"DIDGERIDOO" MODEL PULSE JET
CONSTRUCTION NOTES

IMPORTANT: Read all notes and drawings. Plan each fabrication procedure before commencing any work.

Item 1
(A) The 10mm x 8mm section of material, which carries the M6 tapped hole for the fuel jet attachment, can be made as follows:
(1) Leave an 8mm wide band of material when turning the outside contour of item 1.
(2) Drill and tap the M6 hole as shown on the drawing.
(3) For the benefit of weight reduction remove the excess material, to leave the 10mm dimension.

(B) The machining of the 1.5mm wide x 0.5mm deep shoulders is best carried out after item 15 has been welded up and trimmed parallel along the edges of the major and minor diameters. Also those diameters can be checked, any adjustments made, and the shoulder dimensions machined to suit. Ideally item 15 should fit firmly after having been sprung into place.

(C) A method of locating the 10mm dia. hole required in item 15 so that the fuel jet assembly may be screwed in place, is to drill a small hole say 5mm dia. thru item 15 on the centre line. Assemble item 15 onto item 1 maintaining longitudinal alignment of the 5mm hole and the M6 hole in item 1. Open out the 5mm hole in item 15 to 10mm dia., drawing over if necessary.

Item 2
For ease in the machining procedures, mild steel can be used for this part.

Item 3
The service life of this component could be improved by case hardening. However in that event, due to distortion, subsequent grinding of the valve seat face may be required.

Item 4
For successful performance this part must be made of hardened and tempered spring steel sheet as a minimum quality material.

Continued...........2
Items 15, 16, 17, 18, 19.

For ease of fabrication and better durability these sheetmetal components are best made from annealed material. Also for those constructors who do not have access to the required machine tools, the forming may be more easily carried out by hand. Accuracy in the dimensioning and cutting of the blanks, for these parts, will help to obtain the correct finished sizes after the forming and welding operations have been carried out.

The relevant development drawing may be used to mark out each of these components.

The tungsten inert gas (T.I.G.) welding process is recommended for all of the welded joints.

HAVE FUN -------- PLAY YOUR DIDGERIDOO SAFELY!

I would be pleased to hear of the results from your endeavours.

Ron Bernhardt.
"DIDGERIDOO" MODEL PULSE JET
ASSEMBLY AND OPERATION NOTES

(1) When assembling, be sure that the support bars of the reed valve backing plate (item 5) are aligned so that they will support the petals (blades) of the reed valve (item 4).

(2) The valve plate assembly, located by the 2.5 long spigot, is sandwiched between the shoulder of the reinforcement ring (item 2) and the venturi (item 1) when screwed in place. It will be found that a firm attachment is made with very little screwing force on this fine thread. When assembled ensure that the reed valve works freely and seals well. A suck and blow by mouth on the tailpipe opening, with the plug hole sealed, should verify that condition.

(3) Suggested spark plugs: -

NGK CM6
CHAMPION Y86
" UY6

(4) The required fuel jet setting will vary according to the fuel used and the ambient air conditions. For petrol between 4 & 5 turns open could be tried as an initial setting.

(5) Starting procedure: -

Help from a responsible person would be beneficial.

(a) First check to see that a jet start up would not cause harm or damage to persons or property in the vicinity. Remember that the exhaust from the jet will consist of very hot combustion products.

(b) Switch the ignition circuit on. The intermittent high tension supply (automotive type trembler coil or similar arrangement) should now be arcing across the points of the spark plug. It may be possible to hear this taking place.

(c) Fuel on. Ensure that the fuel supply contains no trapped air (bubbles) between the fuel tank and the jet.

Continued.........2
(2) Simultaneously with (c) apply a low pressure air stream, by means of a hand or foot operated pump or a compressed air supply thru a jet size of about 1.5mm (1/16") dia., across the fuel jet so that the fuel and air enter the combustion chamber thru the ports of the valve plate. It is important to ensure that the air stream breaks the fuel up into very fine particles otherwise with ignition the fuel may just burn, without explosion, causing a miss start. In the event of continued miss starts be sure to avoid an accumulation of unburnt fuel. In that event shut down and clean the fuel away before any further attempts at a start are made. When the jet starts cease the air stream immediately. Experience is the best and only way to learn to start and operate your pulse jet.

(6) Prolonged static running may reduce the life of a model pulse jet considerably due to excessively high metal temperatures.

(7) PULSE JETS ARE NOISY. FUELS ARE HAZARDOUS MATERIALS. Due consideration should be given to all persons and property in the vicinity of operation. SAFE OPERATION GIVES PLEASURE AND SATISFACTION.

I would be pleased to hear of your progress and the results of your endeavours.

Ron Bernhardt.