

# Vintage Karting Magazine



February 2011



Delmar, IA  
October 1<sup>st</sup> & 2<sup>nd</sup> 2010

[www.vkakarting.com](http://www.vkakarting.com)

VKA Logo – courtesy of Tom Medley

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## 2011 VKA Board of Directors

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Ernie Shores	Safety
Dick Teal	Magazine
Lake Speed	Public Relations

## Credits

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Tech Article:

Tech Article:

VKA Logo:

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## **VKA President's Message/What is the VKA?**

10 years ago when I first became involved in vintage karting, I heard this question then, and still hear it today from time to time .... "What is the VKA?" While the VKA might have started out as an organization wanting to be something, during the past 10 years, the VKA has found its purpose. Today, the vision of the VKA is to grow participation in vintage karting, furthering interest in the preservation of karting's history.

The VKA fosters growth in vintage karting by performing two main functions, serving as a public relations entity and also as a network between event promoters. In a public relations function, the VKA publishes newsletters / magazines, maintains a website, advertises in national magazines, distributes and promotes a national event schedule, etc... As a network between event promoters, the VKA maintains event guidelines and coordinates the national event schedule between event promoters.

It is easy to incorrectly assume the VKA is a sanctioning body, like other familiar karting organizations. The majority of karting organizations such as the IKF or WKA are regulatory sanctioning bodies for the sport of kart racing. They define rules, enforce rules and decide the qualifications and responsibilities of the participants for the purpose of creating high level competitive racing events. VKA events are less about "winning" and more about socially connecting for fun with low key racing heats, kart show competitions and evening social gatherings.

Event participation growth creates preservation of karting's history, and more social connections within our vintage karting community ... the VKA will continue to execute this vision.

### **Jeff Campbell**

#### **December Board of Directors Meeting (Short Summary)**

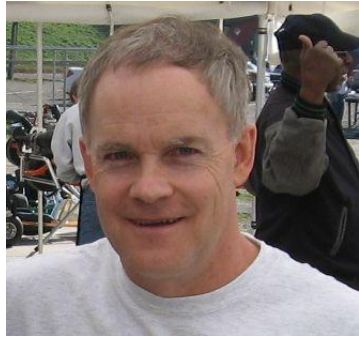
Jeff Campbell was elected the new president & Carl Weakley stayed on the board as the past president. Ernie Shores, Jim Thompson, Lake Speed & Dick Teal were appointed to the board.

Treasurer Lapke reported a balance of \$14,244.28 for the end of November.

Proposed 2012 tire rule was discussed and Director Figone has implemented them for the 2011 Riverside event.

2010 was a successful year and the VKA continues to grow.

## **Vintage News and Views** **By Bill McCornack - Executive Director**



In case you haven't heard, the VKA added a new class during the 2010 season:

### **1980 - 1985 Sidewinder**

- 100cc engines up to 6.1 cu. in.
- Foreign or American engines
- Gas or Alcohol fuels
- 1" or 1 1/4" diameter axles allowed

Many promoters want to increase attendance at their events, and there are many soon-to-be vintage karters coming into our ranks from that era.

We will be allowing the current day Yamaha piston port engines in this class because there are benefits:

- Engines can be purchased new
- Parts are more readily available
  - Durability
- Quality engine - affordably priced

This class has a variety of 100cc engines - Komet, Atlas, Parilla, B M, Yamaha, McCulloch, Corsair, Hewland, Manx, and LMR. As the class grows in number, we'll break off groups such as: 100cc, 135cc, Yamaha. I predict that in about two years, this group will be very large. The other vintage classes are kept separate and frozen in time in their respective eras. I have had a number of inquiries about this new class from the karters that ran these. Their fond memories of early days in karting include these karts and engines.



