

'MEDUSA'

BY JOE BESHAR

Fly on Compressed Air Power!

When I learned there was a compressed air engine for models manufactured in Italy, and available in England, I wrote Ken Hinton, my good friend from across the pond in Bury St. Edmonds, England, and asked if he knew of it, as I was interested in obtaining one. Lo and behold, Ken came to the USA to attend the SAM Champs at Westover Field, Massachusetts, in July ('90) and, with him, he brought me one of the engines. It's the MM3, manufactured by Z Model, Via Solferino, 31020 Frescada, Treviso, Italy.

When Ken handed it to me, I was very impressed from the start, as it comes packaged in a clear enclosure, complete with hand pump (bicycle type), tank, connecting lines, and engine... all in plastic construction. The plastic tank is smaller than a liter-sized container, the type used for packaging soda products. The label read "Maximum Pressure 7 Bars (99.6 psi)"... hard to believe, but true. Supplied is a molded, red plastic prop with spinner, resembling a P-30 rubber-powered prop.

The engine cylinder is clear plastic and thus transparent. You can see the connecting rod, which is not connected to the piston, but free floating with a ball joint at the end of the rod, which rides freely in the piston cavity without a rod. I couldn't wait to run it

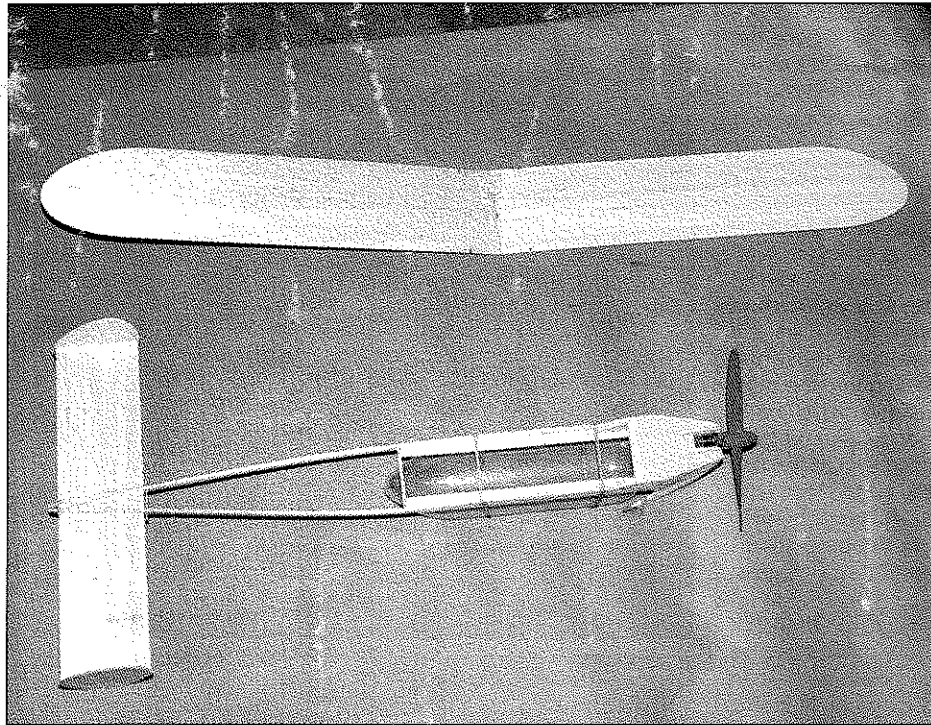
Using the hand pump in accordance with the instructions, I stroked the pump handle 50 times. It was great; one flip and it ran about 2 to 2-1/2 minutes. At this point, I decided that the hand pump was not for me, as I wanted to know just what pressure there

would be in the tank for purposes of control and safety. The tank does have a safety pressure relief valve, which is designed to limit the maximum pressure of the tank. I felt that a pressure gauge should be employed, rather than depending on the relieving pressure of the valve; besides, as lazy as I am, my arm got tired with the hand pump.

I went to the local outlet store and purchased a 12-volt auto-type air compressor; this comes complete with a wire extension and plug for insertion into a car cigarette lighter receptacle. The pump comes with a pressure gauge and can generate up to 220 psi of pressure; this

was ideal for my purpose. The cost was a mere \$20. Being a senior citizen (not retired), I got 10% discount, with a final cost of \$18.

As the pump air supply outlet is designed



The Medusa wing, fuselage and tail, with the compressed air motor installed... held in by rubber bands.

when I found that the entire flight gear, plastic, tank, engine, connecting fittings and propeller weighed a mere 49 grams (1.72 oz.).

I immediately put it through a trial test run.

