

## Why not collect FROGs?

From : Bill Mohrbacher - Past President  
May 5, 2019

Quite often, a would be collector will wonder what to collect? Model airplane engines have been made since the 1930s, not only all over the US, but all over the world. There have been ignition, diesel, glow, pulse jet, and now turbines. They have been made as small as .009 in<sup>3</sup> and way over 1 in<sup>3</sup>. Some like Jim Dunkin, collect only one displacement, .15 in<sup>3</sup> or 2.5 cc in Jim's case. Jim has contacts all over the world, the 2.5 cc might be the most popular displacement, and Jim's book (THE book) contains 1646 engines. So you could collect them for a LONG time.

You could collect engines from different countries. I have 33 in my "country" collection. Did you know engines have been made in Denmark, Moldova, and Turkey? You could stick to one maker. There were 88 different OK Cubs made, 229 K&Bs, 97 McCoys, and 311 Foxes. These can be imposing numbers for a beginner.

If you would like to collect a set of engines of different size, different ignition types, different induction types, and different interesting designs, the why not collect FROGs? And what is a FROG?

Back in 1931 International Model Aircraft Ltd of Britain had a line of ready to fly rubber band models and used the trade name FROG that stood for "Flies Right Off Ground". The FROG line expanded into kits, a huge line of plastic model kits, and full line of model engines. The engines were made from 1947 until 1963. This flying frog was the trade mark



FROG's first engine was the 175 ignition in 1947, Two steel rods were used to retain the cylinder head leading to this engine to be nicknamed the "bicycle spoke" 175. Interesting right out of the box, huh? A year later the FROG 100 Diesel was introduced. It looked much like the 175, but had a "tommy bar" to adjust the compression.



I'll stop here to mention FROG engine names are coded with their displacement. Divide the name by 100 and that is the displacement in cubic centimeters.

British and other European engines are almost sized in cc displacement. Thus we'll find 1 cc (.06 in<sup>3</sup>) a common size, going smaller .5 cc (.030) is popular, 1.5 cc (.09) very popular, 2.5 cc (.15) of course popular, the 3.49 cc (.20), and 5 cc (.29) as the sizes most often encountered. Soon after the American 049s hit the market, .8 cc (.049) became popular. The diminutive Frog 80 in my collection as an example.



Before the FAI declared the 2.5 cc displacement would be the competition maximum, there were a lot of 1.5 cc supporters and many designed engines to that standard.

As in the US, control line flying became popular in Britain and once the glow plug was perfected it was the preferred ignition source for Stunt. But instead of ending up using the US .35 displacement, their engines as well as many other European and Australian stunt motors were 5 cc or .29 in<sup>3</sup>. FROG introduced its magnificent FROG 500 in 1950 to compete in this event. The design (with improvements) lasted until 1962, my 1955 version is pictured. Kind of like the Fox stunt .35



So FROG made engines from .5 cc up through 5 cc. In each case, a marine version was sold, usually with a flywheel, universal, and most often a water cooling jacket. FROGs used front rotary and rear disc valve induction. One, the 1.5 cc Vibramatic, used a "clack" valve, similar to a reed valve (and actually the valve used by Bill Brown on his prototype .28). Due to their early withdrawal from the engine business, FROG only made 1 RC engine (also in marine version), the 1961/62 3.49 cc R/C Diesel). Most FROGs are diesels due to their British origin, but there are glows and of course, the grandfather ignitions.

