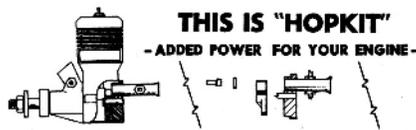


The Hopkit from MECA Bulletin #269

To get more power, Hot Rodders add carburetors, 4 barrels, 3 2s, bigger injectors and such. This is harder to do on a model engine. You can bore out the venturi and open up the crank port and polish out the crankshaft bore, but how can you add a carb? You may be surprised to learn that in the April 1960 Model Airplane News, National Engineering Associates had the answer.

On page 38 of that issue they introduced their HOPKIT (Fig. 1):



An extra rear rotary valve and carb for your front rotary engine. For competition, sport thrills and fun. The Hop Kit goes right on; everything is included. Kits available for Fox .29X, .29RC, .35 Cmbt; K & B .29, .29R, .35S; Johnson .29, .32, .35; McCoy .29, .35. No problems—kits replace the old backplates with a few turns of a screwdriver. Gratifying power. Price is **\$2.95**. If your dealer cannot supply, simply order from:

National Engineering Associates
203-4 Vanol Building, 3908 Olive Street
St. Louis 8, Missouri

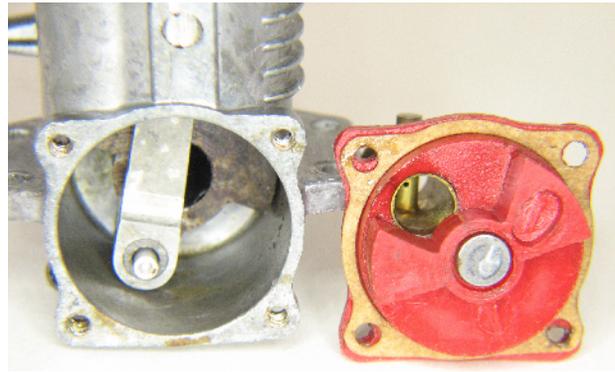
DEL AIRPLANE NEWS • April, 1960

This was a replacement rear cover having a second venturi, spray bar, and a rear rotary valve. A true dual carb setup for a model engine!

One of the great things about MECA is the way collectors share their finds. I remembered the HOPKIT ads, but had never seen the actual device. One day George Milano sent me a box containing a HOPKIT installed on (naturally) a Fox. A sincere thanks to George for loaning it to me for this article!



This is a Hopkit (Fig.2) installed on a 1957 Fox 35 Combat Special (EC 43).



These are the internal parts (Fig. 3). The rear cover and disc valve are made from plastic (George thought polyethylene). The disc spins on a rivet pressed through the rear cover, the head on the disc side and the end retained by a Tinnerman style nut on the outside. A .125" dia. spray bar with a single delivery orifice is soldered to the venturi. The NV end of the spray bar is soldered shut; there is no mixture adjustment on the HOPKIT.

The original needle valve is the only mixture control. With the intake restrictor removed and accounting for 2 spray bars, the 1957 Fox CS with the HOPKIT has a .083 in.² intake area. The Series III CSs, 35 and 36Xs with no restrictor have a .100 in.² intake area. Probably a pressure delivery system would have been needed to supply an unrestricted HOPKIT setup.



Of course, the disc valve must be driven. In Fig. 3 and 4 you can see a driving pocket cast into the disc. In George's engine, an

aluminum pin had been placed into the hole in the crank pin. I think some sort of rivet was originally used as the little pin would have been just too weak and sloppy. This pin or rivet drove the disc valve. I didn't make any precise measurements, but the disc valve seemed to be timed to open and close the same as the crankshaft intake. I assume the engines listed in the ad all had hollow crankpins.

That's the description of the kit; did it work? I don't know; neither George nor I ran it. If any MECA members did use a HOPKIT, I'd be glad to hear from you.