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## Delmar, Iowa-Cover Story

The VKA event in Delmar was my first time at this track. If you haven't been there it's a must to see and drive. The track is located a few miles from town and it's in a rolling hillside area of Iowa. The track has rapid elevation changes that will test your skill at driving and setting a kart up. Friday October 1<sup>st</sup> was practice only. The temperature was cold and engines were making power. I waited until late morning to take my karts out so I could get the carburetors close.

I ran three different karts and was planning to race a Mc9 in the vintage historic class and my Mc49 in the 49 class. Bob Lapke had brought his dual Clinton kart to run so I asked if he would race the Mc9 for me. It's really fun to watch him drive; I don't think he's lost much over the years. Bob won his class and I got third in the 49 class.

The picture on the top left of the cover shows one of the classes being staged for the next heat. The pit area is large and is surrounded by a cyclone fence for safety. On Saturday the fence was put to the test by George Sellon. George's brake disc failed after his throttle stuck wide open and he went under the fence at speed. Fortunately his injuries were minor even if it didn't look that way when it happened.

The top right picture is from inside the Clinton Engine Museum. Most of those that attended the event visited the museum after practice on the first day. Jeff Campbell has many pictures posted from inside the museum on the VKA web site.

The bottom left picture shows the start of a race as the karts come down hill and go into a 180 degree turn.

The bottom right picture shows the great catfish dinner that Delmar is famous for. The dinner is worth the effort it takes to get there.

Dick Teal



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# VKA REAR ENGINE KART TIRE GUIDELINES

## Acceptable tires for rear engine karts VKA events starting in 2012

Any vintage tire that was available in the time frame of rear engine karts, this includes but not limited to:

Tex-Con Tire  
Eliminator Tire  
General Tire  
Major Tire

Carlisle Tire  
Firestone Tire  
Goodyear Tire  
Continental Tire

A-1 Tire

Also to include these current production vintage style tires or any other current production vintage style tire that meets the VKA tire committee's approval.

Cheng Shin and Carlisle                      4.10/3.50-4 / 3.40/3.00-5 /4.10/3.50-5  
11-3.50-5 / 11-4.50-5 / 11-6.00-5  
4.10/3.50-6 / 12-6.00-6

Duro    10x3.60-5 / 10x4.10/3.50-5

Vintage Speed    3.50/4.50-4 / 11x3.50-5 / 11x4.50-5 / 11x6.00-5

Kenda    4.10x3.50-4 / 4.10x3.50-5 / 4.10x3.50-6

These current production tires to have a minimum tire durometer of 65 @ 70 deg. Tire temperature.

The committee may add or delete from the above list as needed for the continued enjoyment and stability of vintage karting.

THE SPIRIT AND INTENT OF THE RULES IS GOING TO BE THE STANDARD BY WHICH VINTAGE KARTING WILL BE GUIDED.



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## Jim Donovan & Max Torque

Many of you know Jim and a lot of you have seen him at the track. Jim is a very special person and he supports vintage karting in many ways. I met Jim when Ann & I visited him at his Max-Torque office in 2008. Jim had borrowed one of my 101 engines to fit his new clutch to the crankshaft and we were picking the engine up from him. Since that day we stay in touch at the track or I call him if I need something. Jim has developed a dry clutch for racing that has turned into something special. He goes to most events and helps any who ask; with their clutch problems.

Jim has started to provide a little something extra at the track; he's started feeding the troops. We had great food at Brodhead, Quincy and Delmar. Why would Jim take the time and spend the money to feed us when I would guess that he's not making much or any profit on vintage clutches? He tells me that he really enjoys vintage karters and our events and wants to do this.

The following story was written by Jim (Maybe his daughter) and it tells a little of the history of Max-Torque and the development of the new clutch.

