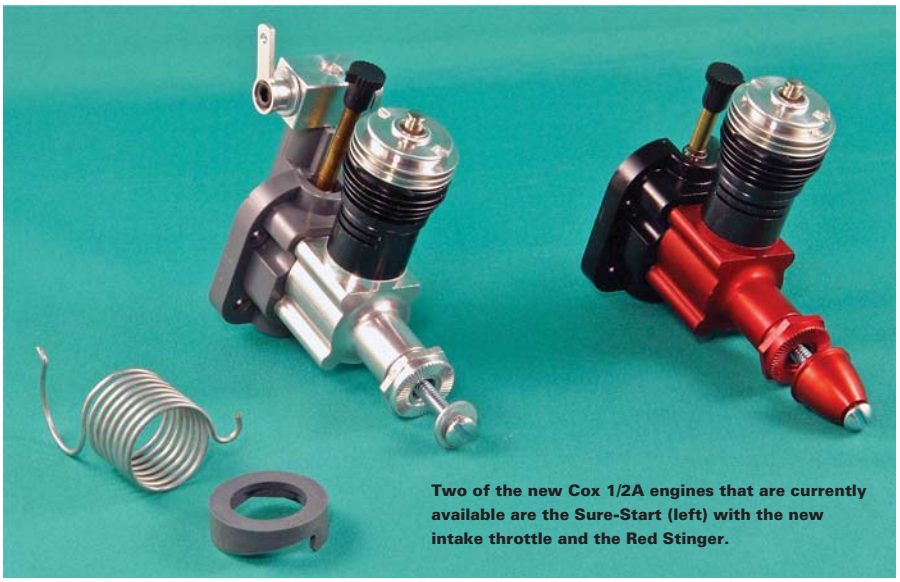
COX .049 Glow Engines

Cox Engines Are Back!

For those who have been in the hobby for a while, the name "Cox" is no stranger. Many of us first started into the hobby with a Cox plastic control line model, and many RCers have used the venerable Cox .049 in various forms to power small aircraft, gliders or even helicopters. I started into the world of model airplanes with a Cox Blue Angels RTF model in 1977. Having sold millions of engines, it was hard to find anyone involved in this hobby who hadn't at one time ran a Cox engine. Back in the early 1990s, the status of Cox engines started to decline as various product disappeared off the hobby shop shelves, as well as many of the accessories needed to keep these engines running and tuned up.

In recent years, Cox International has purchased entirely from the previous owners, all Cox 1/2A product, and has started to offer once again hard to find parts, accessories and other gear. Some new innovations such as the RC carburetor reviewed here, and others have been developed and propellers have once again been manufactured for sale.

For those who love these engines, it is a good sign for sure, and will hopefully allow those of us who still run small glow engines the means to do so for years to come.



Two of the new Cox 1/2A engines that are currently available are the Sure-Start (left) with the new intake throttle and the Red Stinger.

SPECS

ENGINE: .049

MANUFACTURER: Cox

DISTRIBUTOR: Cox

DISPLACEMENT: .049 cubic inch

WEIGHT: 1.9 ounces for RC throttled Sure-Start version, 1.6 ounces for Stinger model, both with Cox three fin glow heads

TYPE: single-cylinder, two-stroke glow-ignition engine; rear reed valve intake, side exhaust; steel piston and sleeve metallurgy; radial mounting

PROP RANGE: 5x2 - 6x4, 5x3 recommended for general sport flying

STREET PRICE: $34.95 Sure-Start with throttle, $39.95 Red Stinger

SUMMARY

With small glow engines becoming harder to find at the flying field, and parts for the old Cox engines somewhat difficult to come by in the past few years, it is amazing to see someone resurrect a wide variety of the Cox .049 line, and offer complete engines, parts, tools and accessories once again. Cox International has stock of all vital components and complete engines in various arrangements. You can by these engines with tanks and without, with various heads, throttle or non-throttled. Re-manufacturing vital parts such as the excellent Cox propellers once again, and tools such as the ball and socket reset tool will ensure the viability of small, glow power airplanes for many years!

INITIAL IMPRESSIONS

I received a small box from Cox International, which was packed with all sorts of goodies! I haven't been this excited to open up a parcel in some time! Taking stock of the decent product selection that was sent to me for review, I was pleased to see the following:

- One Red Stinger engine, which is a higher performance reed-valve engine without a tank
- One Sure-Start engine, with a new intake throttle
- Three Cox gray props (stiff) and three safety tip black props (semi flexible)
- A piston/rod reset tool
- A Cox glow head clip
- Some small diameter silicone fuel tubing
- A Sullivan fuel tank
- Starter spring and plate for the Sure-Start engine
- Spare Cox glow head and gaskets
- Spare crankcase reed and gasket
- Set of .049 wrenches
- A disassembly and reassembly tool for removing and reinstalling the front drive plate

PHOTOS BY ANDREW COHOLIC

The safety-tip black Cox propellers are semi-flexible.