HOPKITS only cost \$2.95 although this would be about \$21.50 in 2010 dollars (think about that!). In theory it wasn't a bad idea, but there wasn't much precision in the product and the materials probably wouldn't have lasted long. The disc valve has a rather loose fit on its axle. The drive pin slips into the hollow crankpin. As far as I know, this hole is not closely machined. With the fit in the crankpin, loose fit on the axle, and plastic construction, I think 15,000+ RPM runs would tax all parts!

The ad ran in MAN 4 consecutive months last appearing July 1960. I haven't checked to see if it ran in American Modeler or Flying Models. It was an interesting accessory!

The Hopkit revisited from MECA Bulletin

#273

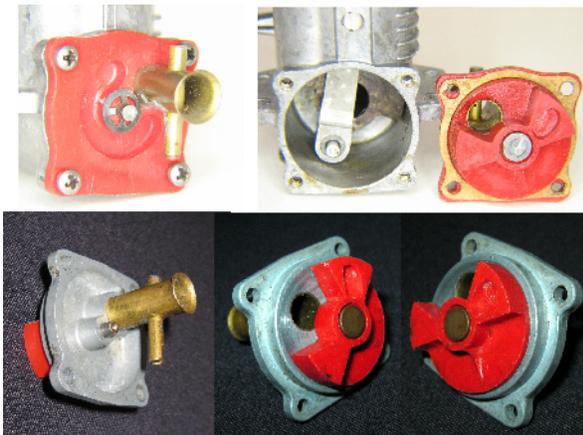


Fig. 5

Back in Bulletin #269 I described the National Engineering Associates HOPKIT advertised in the April 1960 Model Airplane News. George Milano found it and sent it to me to marvel at and report on.

Except for the venturi and shaft pin, the one I examined was some type of plastic. The top photos (fig 5) from #269 show it mounted on an early Fox Combat Special.

Not long after #269 was issued, David Axler, our Region 12 Regional director up in the Great White North, called and told me he had what he thought to be a metal HOPKIT. It was in a box of "spare parts" Dave acquired some time ago and he never knew what it was. Dave sent me some pictures and then brought it out to EXPO XII.

Dave's metal HOPKIT is in the bottom photos of Fig 5. It is pretty much identical to George's plastic one, but the rear cover is nicely die cast and machined metal. The rotor is still the red plastic.

Now the question is; are both of these regular production or is one a prototype? If so, which is the prototype? Those under 30, remember these were made in 1960 and no rapid prototyping was invented yet, so the plastic isn't much of a clue!

And in #296 from Raymond Leone

HOPKIT by Ray Leone

In the pre-WWII era, the Atwood Blue Crown Champion engine employed two carburetors for increased performance. One carburetor fed a front shaft rotary valve and the other fed a rear drum rotary valve. Also during this period, J.L. Engineering, Santa Monica, California, offered a similar accessory set-up for Dennyrite engines. See The Engine Collectors Journal Issue 225 for details on J.L. Engineering.

Then in 1960, National Engineering Associates, St. Louis, Missouri, resurrected the feature of dual carburetion with its HOPKIT.

HOPKIT was first advertised in the May, June, and July 1960 issues of Model Airplane News (MAN). The ad stated "An extra rear rotary valve and carb for your front rotary engine. For competition, sport thrills and fun."

The advertising and instructions for the accessory sometimes spelled HOPKIT as one word and other times as two words – HOP KIT. It was made for FO, K&B, Johnson, and McCoy engines with .29 to .35 cubic inch displacements. The ad also said "Added power for your engine". Price was \$2.95/ The instructions claim, in regard to expensive competition engines with rear rotary valves, "you can go them one better and have two complete intakes."

HOPKIT replaces the engine's original backplate. The HOPKIT's venturi must be oriented next to the upper right hand screw hole in the crankcase for proper valve timing. The small end of the supplied driver pin goes into the hole in the crankpin, and the large end engages the depression in the lobe of the rotor. There must be some play between the crankshaft and rotor to avoid binding the engine. The instructions say to add washer(s) on the driver pin between the rotor and crankpin if necessary to obtain a proper fit. However, only one spacer washer was supplied with my new in package HOPKIT.