Vintage Kart clutches – when we brought the company in 1989, the owner at the time, Kurt Kramer, had not sold a 2 cycle clutch in the 13 years that he owned and ran the company. Kurt had bought the company in 1976 from the founder, George Fields. Mr. Fields was the first to offer clutches exclusively for “go karts” in 1957. The first karts were all direct drive and you pushed them to get them started or you lifted the rear end off the ground pull started the engine and then gave it gas as they lowered the rear of the kart back to the ground. George Fields knew there was a better way because he had been working with clutches in the 30's for washing machines that were gasoline powered. Kurt made the decision to only produce the clutches for 4 cycle engines so we felt that to continue storing this obsolete inventory didn't make any sense because we knew at some point we would move the company to a more convenient location. As history proved out it was not the best decision to scrap everything including the dies to stamp out the 2 cycle parts. Who could have foretold the excitement and interest that was going to come back to a bygone era of the 50's, 60's & 70's? The interest in 2 cycle racing was certainly phenomenal.

At first we had no interest because the assortment of engines of which we knew nothing. We did know some were a straight shaft: West Bends, Power Products, Clintons, Homelite, Poulan but the McCulloch had a taper shaft.

Since the tooling was gone and the volume just wasn't going to justify retooling for the 2 cycle our only interest was going to be if we could use the existing Draggin Skin racing clutch. We knew a 2 cycle had the higher rpm's but didn't realize just how much and what kind of torque it produced. To sum it up quickly the 4 cycle clutch couldn't hold up so it was suggested we still use all the same parts but we improve the drive plate by making it out of a billet (block of steel) and have no welding. The drive plate would be 100% machined with no stamping. The advantage would be it would run true; it would be stronger since we were making it out of 4142 pre-hardened steel and because it was already hardened there would be no warpage. This would give us a superior product.



We knew the vintage racer didn't want to be fixing a clutch at the track; they wanted it to hold up and be problem free since they were going a long distance to the various vintage meets. The vintage karters were patient while we went through a steep learning curve but in the spring of 2010 after the 4th design change we had the perfect replacement that would hold up to their expectations.

At Barnesville, GA in the spring of 2010 a vintage karter, Steve Seewer, introduced Jim Donovan to the neat compact spring changer which made it possible to change the extra strong "ORANGE SPRING" at the track. This tool made it possible to quickly change the springs without taking the shoe assembly back to the factory and holding it in a fixture. We quickly made up 7 of these tools and gave them to dealers and drivers that attend the various meets both in the West and Midwest. We also began to radius the "V" that holds the spring to the shoe. Taking off the sharp edge from the shoe stamping and putting a nice radius will greatly reduce the spring breakage. The clutch now seemed "bullet proof".

The last change we that we will phase in will be the heat treating of the drum. The shoes will grip better in a soft drum and initially that was the intention but the wear of the sprocket in the soft drum has made us reconsider. The two cycle clutch is harder on the drums than a 4 cycle clutch because of the fast acceleration and then the HARD braking.



We will make a clutch for ANY vintage engine. All we need to know is the crankshaft diameter, overall length, what the thread size is on the end of the crankshaft that holds the clutch in place and lastly the sprocket size you want.

We went to the experts to get the following information and we want to thank the many people that educated us on 2 cycle engines: Bill McCornack, Bill Riggs, Dick Teal, Terry Ives, Dave Bonbright, Pearl Gamble, it is a long list and we thank the many vintage drivers that gave us feed back and suggestions on things we could do to.

This clutch was a joint effort of many people and the nice tools to hold the clutch while you tighten the nut as well as the puller were again suggestions from the end users.

WEST BEND 500, 510, 580 and the 700: normally had a straight 9/16" (.562) crankshaft with a 1/8" x 5/8" Woodruff key. The end of the crankshaft was threaded with 7/16 -20 (fine thread) with left hand or right hand threads. These clutches would normally be outboard mounted because of the position of the woodruff key. They could be altered to have a full length keyway and most of the time it was a 3/16. Clutch lock-up for this engine should be around 3,500 to 4,000rpm

WEST BEND 610 & 820: this was normally a step shaft 5/8" down to a 9/16". The 5/8" section would have the woodruff key which was a 5/32" x 3/4". This shaft was threaded at the end with the 7/16"-20 and could be either a LH or RH threads. The new 820, Copperhead, has a choice of three crankshafts: (#1.) Straight 3/4" (not popular for the vintage racer because you cannot get the gearing small enough on such a large diameter), (#2.) standard step shaft and (#3.) the McCulloch taper, which seems to be the most popular.

