



FAST FACTS HILLIARD

- Shoes and Springs are changed to customize performance.
- Most common sizes of 4 cycle #35 chain clutch drivers are available



FAST FACTS LO 206

- Over 8HP out of the box.
- Rev-Limiter limits RPM to 6,000 helping the engine to last longer.
- Sealed engine allows for a more level playing field.
- Simple, easy, reliable for any level of racer.



NKN doesn't get the chance to test oval and 4 cycle equipment enough,

and when we do get the opportunity, we try to do it in a big way. But a rainy spring in Indiana made it difficult this year. After three rain outs, NKN was finally able to get some 4 cycle track time for a series of tests that included an engine, chassis, clutch, jackshaft, and track.

On a single day, we were going to test the new Briggs L0206 engine, the Trick/Olimpic Joker chassis, the Hilliard Inferno clutch, and Burris Racing's new jackshaft. Oh yeah, there was a new track to try that will be hosting the WKA pavement oval Grand National in August: the new oval at New Castle Motorsports Park.

Briggs L0206 & Hilliard Inferno Clutch

NKN has featured the L0206 in the past few months, and this was our first opportunity to test it on the track. For those readers who missed the past articles, the Briggs L0206 is essentially a sealed Animal with a rev-limiter. Rules also spec an RLV exhaust header and muffler; additionally, there are NO, ZIP, ZERO modifications allowed. The intent of the L0206 class is an easy to use spec package that is intended for beginners and those who are seeking an affordable and simple to operate class.

L0206 is a higher quality product than the Chinese made Honda clone engines and has the ability to be blueprinted at a later date to move it into the full-blown Animal classes.

The L0206 looked right at home on the Joker chassis.



The L0206 engine arrives less clutch, motor mount, exhaust pipe and gasket, muffler, throttle linkage, fuel pump pulse line, and chain guard. This isn't that big of deal, considering most karters will have personal preferences for all of these items (especially clutch and motor mount); however, considering the rules we found require this specific pipe and muffler it would have been easier for it to come with those items. We believe since this kit is suited for a new karter, the more complete it is the easier it will be for them to get on track (similarly in the 2 cycle

world, the Rotax kit includes everything except the motor mount—even the throttle cable and housing).

For this test we used the Odenthal Manufacturing EZ-SET 4 Stroke Mount. This mount is made of 6061 aluminum anodized black like all Odenthal mounts, and makes adjusting the chain a snap! It fits all of the commonly used four-cycle engines including Yamaha F200, Hondas, and all Briggs and Stratton engines.

The clutch was the Hilliard Inferno Blaze centrifugal drum clutch. The Inferno is a four-shoe clutch that is highly tunable via a selection of different shoe weights and spring tensions, even allowing two different weight shoes to be used as long as they are opposite to keep the balance. With a simple spring change, we were able to get the clutch to engage about 3,800 RPM. This was a bit lower than our "oval experts" recommended for a blueprinted Animal, but was well suited for the RPM limited L0206.

4 CYCLE TESTING

EXTRAVAGANZA

Testing a L0206, Hilliard Clutch, Trick Chassis, and New Castle's Oval.

FAST FACTS NEW CASTLE

- The oval track is 1/4 mile in length and varies between 40-44 feet in width.
- Turns 1 & 2 are fast with multiple lines while 3 & 4 are much tighter and it will be hard to turn 2 wide.
- The oval joins the road course and has a short 1/4 road course attached to it.



We purchased the L0206 RLV header pipe and muffler through S&M Kart Supply and used the rest of the parts required from stock we already had. Assembly wasn't that hard, but then again we've done this before. Mike Hayes of MPH Kart Shop said, "the only part of the L0206 instructions that wasn't obvious was the breather tube on the valve cover. Instead of using the tube provided, we removed the valve cover and drilled a hole to install a valve stem (with the core removed)."

Break-in of the L0206 was easy. We added sixteen ounces of Cool-Power Lite oil and ran it on the stand for about twenty minutes before running it around the track for about ten to fifteen laps slowly.