Early versions of the HOPKIT employed a needle valve.. Two fuel lines from the tank are recommended, one for the engine's original front carburetor. However, for a pressure fuel system a fuel line "tee" may be used instead of two separate lines. Lean both carbs to peak the engine. Once the initial settings are obtained, then you can leave one carb alone. Afterward, only the second carb is used for richening to start the engine and final adjustment. So, there is no "twin carb adjustment problem."

Interestingly, the instructions claim that "unusually steady running can be gained by

corking the front rotary and using HOPKIT alone." To me this seems contrary to the stated purpose of the accessory which is to increase engine performance by adding a second carburetor to admit additional fuel and air.

The instructions state that the needle valve assembly supplied with the HOPKIT is purchased from an outside manufacturer. It was advised to clean out the spraybar and small fuel hole with a long pin to remove any debris from manufacture. Also, detailed instructions are given on how to properly install the spray bar assembly in the HOPKIT venturi.

Later HOPKIT versions eliminated the needle valve and used a fixed jet. The instructions claimed both versions won contests, but the fixed jet version "means even easier initial adjustment and starting."

A great deal of information is given about the plastic material used for the HOPKIT backplate and rotor which was of the manufacturer's own formula. It was tested "to the highest point of heat that the engine could stand; the plastic, under heat that simply killed the engine....., was still as good as the engine itself." The plastic material did not "show signs of distress under any conditions." "The plastic rotor has actually raised our promise of added rpm for it is very light and hence cannot vibrate. The lightest of all plastics, it deals in heat resistance far in excess of the claims for nylon." The HOPKIT manufacturer confidently claims "you are far ahead of the fellow who 'forgot to send for one' – in a single word, they work, and they work well."

In the February, March and April 1961 MAN, National Engineering Associates, now at a different street address in St. Louis, Missouri, came out with a new ad for HOPKIT, fig. 6. It showed a photo of the accessory installed on a K&B engine. The Mark I, illustrated in the photo, was for speed. Price was now reduced to \$1.95.



Fig. 6

Mark II was for RC, priced at \$1.29. This was significantly cheaper than the Mark I, but I don't know how its design differed which resulted in a lower manufacturing cost. Perhaps some readers can answer this question.

Mark III was a Knockdown Factory Set. All parts and instructions were supplied for the customer to build either the Mark I or II version. Price was only \$.99 since the modeler was providing the labor.

It appears that much research was done to develop the HOPKIT. I would like to hear from readers who used this accessory and can comment on its performance. Please send any additional information to the M.E.C.A. Bulletin Editor.

And from Bulletin #279

The cover of #279 showed three engines using front and rear induction, Fig 7.



The description of the cover was: The 1960 HOPKIT shown on George Milano's 1957 Fox Combat Special added a rear rotor and 2nd venturi and spraybar to introduce more fuel-air to increase the engine's power. It was actually successful; more in a later Bulletin article.

In 1965 Fox brought out the 29XBB based on the 36X, but using a rear disc valve induction system. Around 1963 or so, John Hall, fellow Foxologist, engine builder, and Northwestern USA CL competitor grafted the 29XBB rear induction system onto a 1972 Fox 36X. I guess you would call this a HALL HOPKIT. It was successful; 18,000 RPM on 10% nitro fuel.

But as usual when it is said "Everything old is new again", Bill Atwood used front and rear induction systems for his 1939 tether car record Labor Day 1939! This engine became the 1940 Atwood Blue Crown. Atwood simplified the design somewhat by eliminating the front NVA. A "Smokestack" venturi with a single NVA fed a tunnel. This supplied the rear rotary valve, continued under the case, finally feeding the front rotary valve. This design was the Atwood "Champion", immensely successful being sold in this basic form from 1940 through 1948. The engine on the cover is Dave Kauffman's 1948 Super Champion.

That's all for now!
Bill Mohrbacher