The McCulloch taper is a 10 degree taper, right hand thread 3/8"-24, and a #404 woodruff key (1/8" x 1/2" long). The more powerful and beefed up engine calls for a higher lock up around 5,500 to 6,000rpm. One thing that you must be careful when tightening down the nut is that when done the clutch drum and sprocket must be able to free spin on the shaft. There can be some length variances in the new crankshaft and a short shaft may require the sprocket to be shortened .015 to .025. Make sure the clutch drum spins free after you tighten down the nut. Keep the sprocket as cool as possible if you need to shorten them to avoid drying out the bushing which also gets shortened at the same time. My preference is to shorten the sprocket in a lathe but if it has to be done at the track a disc grinder will do the trick.

**McCulloch Engines:** Too many different engine models to list. The majority of the racing engines all had tapered crankshafts. The sprocket was mounted inboard or outboard on the 9/16 shaft of either the crank or the clutch “sleeve or sleeve-nut combination”. The early engines used a larger woodruff key that was 1/8” x 1/2” long while the later version went to a 1/8” x 3/8” long. The crankshaft that required a left hand nut will not have a woodruff key. The nut needed for the McCulloch was a 3/8” -24 (fine thread) RH or LH. I would always suggest putting a little “blue loctite” on the threads as well as the taper to assure the nut stays in place. We include a dog point set screw that can be torque down onto the end of the crankshaft once the nut is tight which helps to prevent the nut from backing off.

The taper on the McCulloch crankshaft is 10 degrees and the clutch is also a perfect 10 degrees so the need to lap them on is not really necessary but it sure doesn't hurt. Because of the snug fit and the loctite a puller to remove the clutch is certainly needed and we sell one that fits the clutch which is universal for either the inboard or outboard mounted clutch.

Clutches for other vintage engines can be quickly made; all we need are the dimensions but would prefer having the engine or the crankshaft to be sure of the fit.

Sprockets sizes available for the vintage clutches are from 9 teeth and up. We make any sprocket in the #35 chain from 9 teeth to 25. We can make timing belt pulleys for enduro karts. If you don't ask you will not know if we do or don't make it.

**Interchangeable clutch parts:** the same drum and sprocket used on a McCulloch OUTBOARD mount can be used on the West Bend 820 or 580. The customer must specified what engagement he would like because the strongest springs (the orange springs) can only be changed with the SPRING CHANGER TOOL. These tools are at the track where vintage races are being held. They have been given to various distributors and racers that consistently go to the events.

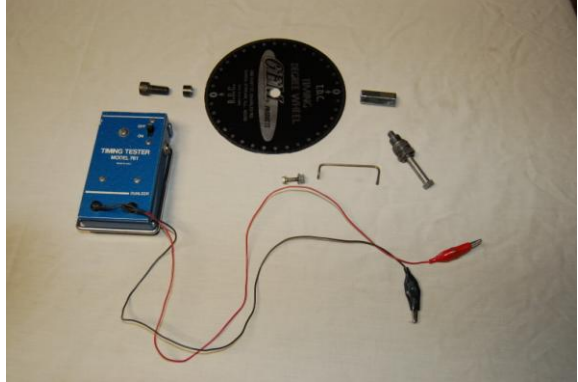


# ***Mc 49 Timing - 35 + Degrees of Advance***

Last summer I raced a Mc 49 and had pretty good success. The engine seemed like it would never stop revving higher and I had many ask me why. I told them that I had the timing set at 37 degrees of advance and this article explains how you can do the same. This won a lot of races for my kids in the 60's