On the track, the L0206 did what it was supposed to do: run steady and strong right up to the 6,000 RPM rev-limiter. The engine accelerated without hesitation, and the carburetor seemed well tuned in the stock/spec L0206 configuration. Throttle response and throw was a good length, another advantage of a 'real race engine' versus the Chinese clones (stock, most clones have about a quarter inch of

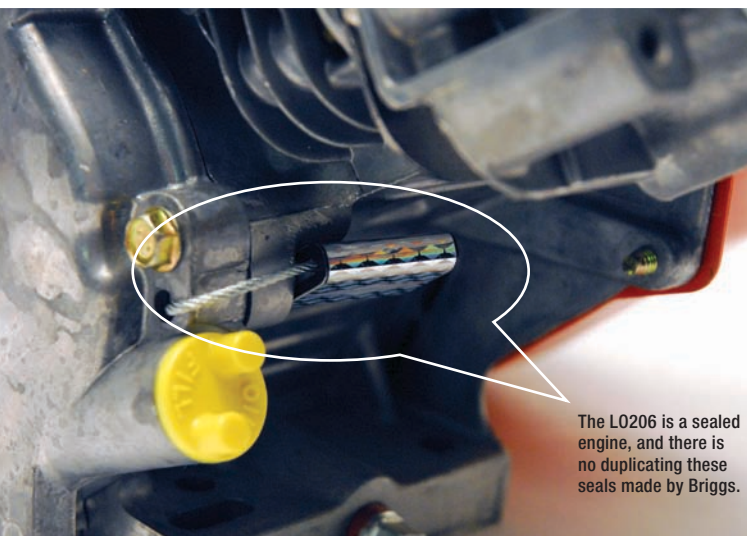
throttle travel at the pedal).

The L0206 has a rev-limiter that cuts every fourth spark at 6,000 RPM. This means that when the engine senses it's turning in excess of 6K it'll knock you back a few hundred revs to keep in the limits of the class rules. Our MyChron4 recorded an absolute high of 6,019 RPM before the rev limiter took over. "The rev limiter should be smooth and not disrupt the kart," said Dave Klaus of Briggs & Stratton Motorsports. So, when you are determining your gear don't forget to account for the extra RPM you pick up in the draft! We reduced the rear gear until we ran out and needed to increase the front driver teeth. "In the end, we'll for sure need a 17 tooth front driver for this track – maybe 18," stated Hayes regarding a built Animal.

The Briggs L0206 performs on track as it's promoted: a reliable, easy to run, entry-level 4 cycle package that is upgradable in the future. Experienced racers could be bored with it as the power is very low compared to a fully built race engine; however, for the beginner (or 2 cycle racer looking to go oval racing) the L0206 delivers what it is intended to be: a good package for a new karter to start their karting career.



The L0206's spec RLV exhaust pipe and muffler.



The L0206 is a sealed engine, and there is no duplicating these seals made by Briggs.

Trick Olympic Joker Chassis

Many karters, especially those who predominantly race European or sprint karts, look at most oval chassis and can't believe how complicated they are. The

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KART RACING CLUTCHES



The Burris Jackshaft allows for the axle gear to be ran outboard, negating the need to modify the chassis.

Typically, 4 cycle oval racers use a jackshaft to reduce the size of their axle sprocket—if they're running a very short track such as an indoor race. They'll run something like a 24-tooth sprocket on "jackshaft in" (engine side) and a 16-tooth on the "jackshaft out" side thus allowing a larger engine sprocket and/or smaller axle sprocket.

Mike Burris explains how to calculate gearing for a jackshaft: "The formula is to divide the J/S In by the engine and divide Axle by the J/S Out and multiply the two to get the final ratio.

Engine = Clutch Sprocket.

J/S In = 24 or 28 tooth input sprocket.

J/S Out = 14 thru 16 tooth output sprocket.

Axle = Rear axle sprocket.

To determine the JS In & Out gears put your desired clutch and rear gear teeth in the proper box and change the JS In gear and JS out gear until you get the desired final drive ratio."

Using a Jackshaft for 4 cycle Sprint Racing

But with the rising popularity of European sprint chassis built around outboard-geared 2 cycle engines, the opportunity to run a 4 cycle engine on a sprint kart greatly declined. However, with the rise in demand for "clone" karts and other options like the L0206 it has become necessary for people to adapt Euro karts to 4 cycle engine packages.

Adapting a "2 cycle kart" to a 4 cycle engine package can typically be accomplished in one of two ways: cut the right side seat strut that is welded to the frame and move the seat to the driver's left or use a jackshaft. Also, with some Euro karts there just isn't room to run a sprocket inside the bearing hangers due to the angle of the rail that runs behind and under the seat. Since permanently modifying a frame can detract from its resale value, companies like Burris Racing and Buller build jackshaft kits.

A jackshaft kit allows the inboard drive to be relocated to the outside of the bearing hangers (the traditional placement of a 2 cycle axle sprocket). NKN tested a Burris Jackshaft on a Birel chassis with an Animal motor at the WKA Great Lakes Sprint Series event at G&J Kartway in Camden, OH.

