

RX8 Flywheel & Pullies Install



By RYAN SCOTT

Photos By RYAN SCOTT

RX-8 OWNERS LOOKING FOR A FEW MORE PONIES are finding out one thing, Mazda did a good job engineering this car. As a result there just aren't many ways to get noticeable power gains from the RENESIS. The standard intake and exhaust show only minimal gains, and engine management mods have met with mixed results. However, two things that will always produce results are a lightweight flywheel and a set of lighter under-driven pullies.

Unorthodox Racing has been in the business for a long time, manufacturing these parts for just about every car imaginable. They also recently released their pieces for RX-8's. So I made a call to see if they could supply us with these parts for an install. They graciously agreed, and a couple days later they were in hand.

Jim at Unorthodox had told me over the phone about their new design for flywheels. It's unique in that it doesn't need the addition of a counter-balance, the flywheel has it integrated into one piece. Upon inspection, it's a very clever and well-conceived design, and will certainly simplify the installation for future buyers. The pullies are typical Unorthodox quality, billet aluminum and feather light. An added bonus is that they look great, and add a little bling under the hood.

Owner of the car Jeff Hwang and I met on a Wednesday afternoon at a local import shop, Lightspeed Motorsports. John, the owner of the shop donated use of his lift and labor to perform the installation. Lightspeed



runs a very clean operation with well trained mechanics, doing this install would be a snap for them.

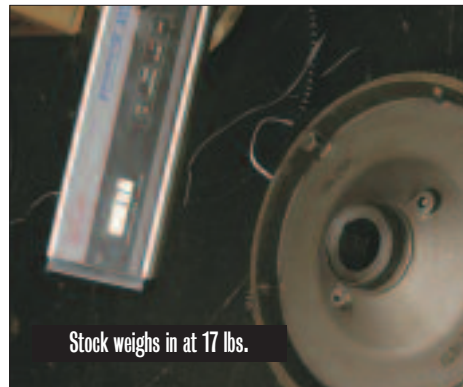
Once on the lift, the biggest part of a flywheel install is removing everything necessary. The exhaust midsection, subframe braces, driveshaft, and transmission must all be removed. With the right tools and a lift, this was fairly simple. One of the exhaust bolts twisted and broke upon removal, after only 22K miles, like we needed another reminder of the heat a rotary can produce. Dropping the transmission is easier than you might think. It's



Mazdaspeed weighs in at 15.5 lbs.



Unorthodox weighs in at 14 lbs.



Stock weighs in at 17 lbs.

a two man job however, and once all bolts are loosened from the bellhousing and frame braces, it will come out with a little wiggling and grunting. Once out, a few bolts is all that hold the clutch in place.

Jeff had a MazdaSpeed flywheel installed on the car by a dealer at 6K miles, and as part of it was installed a factory automatic counter-balance. That was the hardest part to remove, as it was on very tightly. We had to quickly make a tool that we could thread onto the counter-balance and pry it loose. For the mechanic at Lightspeed, it was piece of cake and only took a few minutes. He had obviously done this before.

By removing the MazdaSpeed flywheel, we had the opportunity to compare it to the stock flywheel and the Unorthodox unit. As the pictures show, the Unorthodox piece was the lightest at 14 pounds. The MazdaSpeed flywheel and counter-balance were 15 1/2 pounds, and the stock flywheel was 17 pounds (which is very light for stock).

Putting the Unorthodox flywheel back in and re-assembling the car went very smoothly. The broken exhaust bolt was replaced with a match that was lying around the shop. We lowered the car from the lift and gave it a quick start to verify everything was together. Now on to the pullies.

Install of the pullies is a simple job, something just about anybody can

do in their own garage. All that needs to come out of the car is the airbox, that gives enough room to reach the bolts on the crank and water pump. The single alternator bolt is on very tightly however, shade tree mechanics will most likely need a long breaker bar to get it loose, we cheated and had air tools however. Once we pulled all the factory pullies, the difference was obvious. They were too light to accurately weigh with our scale, but there is a substantial weight savings. Also, the crank and alternator pulley are under-driven, water pump pulley is the same diameter as stock.

The supplied instructions gave us the necessary Gates belt numbers to use with the new pullies, which were sourced from the local Auto Zone. And everything went back together without a hitch. Time to take the car for a spin!