## **Special Tools**

1. **The blue timing tester is something I've had for 50 years. You can use anything that will check for continuity. A flash light modified with two leads will work. An ohm meter will also work.**



2. **Degree wheel; I wore out my old one but they're still available from GEM. I bought this one about three years ago. (GEM #G4500)**
3. **Coupler nut, the nut screws onto the flywheel side of the crankshaft to hold the flywheel and the degree wheel. I bought a standard coupler nut from my hardware store and then drilled and tapped it for 7/16-20 threads. The nut is shown to the right of the degree wheel.**
4. **Degree wheel adapter, the hole in the degree wheel is larger than required for the mounting bolt. I machined a piece of tubing that has a step on one end that centers the wheel. The adapter has a tight clearance hole for the mounting bolt.**
5. **Mounting bolt, the mounting bolt I use is a 7/16-20 socket cap screw.**
6. **Top dead center locator, I use an old spark plug that is tapped for a 5/16 cap screw and a 3 inch long hex head cap screw. Mine is coarse thread and I've had it for 50 years. Grind the end of the 3 inch screw to a bullet shaped end.**
7. **Pointer, I use old metal hangers to make my pointers. You will have to bend one to fit your application.**



## Point assembly modification

This photo shows the modification to the point phenolic material (brown color); that allows high advance. This modification with a 5 degree flywheel will allow you to set your timing from 30 to 40 degrees advance. Getting 35 degrees is easy, anything above that will take a little patience and testing all of the variables.

File the tip of the point assembly that contacts the crankshaft to a 45 degree angle until there's about a .030 (1/32) inch flat left.



This photo shows the points installed in a Mc 49 side plate. Set the point gap to .017 or .018 to start.



### General ignition tips

1. I use new or old point assemblies depending on what I have at the time. I clean the points by using 400 grit sandpaper. I cut a narrow strip of paper and draw it through the point surfaces while I'm holding them together. Clean both sides of the points until the surface is level. You can see whether it's level after you pull the sand paper through a few times.
2. Clean all connections with a wire wheel. This is really important for good conductivity and current flow. The surface beneath the condenser needs to be clean metal and not painted. The ends of the condenser and the wire that goes from the point assembly to the coil need to be cleaned. Also clean the front and back surfaces of the condenser. The coil laminations and ground strap also need to be cleaned. I think you get the idea by now.

## 5 Degree Flywheel Prep

You will have to find a 5 degree flywheel to get the high degrees of advance. Color the flywheel rim as shown so you can mark it. The marks will go on later. I use red finger nail polish. Machinist blue dycum is also a good option.



## Assembly & Side Plate Marking

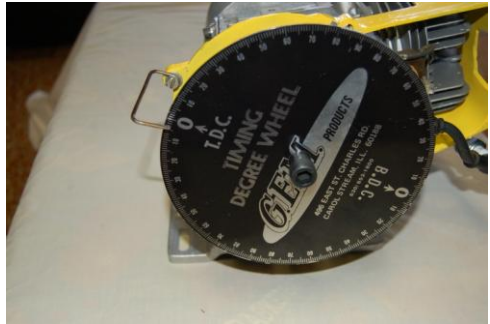
1. Slide the flywheel in place and use the coupler nut to hold it in place. You don't have to torque the nut. I usually just have it finger tight to keep the flywheel from wobbling.
2. Mark the side plate with a straight edge and a scribe in the general location shown in the photo.
3. Assemble the coil in place. I use a .010 long piece of feeler stock to get the correct air gap between the flywheel magnets and the coil laminations. There is side play in the lamination slots. I usually push the coil to the left before tightening the screws.
4. Set the gap on your spark plug to .028/.030 and plug it into the plug wire. Check to make sure you have spark by quickly turning the flywheel. The magnets should be to the right of the laminations and then turned past the laminations.