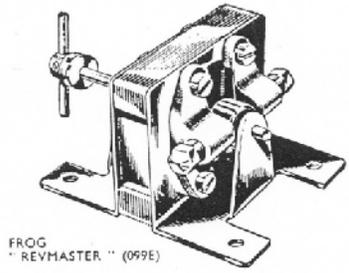
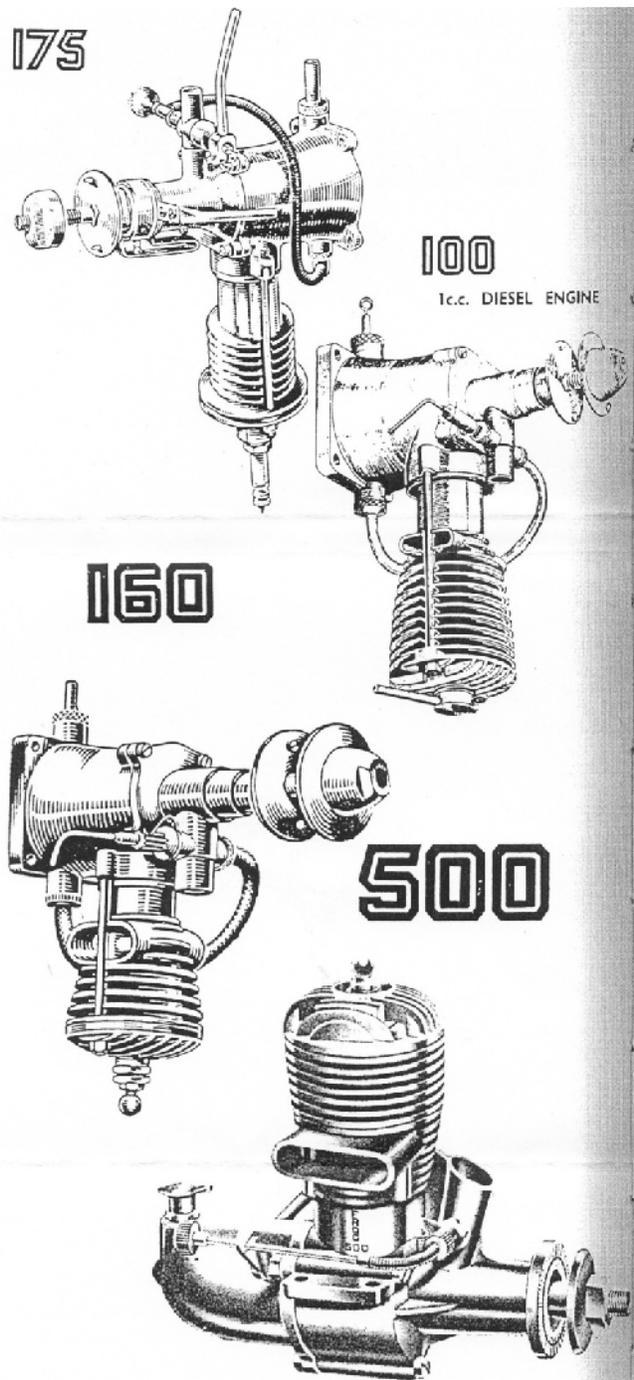
Not counting the marine versions, I count only 22 different models on the following Compendium of FROG Engines (from MECA member Jack Cylenica in the book "FROG Model Aircraft 1932-1976, by Richard Lines and Leif Hellstrom, available quite often from Amazon Books).

# Compendium of FROG Engines and Electric Motors

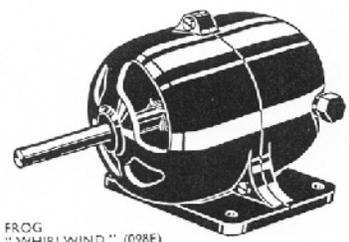
Listed in date order of introduction

Ref. No.	Name/type	Cubic capacity	Produced between	Remarks
PE Mk.1	Petrol	1.75cc	1946-49	Called the "175"
CI Mk.2	Diesel	1.00cc	1947-49	Called the "100"
099E	Revmaster	-	1947-61	Electric 4-6 volts DC
098E	Whirlwind	-	1948-58	Electric 4-6 volts DC
CI Mk.III	Diesel	1.66cc	1948-50	Called the "180"
CI Mk.IIIM	Diesel	1.00cc	1948-50	Marine "100"
CI Mk.IIIIM	Diesel	1.66cc	1948-50	Marine "180"
PE Mk.IIM	Petrol	1.75cc	1948-50	Marine "175"
160RG	Red Glow	1.66cc	1949-50	Called the "160"
500RG	Red Glow	4.92cc	1950-62	Called the "500"
250D	Diesel	2.49cc	1950-54	Called the "250"
50D	Diesel	.49cc	1951-56	
150D	Diesel	1.49cc	1951-57	
150RG	Red Glow	1.49cc	1951-53	
500P	Petrol	5.00cc	1951-54	
097E	Tornado	-	1951-61	Electric 3-4½ volts DC
50M	Diesel	.49cc	1955-57	Marine "50D"
150M	Diesel	1.49cc	1955-62	Marine "150D"
149D	Diesel	1.49cc	1955-62	Vibramatic induction
249BB	Diesel	2.49cc	1955-62	With twin ball races
80D	Diesel	.79cc	1957-62	
100D*	Diesel	1.00cc	1957-62	Redesigned "100"
149M	Diesel	1.49cc	1957-62	Marine "149D"
249M	Diesel	2.49cc	1957-62	Marine "249BB"
P/097	Tornado	-	1958-61	Complete power pack
P/099	Revmaster	-	1958-61	Complete power pack
249BB (Mod)	Diesel	2.49cc	1958-62	Racing engine
349BB	Diesel	3.49cc	1958-62	With ball races
349D	Diesel	3.49cc	1958-62	Plain bearings
349M	Diesel	3.49cc	1958-62	Marine "349D"
M009	Swordfish	-	1958-60	Electric outboard motor
049RG*	Red Glow	.8 cc	1959-62	
150R*	Red Glow	1.49cc	1958-62	Contest engine
1400	Venom	1.50cc	1959-62	With spring starter
1500	Red Glow Viper	1.50cc	1959-62	Competition engine
349 R/C	Diesel	3.49cc	1961-62	For radio control
349M R/C	Diesel	3.49cc	1961-62	Marine for radio control