Although the manufacturer didn't advise it, we used a 1:1 ratio on the jackshaft with two 16-tooth gears. It's not advised because that results in the jackshaft spinning at the same RPM as the engine. However, it fit our kart/mount/engine combination and worked flawlessly over the course of a whole three-day weekend of racing.

With the moving on the sprocket to the outside of the frame rail, there was added clearance to setup the seat where we wanted it and no need for frame modifications. Additionally, once the bearings heat-cycled a couple of times there seemed to be little to no visible drag increase when spinning the axle versus spinning it without a jackshaft.

All-in-all, using a jackshaft (kit priced around \$200) could become a feature that becomes popular with drivers who favor a particular chassis, desire to try a 4 cycle class, and don't want to get the hacksaw out for their chassis.

Joker is not one of them. In fact, karters who race the Joker say it's "simple to setup and has a very wide window."

While we were testing the Briggs L0206, we borrowed a Trick Olympic Joker from Hayes's MPH Kart Shop located in Brownsburg, IN. The Joker has a good list of standard features including a toe-lock pin, C-cut steering wheel, MCP brakes, anodized and laser etched hubs, NTN 1 1/4" axle bearings, and a step-up right front spindle and hub. This particular one had a Lightning-Lite fiberglass body and Safrit's Edge fiberglass seat.

One nice feature the Joker does not have that is common on many oval karts is an adjustable read end. The bearing cassettes allow for 'lead' to be adjusted in the rear axle. The Joker does not feature (standard) adjustable cassettes.

For this test we used Burris SS-55A tires mounted on Williams Tru-Roll TR2 wheels. The 8.10"x6" right side tires had about a one inch larger rollout (stagger) than the left side 5.00"x6" tires. This proved to be way too much stagger for the track, as we'll discuss later. Otherwise, the Burris 55's performed flawlessly on a very green track showing little tire wear and great consistency over the course of the day.

Hayes had run the Joker chassis on dirt; however, this would be his first experience on an asphalt oval with this kart. Typically to change from dirt to asphalt both front spindles and caster blocks would need to be changed along with some other minor setup changes. "Trick makes an asphalt kit for the Joker that includes 10° caster block for the right side and 6° for the left," said Hayes. "It also includes asphalt spindles for both."

However, we didn't have the asphalt kit so we made some very small

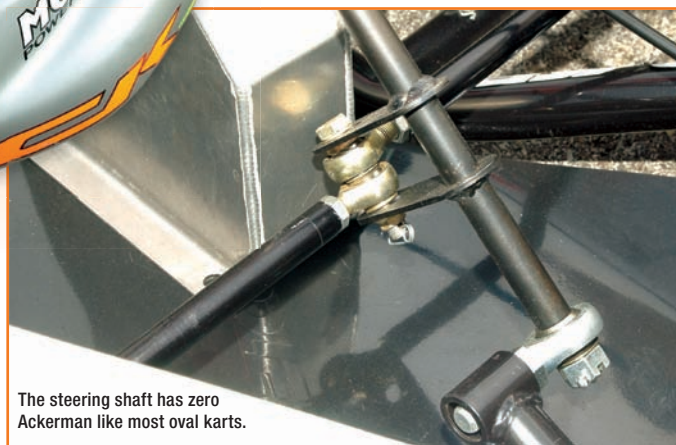


and basic changes to the setup like taking out some cross weight moving the left rear track width out about 3/4". Otherwise, the setup, especially the front-end geometry, was essentially the same as Hayes used the previous week on the dirt at Ben Hur Speedway in Crawfordsville, IN.

Initially, the high amount of stagger and cross weight really made the front end want to "wander" at the exit of the corners and down the straights. After we reduced the stagger to approximately .5" this wandering effect was greatly reduced.

The Joker had excellent turn-in and was just as comfortable running the high line as the lower line. Only once under maximum load did it step out suddenly, but at the same time it was easy to catch without scrubbing off more than about 300-500 RPM.

For our next change, we reduced the cross a bit more by lowering the left front spindle via moving three washers above the spindle. Like most oval karts,



The steering shaft has zero Ackerman like most oval karts.

the Joker uses a system of thin washers above and below the spindle to set the desired cross weight of the chassis. This change, combined with the reduction in stagger, nearly eliminated wandering effect down the straights and off the corners. As Hayes said, "the Joker has a very wide window of being good, and is very easy for a guy who is new to oval karting to setup," and he was right. We made a couple more minor track width and tire pressure adjustments just to see how the chassis would respond. However, without a low enough gear to not hit the 6,000-RPM limiter of the L0206, we were limited with what we could do with the chassis.