As soon as Jeff put the car in gear it was obvious some-

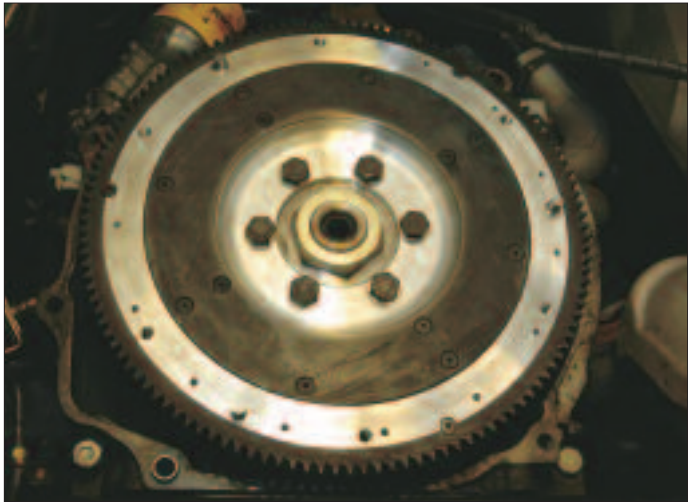




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thing wasn't right, there was a pretty bad engine shake that worsened with rpm increase. We knew it had to be something wrong with the flywheel install, but since it was late in the day, we decided to give Unorthodox a call the following business day and investigate. Since Unorthodox sent me the flywheel straight from their manufacturing facility, no instructions were installed. But it was a simple mistake on our part. With the counter-balance integrated into the flywheel, it has to be slipped onto the crank in the right position. We didn't do that, and it made things unbalanced. I doubt anybody else would make this same mistake, and a retail piece will come with instructions and a mounting template. The mechanics at Lightspeed moved the flywheel to it's balanced position, and finally Jeff was able to make that test drive.

We had hoped to verify results on the dyno, but the car proved to be one of those 'un-dynoable' RX-8's. A few before runs netted a best of 152 rwhp, DSC and Traction Control off obviously. And while we're sure that it would have showed a higher number after the pulleys, there's not much point of listing it as reference since our baseline was invalid. The pulleys and flywheel did net a very noticeable gain in driving feel that at the end of the day is really all that matters.

Both pieces are highly recommended, and should be at the top of every RX-8's owners wish list. Big thanks to Unorthodox for providing the parts to test, and to Lightspeed for generously donating time and resources for the install.

Owner, Hwang, is one of those Missouri snow-birds, roosting here during the warm months and heading to Miami for the winter. So immediately after the install he drove his 8 down to sunny South Florida, however before leaving he was a bit anxious because the pulleys caused his CEL (Check Engine Light) to illuminate. To fix the CEL, the manual for the pulleys says that to clear the ECU you can tap the brake pedal 20 times in 8 seconds with the car on but engine off, then starting the engine and turn-

Here are the driving impressions in his words:

In the absence of available mods that make real power and with a free-revving car that doesn't make a lot of low-end torque, it makes sense to focus on throttle response. And thus far, the mod that has made the biggest difference — by far — was the MazdaSpeed flywheel

The installation of the Unorthodox Racing pulleys and the even lighter flywheel has resulted in a tangible improvement in throttle response over the MazdaSpeed flywheel and stock pulley setup. The full 9,000-rpm range of the RX-8 is even more accessible than before; if you have yet to work on either the flywheel or the pulleys, it's like driving a completely different car.

It's not clear exactly how much of the difference can be attributed to replacing the MazdaSpeed flywheel with the Unorthodox Racing one (since pulleys were done at the same time), but both are very streetable. I think that if you're in the market for a new flywheel and are comparing the two, the real question is how much the warranty means to you: The MazdaSpeed flywheel and installation at the dealership will cost around \$1,000; the Unorthodox Racing flywheel and installation at your local garage will be about three-quarters of that. And the Unorthodox piece does deliver another full 1.5 pounds of weight savings over the MazdaSpeed.

As for the pulleys, the manufacturer claims about an 8 hp gain at the wheels, with the max gains coming after about 5-7 days, once the ECU calibrates to account for the lighter weight of the pulleys. But so far, so good. And other than the nagging check engine light that I need to take care of, I've found nothing to complain about.

The new 19" rims have also affected performance considerably. The new wheel/tire setup is 4 lbs heavier per corner over the previous setup (stock wheels/Michelin Pilot Sport PS2 245/40/18) in the front, and 7 lbs heavier per corner in the rear. As a result, the car feels more substantial and stable, but is far less nimble. Surprisingly, the ride quality hasn't suffered much.

Eventually, I plan on investing in a set of lightweight 18s for road trips and the track. But for now, I am happy with the new pulleys and flywheel, and at least the rims look good.

ing the wheel right and left. UR also says that max power gains would be seen after 5-7 days, once the ECU adapts to the lighter pulleys. But when the clear procedure didn't work, Jeff decided 'what the hell' and took off for FL planning to take care of the CEL upon arrival in the warmer climate.

Except after driving for six days, and putting a handful of miles on the car, the CEL has now turned itself off. After which point Jeff continued driving to FL (another 800 miles) during which time the CEL has not come back.

I guess it makes sense that once the ECU figures it out, the check engine light would go away.**RX**

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