5. I use alligator clamps on a wire to ground the plug. I find that it's easier than grounding the tip of the plug on the engine. I attach one clip to the electrode and the other end to one of the coil mounting screws.
6. If you have spark go to the next step. If you don't have spark find out why. You may have to close the point gap. Not all condensers are equal. I like the large vintage ones with the green wire I get off of old engines.

## Degree the Flywheel

1. Install the timing wheel in place.
2. Install the pointer.
3. Install the top dead center assembly. The plug base should be tightened to prevent movement.
4. Screw the cap screw into the plug base.
5. Rotate the engine until it's close to TDC. (Top Dead Center)
6. Tighten the screw until it contacts the top of the piston and the piston can't rotate.
7. Loosen the screw so the piston can just rotate past the screw.
8. Tighten the screw to stop the piston just before TDC.
9. Move the degree wheel to align the pointer at a few degrees before 0.
10. Rotate the engine in the reverse direction until it stops and see if the degree is the same as it was on the other side of 0. The goal is to have the same number of degrees on each side of 0. You will need to hold the piston against the stop in each direction to take the slop out of the system. You will have to move the flywheel while you hold the piston against the stop to get the degrees even on both sides of 0.
11. Once you have the same reading in each direction remove the stop bolt and then rotate the degree wheel to align the pointer at 0. Mark the flywheel where you put the side plate mark.



12. Rotate the engine to 20 degrees and put a small mark on the flywheel. Then move to 25 degrees and mark the flywheel. Continue to mark every 5 degrees to 40 degrees.
13. Remove the degree wheel and pointer and use a straight edge and finish marking the flywheel. As long as this crankshaft and flywheel stay together you will be able to time your engine without using a degree wheel.

### Set the Timing

Now that you have a built in degree wheel on your flywheel you can test all of the variables that effect the timing. Start with a stock flywheel and points set at about .018 and you will get about 25 degrees of timing. Install the special points and a stock flywheel and it will be about 30 degrees. Then install a 5 degree flywheel and you will get about 35 degrees. Check for spark with each variable and when you're ready, button up the engine. This timing system can be used on any similar engine. The Mc 9 that I raced last year is set up the same. The Mc 49 has a fixed compression ratio so it responds well to the high degree of advance when alcohol fuel is used. Be careful if you have higher than stock compression on removable head engines. It still works great but make sure you get enough fuel to keep the engine from seizing up.

### McCulloch 49 & McCulloch 9



Dick Teal



# McCulloch Mc49 Information

## Chainsaw Clone Engines

### McCulloch Chainsaws with “standard” covers (Same as Mc49)

#### *Category 1*

#### Chainsaw Blocks with Fixed Heads and Needle Bearing PTO

<u>Model Number</u>	<u>Displacement</u>
1-43	4.9 cu-in (80cc)
1-46	4.9 cu-in (80cc)
1-52	4.9 cu-in (80cc)
1-53	4.9 cu-in (80cc)
1-63	4.9 cu-in (80cc)
Mac15	4.9 cu-in (80cc)
200	4.9 cu-in (80cc)
250 (early)	4.9 cu-in (80cc) (Block # 61406 may have been used on early Mc49)
250 (late)	4.9 cu-in (80cc) (Shares the same block as Mc49 -#62481)
640	4.9 cu-in (80cc)

#### Category 2

#### Chainsaw Blocks with Fixed Heads and Ball Bearing PTO

<u>Model Number</u>	<u>Displacement</u>
Super 250	5.3 cu-in (87cc)
300	5.3 cu-in (87cc)
380	5.3 cu-in (87cc)
380a	5.3 cu-in (87cc)
440	5.3 cu-in (87cc)
450	5.5 cu-in (90cc)
550	6.1 cu-in (100cc)
Super 550	6.3 cu-in (103cc)
650	5.3 cu-in (87cc)
660	5.3 cu-in (87cc)



