matter what sort of aircraft you are flying.



(Photo by Jim Bede) Paul (6 feet tall) stands by the nose of the BD-6 to give an idea of the size of the little bird.