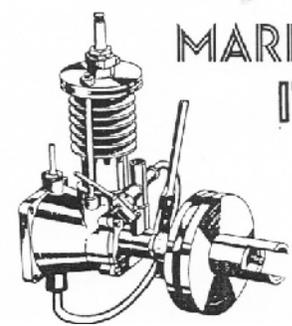
\*Also sold in "Presentation Pack". Engine department closed in 1963.



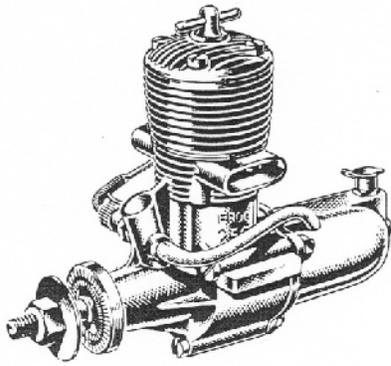
FROG "REVMASTER" (099E)



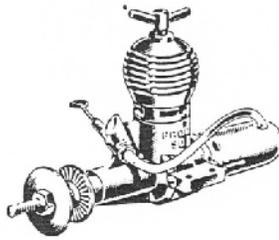
FROG "WHIRLWIND" (098E)



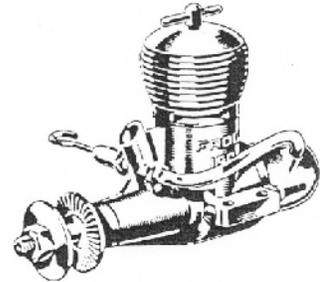
MARINE 175



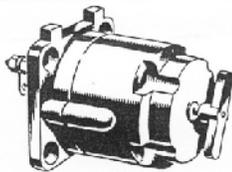
FROG "250" DIESEL (250D)



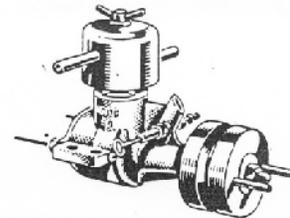
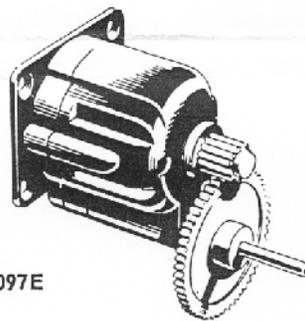
FROG 50 DIESEL Mk. II



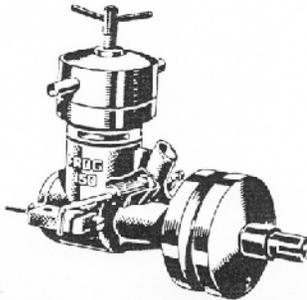
FROG 150 DIESEL



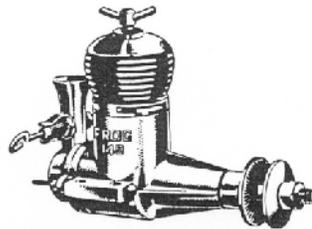
TORNADO 097E



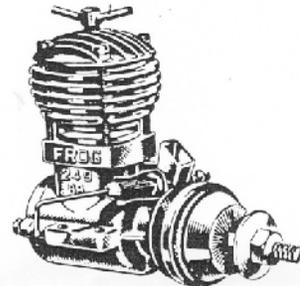
FROG 50 MARINE



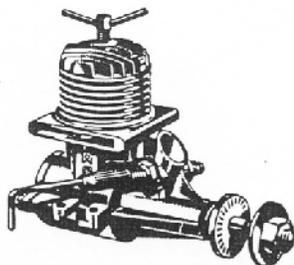
FROG 150M



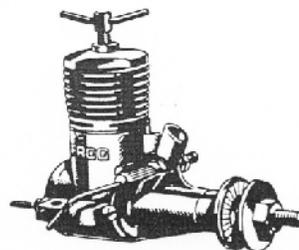
FROG  
"149D"