# McCulloch survival tips

By Jay Mendoza

Many of us have McCulloch engines, and those of you that have seen their internals know they are a bit unconventional when it comes to the upper rod bearings. To explain further, the Macs use two pressed in needle bearings in the pistons wrist pin bosses, and the wrist pin is a press fit in the rod; no cir-clips are required to keep the wrist pin in place. When pressing the pin in place, it helps to not fully center it in both bearings and instead let it expose slightly more of the needles on the blind side of the piston to aide in lubricating that bearing. Your engine builder will usually do this for you if you lack the pin-pressing tool. Another tip is to always use a torque wrench on the rod bolts, and be sure that the rod cap is perfectly aligned before tightening it fully; the fracture line should not catch your fingernail. **IMPORTANT!** If you do loose a needle when assembling the rod, do not grab another one! Instead find the one in the case; they usually drop into the transfer port or piston. I only count out two dozen (24) needles and that way I can keep track of them. Use a sharpened wooden dowel or chopstick to push the needles around through the slot in the rod cap to assure they are all there with no gaps. It is suggested you not re-use the rod bolts; they are available and cheap, so just replace them, and use the splined ones if you have them. If you lack the skill, and/or tools, your engine builder will gladly do these steps for you as well.

While on the subject of the ever so important rod and piston assembly, if you have an engine that has not been run in some time, the upper rod bearings tend to gum up with oil and needs to be flushed and lubed before the engine is run to prevent damaging them. We use carb cleaner to do this and remove the head, stuffer, and piston/ rod assembly to get at the bearings. With really gooey castor, you can loosen things up a bit with a heat gun first, but this is usually not required. The most important thing is that the small end rod needles bearing are completely free to rotate. Per the manual, follow up by rinsing the engine with 25% oil to gas mixture prior to running it. If you do not use castor (shame on you) then a gas/oil flush will typically loosen things up without taking the engine apart, but I always do anyway. The small cost of replacing the head and stuffer gasket is cheap insurance as opposed to repairing a needed engine!

One last caution on pistons; pay careful attention to the knock pins used to pin the rings as sometimes they are a little proud of the pistons outer diameter and not fully pressed in. Do not try to press the pin in any further, but take a Dremel cut-off wheel and grind the tip of the pin down so it is not protruding enough to touch the cylinder wall and gouge it.

Another area of concern that is often overlooked is the crankshaft flywheel and PTO tapers; be sure to lap your clutch on with lapping compound for a good tight fit. Make sure the crank tapers are clean and dry before fitting the clutch and flywheel assemblies.

It's OK to run one to two degrees of ignition timing retard for ease of tuning the fuel needles, especially if you have a 5-degree flywheel. Check the timing before every event, as it will change.

On the subject of seals and gaskets, it is always a good idea to replace them if they have been removed. A little high quality pure silicon seal on them is also advised if you do try to re-use them. Oil or grease can be applied to new paper manifold and stuffer gaskets to prevent them from sticking and makes subsequent removal much easier. Lap all surfaces on a surface plate, and do not use Loc-Tite on the screws! A little anti-seize or moly grease should be applied to the threads of the head, stuffer, and manifold bolts to ensure proper torque is achieved as they go into lock nuts; this prevents them from binding when torqued.

Do your pressure test of the engine with no carb or reeds; make up block off plates that seal with ¼" thick rubber to do this. A little grease on them will help seal things up nicely. Go up to 15 PSI and if it looses less than a couple pounds per minute, you are OK. Leaks can be found with a soap and water solution applied to the suspect seal, seam, or gasket.