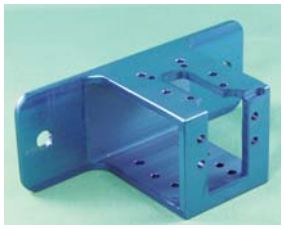
- Two styles of head conversions
- A slick universal test mount, which can hold all the various Cox engines

All items were well packaged in bags and padded wrap. Instructions were well written and clear, and included with all tools.

RUNNING THE ENGINES

To break-in my small engines, I mount them to this pre-drilled aluminum stock and then bolt it to my workbench.

Cox engines use a hardened, formed-steel piston, which runs in a softer steel cylinder. The engines were both fit on the loose side, yet still needed to be run in. I used Wildcat 1/2A fuel, which is a 25-percent nitro fuel with a castor and synthetic blend oil. To break in the engines, I mounted them to the test stand, and first ran them very rich in short duration runs. Allowing cooling between runs is critical. Once several tanks of fuel have been burned, you can start to lean out the needle valve and let the engine turn up. Gradually, you can lean out the engine fully and once it will hold a peaked setting without slowing down it is ready to run.



The Red Stinger and the Sure-Start engine were very easy to get running—even an experienced finger flip would get them running every time. I also tried out my very old AstroFlight 1/2A starter that my father bought me back in 1980 and that had both engines running immediately. I also tried the provided spring starter, on the Sure-Start engine. It worked very well, but I found it to reduce the maximum rpm by several hundred. I personally prefer to leave the spring starter off.

I tested the engines with both types of propellers and also with the Wildcat and also some SIG 1/2A fuel, which is a 35-percent nitro blend.

Here are the results for the Red Stinger: I also added one extra copper head shim under the glow head for the SIG fuel to prevent burning out the element. Runs were consistent, and the needle relatively easy to hit the sweet spot.

Fuel	Prop	Max RPM
Wildcat	grey 5x3	18,200
SIG	grey 5x3	18,300
Wildcat	black 5x3	20,600
SIG	black 5x3	20,760

Running the Sure-Start (broken in with the throttle open fully) was done similarly. However, I just ran the Cox black 5x3 propeller, and Wildcat 25-percent fuel. I tested the ability to throttle down to a reliable, low idle. This test was done with the stock three fin glow head, the "A" style head which uses a button insert glow plug, and the "B" style head which uses a standard 1/4-32 long type glow plug.

Here are the results for the **Throttled Sure-Start**:

Head	Max RPM	Minimum idle
Stock glow head	18,000	6,800
Head "A"	18,600	6,000
Head "B"	14,500	5,500

CLOSER INSPECTION

If you have ever played with a Cox engine in the past, these new ones will be immediately familiar. The engines supplied for this review are based on the typical Cox extruded aluminum crank case, rear mylar reed valve; counterweighted crankshaft with pressed on aluminum drive washer, a plastic back plate that also houses the intake venturi, needle valve and acts as the radial mount, the traditional steel connecting rod with a captured ball and socket link to the steel piston and the one-piece machined-steel cylinder with varying patterns of exhaust and bypass ports with the threaded head.

Included with the engines were such accessories as: a Cox glow-head clip, a set of .049 wrenches, a piston/rod reset tool, three different glow heads and two different types of propellers.

These engines are not difficult to work on, but do require the proper wrenches, which are available from Cox International. Never stick anything into the exhaust ports as the soft steel cylinder is very easy to damage.

The Cox engines require periodic cleaning —especially when run in a dirty environment. If any dirt gets under the reed, or in the needle valve assembly, disassemble and clean immediately, or poor running will be the result if you can get it started at all. Clean it up and it should be just as good as new.

CONCLUSION

I am very happy to see that someone has taken up the task of keeping Cox engines alive and making them and a good variety of accessories available to the average modeler. With all necessary parts now once again available, anyone can enjoy the fun and excitement of running a small glow engine for relatively little investment. The new throttle works well, as does the rest of the product line reviewed. Keep an eye on Cox International for more additions to its already large and well laid out website and online store. ✪

Links

Cox International, www.coxengines.ca, (877) 769-1779

Wildcat Fuel, www.wildcatfuel.com, (859) 885-5619

For more information, please see our source guide on page 113.