O.S Pet II .09 Series 2

SPECIFICATION	PROPELLER—R.P.M. FIGURES	
Displacement: 1·615 c.c. (·098 cu. in.).	*diameter x pitch*	*r.p.m.*
Bore: ·529 in.	7 x 4 Frog nylon	11,800
Stroke: ·448 in.	9 x 6	6,500
Bore/stroke ratio: 1·18 in.	8 x 4	9,800
Bare weight: 3½ ounces (with throttle).	8 x 6	7,000
Max. power: ·119 B.H.P. at 13,500 r.p.m.	6 x 4	15,500
Max. torque: 11 ounce-inches at 11,000 r.p.m.	6 x 4 Stant	13,500
Power rating: ·074 B.H.P. per c.c.	7 x 4	11,000
Power/weight ratio: ·034 B.H.P. per ounce.	8 x 4	9,600
Material specification:	9 x 4	7,000
Crankcase: Light alloy pressure die-casting.	9 x 4 Trucut	7,500
Back cover: Light alloy pressure die-casting.	8 x 6	7,800
Cylinder: Unhardened steel.	8 x 4	10,200
Cylinder head: Light alloy pressure die-casting.	7 x 5	10,800
Piston: Cast iron.	7 x 4	12,300
Gudgeon pin: Silver steel.	7 x 3	13,500
Crankshaft: Hardened steel.	6 x 4	14,000
Propeller driver: Steel.	6 x 3 Topflite	16,800
Crankshaft nut: 2 B.A.	6 x 4	15,500
Spraybar: Brass.	7 x 4	12,000
Throttle: Brass barrel in aluminium housing.	7 x 6	10,500
Glow plug: 2-volt (Japanese) with idling bar.	8 x 4	10,500
Manufacturers: Ogawa Model Mfg. Co. Ltd., Hiranobaba, Higashisumiyoshi, Osaka, Japan.	9 x 4	8,300
	Fuel: straight methanol/castor oil blend.	

The standard of design development and workmanship in Japanese motors produced during the last decade, is extremely high and the O.S. “Pet" is certainly no exception to this rule.
It is of exceptional high quality throughout, a nice motor to handle and achieving a peak power figure on test of .119 B.H.P. at 13,500 not outstanding in its way, but quite potent, nevertheless on straight fuel.

The model supplied was also fitted with a throttle control, consisting of a barrel type throttle housed in a spherical extension member for the choke tube.
This throttle unit is held in place by the spraybar and the barrel is operated by a simple lever.
Speed control possible with the throttle proved to be remarkably good.
From a load speed of 11-12,000 r.p.m. at full throttle, speed could be lost progressively until a minimum idling speed of 3,500-4.000 r.p.m. was reached, which low speed could be maintained indefinitely.
From 15,000 r.p.m. load- speed, idling speed was reduced to 4,500-5,000 r.p.m. with the throttle fully closed.

Pickup was dependent on the time the engine had been running at low speed.
The longer this time, the longer the engine took to settle back to full power again maximum delay being of the order of several seconds after, say ten or twenty seconds slow speed running.
There was also one throttle position which, if held, cut the motor. The barrel valve works on two openings a large opening for normal running and a small hole for slow speed running.

At intermediate throttle positions, the larger hole is progressively closed, but in one position the large hole is almost cut off and the small hole only just opening, and under this condition the mixture produced will not sustain runing.

Starting characteristics, we did not find outstandingly good with the standard Jap. plug. Because of the shielding effect of the idling bar the plug appears to remain relatively cool when coupled up, although the clement itself glows quite brightly. As a consequence, it was a little fussy about choking and priming for the right starting mixture. Starting was much improved by fitting an A-M glow plug which incidentally, also gave a superior performance on straight fuels. From 11,400 r.p.m. load- speed on a 7 x 4 plastic propeller, the speed rose to 11,800 rpm., on the A-M plug.

We checked throttle operation with the A-M plug and found that it made very little difference. Steady low speed running could still be maintained but the ’‘clearing time” when opened up to full throttle again was slightly longer.

Running was consistent at all load-speeds and, unlike many small glow motors, the O.S. “Pet” was also quite happy running slow driving large diameter propellers. It was taken down to 7,000 r.p.m. load-speed without any appreciable loss of torque. On the other hand, running was sweetest and the engine sounded most happy at speeds above 12,000 r.p.m. Ultimate speed reached on propeller loads was just under 17,000 r.p.m. Straight fuel was found to be quite satisfactory for even the highest speeds. Performance could,

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undoubtedly, be boosted by the addition of nitromethane, but no significant gain was achieved at load-speeds circa 12,000 r.p.m. on a spot test with a 10 percent, nitrated fuel.

Constructionally, the O.S. “Pet” features an intricate pressure die-cast light alloy crankcase unit, embodying a stub exhaust on the right hand side. Both beam mounting and radial mounting lugs are incorporated, in the latter case replacing the three screws holding the back cover in position by three mounting screws. Main bearing is plain and exceptionally well finished, while the hardened steel crankshaft is 8 mm. diameter, tapering down to 2 B.A. threaded length (an unusual standard for a Japanese engine) and is drilled with a large intake hole. The intake port is cut square and also large. Shaft and crankpin arc finished by grinding. The web is plain and of generous thickness with a 4 mm. diameter crankpin.

The cylinder is of unhardened steel, seating on the crankcase unit on a substantial flange. A rectangular transfer port is machined under and up into the flange at one side, corresponding with the transfer passage cast in the crankcase unit. The diametrically opposed rectangular exhaust port is cut through the cylinder walls above the flange. Not a great deal of metal is left supporting the cylinder, but there was no evidence of weakness or distortion.

Cooling fins are machined on the upper part of the cylinder which is capped with a die-cast light alloy head. Two short screws hold the head to the cylinder and two long screws passing down into the crankcase (fore and aft positions) hold the cylinder unit in place. The head is not contoured and the glow plug is centrally mounted.

The cast iron piston is flat topped, but cut away and stepped at one side to act as a deflector. Piston-cylinder fit was slack, but not to the extent of lacking compression and very little running in time was necessary to achieve consistent performance. Running fits could not be criticised. The connecting rod is a forging with a bronze bushed big end and the 3 mm. silver steel gudgeon pin is fully floating.

Dismantled view of O.S. Pet (without screws) shows simplicity of construction.

We can only repeat that the O.S. “Pet” is a remarkably good engine in all respects. It would seem an excellent choice for a small radio model.

More Pics.