Now I'm sure some will want to argue and belabor this point, but here I go anyway: Forget McCulloch's lubrication instructions and always use at least 16:1 gas to oil mixture, castor being the best oil. The next best thing to castor is a high quality ester based synthetic like Torco GP-7 or Motul 800. Many have erroneously been told, or figured that more oil equals less gas, and therefore less power...not true. Why? Well the extra oil acts as a coolant in addition to being a lubricant and carries away power-robbing heat. More oil equals more heat being carried away, which equals more power. Less oil means more heat and subsequent wear. Additionally, the faster the engine spins, the more centrifugal force tries to fling oil out of the bearings, so more is required at higher RPM to prevent them from starving. On model plane engines, 18-25 % oil content is common. Put another way; oil is cheap, engine rebuilds are expensive!

Always run your engine on a gasoline/oil mixture for a couple minutes after running alky to purge it. Remember to reset you high and low speed needles to the Alky settings after doing this, or just leave them alone but be prepared to keep the throttle open as the engine will load up easily on gasoline. A note here: If you use a synthetic, or petroleum based oil with your gasoline when flushing it tends to not gum up the wrist pin needle bearings over time like castor does, something for you to consider. As a final storage precaution, always remove the diaphragms and duck bill from the McCulloch Walbro BDC type carbs and rinse them off with WD-40, then wipe them clean and store them in a freezer Zip-Loc bag to prevent them from getting brittle.

Many thanks to Steve Ohara and Terry Ives for all these tips, hope they help keep your McCulloch American Racing Engine running strong for many years to come,

Jay.



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## Resources for Vintage Karters

Dave Bonbright - West Bend 610 & 820 Engines, parts & performance modifications  
Tele: 707-938-8122      Email: [powerbeel@aol.com](mailto:powerbeel@aol.com)

Bill McCornack - Mc engine bolts, box mufflers & performance mods. Rev Grip  
Tele: 630-400-2645      Email: [bill.mccornack@comcast.net](mailto:bill.mccornack@comcast.net)

Terry Ives - McCulloch engine repair, pistons, rings & gaskets. Azusa and Hortsman  
Tele: 916-201-7707      Email: [tii@surewest.net](mailto:tii@surewest.net)

Ed Sahagian - Line boring, blueprinting, head surfacing, helicoiling & prototyping  
Tele: 912-330-9120

David Nance - Clinton NOS engine parts.  
Tele: 256-881-3254      Email: [gnome1967@netzero.net](mailto:gnome1967@netzero.net)

Dave Romaine - GEM V-12 reed cages  
Tele: 312-953-1692      Email: [bubbaone@yahoo.com](mailto:bubbaone@yahoo.com)

Greg Gouveia - Reproduction Chilton, Palmini & Azusa tanks  
Tele: 805-541-4310

Thomas Thorin - Simplex decals, brake linings & 5 inch cast wheels  
Tele: 818-888-7753      Email: [tthorin@socal.rr.com](mailto:tthorin@socal.rr.com)

Carl Weakley - Early 70's Margay Cheetah reproduction seats  
Tele: 618-656-3900      Email: [clwcpa@aol.com](mailto:clwcpa@aol.com)

Charles Groeteke - Vintage frame repair & parts, chrome stripping and re-plating  
Tele: 636-942-9988      Email: [slkcharlie@sbcglobal.net](mailto:slkcharlie@sbcglobal.net)

K&P Manufacturing - Bug chassis, parts and repair  
Tele: 626-334-0334      Email: [kartsparts91@yahoo.com](mailto:kartsparts91@yahoo.com)

Robron Incorporated - Dart chassis, parts and repair  
Tele: 800-624-7383      Email: [robroninc@bellsouth.net](mailto:robroninc@bellsouth.net)

GL Doemelt Incorporated - King Kart chassis and parts  
Tele: 217-268-4243      Email: [gldoemelt@yahoo.com](mailto:gldoemelt@yahoo.com)

Nils Gustafson - Reproduction vintage tires  
Tele: 541-471-7212      [www.vintagespeedtires.com](http://www.vintagespeedtires.com)

**“Outstanding Vintage Karter Award”  
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