In conclusion, the Joker was a very easy to drive and very easy to tune LTO (left turn only) chassis. While we made some big changes that had proven to be significant to radical (in terms of feeling) on other LTO chassis, they proved to be rather minor on the Joker—it seems to have a wide window of good. In our opinion, the Joker is one of those karts you should get if you press the "Easy Button": it's 95% as fast as anything else, 100% of the time. Leaving the other 5% up to the driver and engine.



The front end of the Joker has a wide range of adjustments.

New Castle Oval

Many oval karters in Indiana and the surrounding have said, "Finally!" Finally, a first class asphalt oval has opened near the Indianapolis/Dayton corridor.

After five years of one of the nation's premier road courses being open, the oval at New Castle Motorsports Park is ready for racing. First it appeared the nearly 1/4 mile egg-shaped oval would be dirt; however, after a couple of years of sitting carved out but not contested, the Dismore family decided it would be easier and more beneficial to the facility as a whole to pave the oval and attach it to the existing road course. In its entirety, the entire NCMP facility can be raced at approximately a 1.5 mile course now.

NKN was honored to be among the first to sample the new track and we believe to be the first ever to turn laps on it in an LTO kart. Needless to say, we were excited!

In addition to being billiard table smooth asphalt, the new NCMP oval will be complimented by a two-story scoring tower and scale house located just past the start-finish line and adjacent to the pit area. The building of this tower was one of the delays

Testing the new NCMP oval, Hayes gets the LF wheel a bit off the ground.



in opening the oval as track owner Mark Dismore wanted to extend the same high level of facilities and amenities to the oval racers as he has to the sprint racers.

The oval will host a huge weekend of 4 cycle racing as both the WKA Gold Cup and Pavement oval series invade the eastern Indiana facility on August 21-23. By now, almost every serious karter in the country is familiar with the existing NCMP road course, but NKN is going to give the oval racers a "sneak peak" of what to expect on the oval.

"It's fast," was the first impression of Hayes when returning to the pits after his first run in the Joker/ Briggs L0206. "I guessed from looking at pictures it would be about 15/55, but we really need about a 17 or maybe 18 front driver."

The track measured out about 1,300 feet in length, depending on the line chosen by the driver. Straightaways were close to thirty feet wide, with the corners opening up even a bit more. The track is egg-shaped, with turns one and two being much wider in radius than three and four.

"This place is going to be fun!" exclaimed Hayes. "They'll be running three or four wide through turns one and two, and then will have to get single—maybe two-wide going into three. This is going to be a great place to watch an oval race."

The first two turns give the driver endless options. We easily ran flat out around the bottom, the middle, and the high sides of these corners. "Through one and two and down that backstretch drafting is going to be a big deal," continued Hayes. "Especially in the Champ karts."

Turn three did present a different challenge. On entry, there is a significant bump that is big enough to affect the stability of the kart. The bump is on turn-in, and seems to hit right where the weight transfer to the right rear tire happens. If you're making a pass entering three, or the guy being passed, be aware you could get side swiped when the inside guy hits the bump. However after this slight bit of character is cleared, turns three and four open present a uniquely different setup challenge versus the first two turns.

If the chassis is ultra free for the first two turns

and you slide off turn four (either scrubbing speed or having to lift), you'll for sure be a sitting duck down the main straight and into turns one and two. If you tighten it up off four, chances are it'll scrub vital RPMs in one and two. Finding a balance will be key to winning.

Other than the bump in three (which could be eliminated by the time this goes to print), the NCMP oval is awesome! It elevates the diversity of the already world-class facility and gives LTO karters a great track in East-central Indiana.

NKN has heard that NCMP and Mike Burris's Fast Track in Vincennes, IN are in discussions about a touring series that would split time between the two tracks. Both Burris and Dismore also want to see some sprint kart racing on the ovals, which is a fun variation to the typical sprint racing from time-to-time.



The lightweight brake rotor and simple bearing cassette on the Joker chassis.

In conclusion, NKN had a great time testing these 4 cycle products. The Briggs L0206 could be a great starting point for new karters, giving them a reliable option that also allows them to move up as desired. The Joker chassis was an easy to tune LTO chassis that simplifies that area and allows the driver to focus on driving. The Hilliard clutch was bulletproof and presents a reliable and tunable option to entry level and "clone" racers. And finally, it's so nice to have another first-class pavement oval for karters in the Midwest to enjoy—we sincerely hope this leads to a boom in oval karting popularity in this area! 🏁