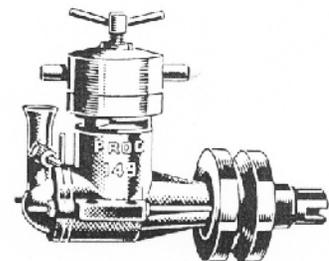
FROG "249BB"



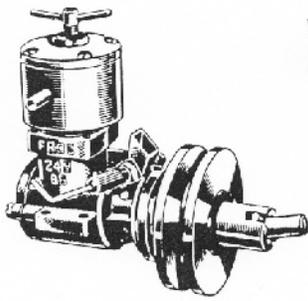
FROG  
"80D"



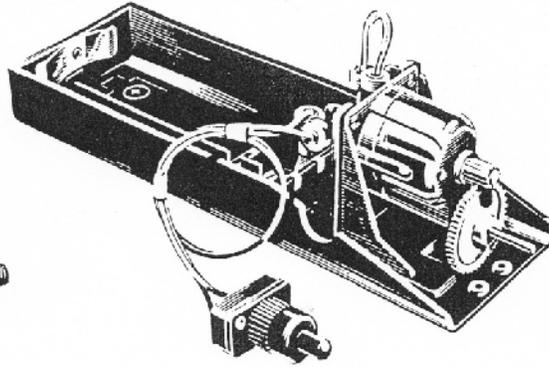
FROG  
"100 Mk. II"



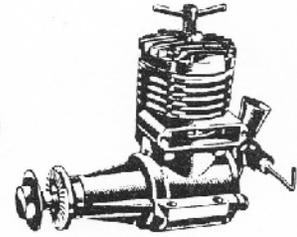
FROG 149M



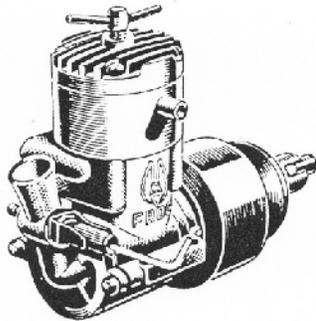
FROG 249M



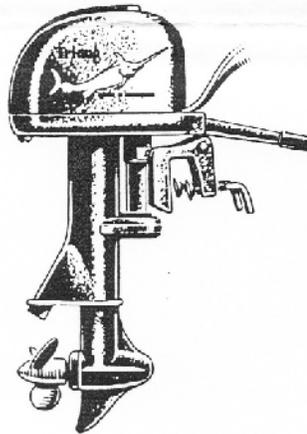
FROG TORNADO  
POWER PAK P/097



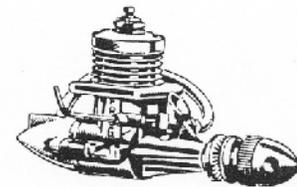
FROG  
'349BB'



FROG 349M



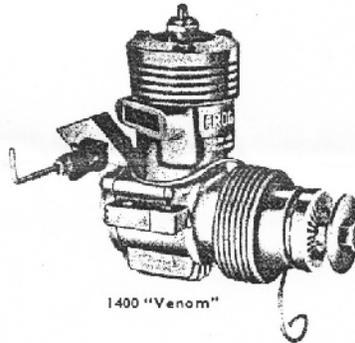
FROG  
'SWORDFISH' M009



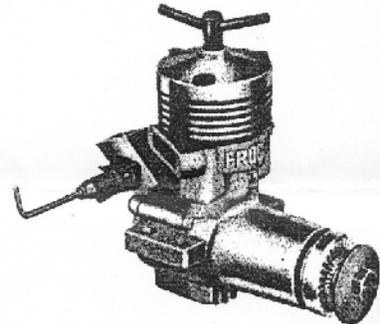
FROG  
'049RG'



FROG  
'150R Mk. II'



1400 'Venom'



1500 'VIPER'

FROG '100/PS Mk.II'  
PRESENTATION SET