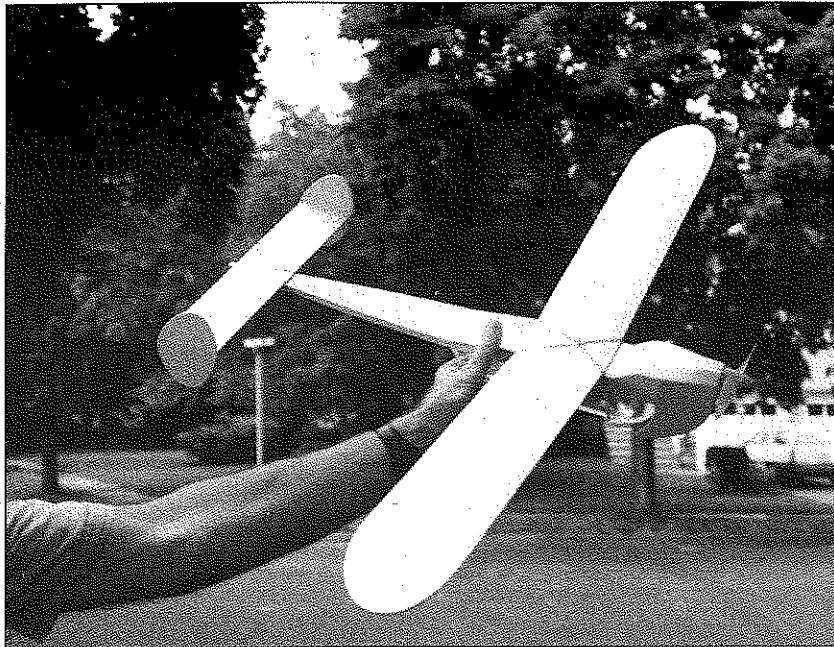
for insertion and clamping on an automobile tire tube valve, I picked up a scrap tire valve from a local gas station, cut off the rubber portion and adapted it to the plastic tube extension which came with the hand pump. This made it compatible for charging by insertion into the charging plug supplied with the tank. It worked great, as I was able to pump the MM3 tank to any pressure I wanted, up to its maximum of 99.6 psi, simply by depressing a button and reading the pressure reading on the gauge.

At this point, I was so encouraged I went ahead to design and build the "Medusa," a very simple and basic model constructed entirely of balsa wood. Initially, I left the fuselage crutch open. For the first flight, I pumped the tank up to 40 psi. I launched it, and it just about stayed airborne and found its way to the ground, with a gentle soaring attitude, to a fine landing.

For the second flight, I proceeded to pump up the tank pressure to 70 psi. I launched it, and it flew beautifully in a left hand circle, about 100 feet in diameter, ascending up to 250 feet, docile and in perfect stability. It was a beautiful sight. While in flight, it suddenly occurred to me that I didn't have a de-thermalizer. Hysterically, I screamed at it to come down . . . it must be disciplined, as it acknowledged in a continued gentle soar to ascend and land right in the middle of the football field from which I had flown it. I

think the people in the area must have thought (?) I was crazy when I was talking to the plane to have it come down!

The compressed air approach is great, it is clean, without temperature concern or liquid state to worry about as with CO₂, and



As an option, the Medusa fuselage can be covered, as here, with Litespan covering.

with all this, it is also inexpensive.

I found joy with the "Medusa" and compressed air power, and thought I would pass my experience on to other aero modelers. I don't believe it is necessary to go into a lengthy construction article for this simple model, but I thought a brief summary with description and detailed plan would serve those who are interested.

The wing, tail and twin rudders are cut from 3/32-inch soft balsa sheet stock, as are the three ribs. The fuselage is constructed in

a simple crutch design using 1/8 x 3/8-inch strip stock and planked at the front section with 1/16-inch balsa sheet contoured as shown on the plans. The motor is simply mounted by gluing the mounting members as shown on the plans with CA to the flat of the fuselage front top section.

The wing with three ribs is contoured as shown from 3/32-inch sheet stock with a dihedral of 2-1/2 inches at each tip. The tail and wing are held on with elastic bands over the pegs as shown. You will note, in the wing there is a peg at the center; this peg serves not only to hold the wing in position with #32 rubber bands, but also the tank nested in the crutch construction of the fuselage. Rudders at the rear provide stability when "Medusa" is landing and serves to keep it level when setting it on the ground.

Some of the vital statistics of the engine are as follows:

Constructed entirely of plastic.

Displacement	.04 cu. in.
Bore	.39"
Stroke	.31"
Maximum RPM	15,000
Tank Capacity	46.5 cu.in.
Length	11"
Diameter	2.68"
Max. Pressure	99.6 psi

I trust you will find "Medusa" interesting enough to build it, and enjoy flying it like I did, with compressed air power. **MB**