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Tech Review: Carlini Torque Arm



By [Don Crafts](#), Chicago Desk

We know what you are thinking. What on earth is a *torque arm*? A good question with an easy answer. A torque arm is an aluminum brace that installs between the engine and transmission of Harley-Davidson Evolution Big Twins.

Okay, so why would you want one? Well, that one doesn't have such a easy answer. Let us start with some background information first.

background

Today's Harley riders have more horsepower at their disposal than ever before. Hopped-up Evo mills routinely register near triple digit horsepower. This is a good thing. However, the Motor Company does not design its motorcycles to handle twice their stock power output. This design "weakness" usually shows up first in the connection between transmission and engine. The transmission of a big twin Harley is connected to the engine at only two points:

- the central mounting bosses between them, and
- the inner primary case on their left.

In some cases this configuration can lead to an unbalanced loading of

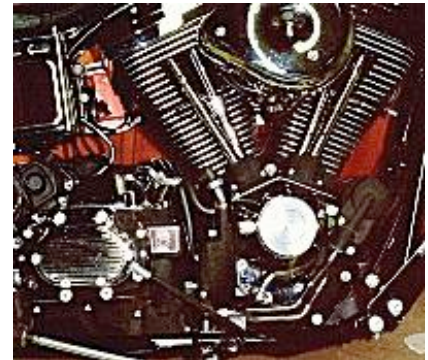
forces. Engine transfer of power to the left side of the transmission causes this imbalance. As such, the primary chain is in effect trying to pull the left side of the transmission towards the engine. Normally, the transmission mounting bolts are sufficient to contain this torque load. However, this configuration was not designed to handle increased torque generated by a real asphalt ripper.

how does it work?

What a torque arm does is "unitize" the engine and transmission. The torque arm connects an Evo's transmission to the right side of its engine. If you've been following along you will no doubt remember that the inner primary case connects the transmission to the left side of an Evo engine. Now the transmission is not only connected by mounting bosses in the center and the inner primary case on the left, but also by the torque arm on the right. This setup makes all the components happy. And there are no unbalanced loads lurking around to cause failures.

This arm was designed by Tony Carlini of Carlini Design. Carlini originally developed the torque arm for his high-powered "Black Bart" custom Dyna Glide. He had grown tired of replacing primary cases on it. Imagine that.

It is no surprise that this problem first started showing up on FXDs. Dyna Glide models have an additional reason for needing a torque arm. Look where Dynas have their swing arms mounted. They are unique in the world of big twins. A Dyna Glide swing arm is attached directly to the transmission, rather than its frame. This adds an additional component of stress to the equation. When cornering, side loading on the rear wheel is transmitted directly to the swing arm, which on a Dyna then transfers this load directly to the transmission. Again, in stock form this does not cause any trouble. But how many people are happy with stock Harleys?



Pipes & brake removed

installation

Installation was almost a snap. All you need to do is remove six bolts, slap on the arm and install six new bolts. Simple. What makes it a little bit tricky is that you first have to remove the exhaust system and the transmission cover. Which exhaust system you have will dictate how difficult the first step is. For this review we installed the torque arm on a Dyna equipped with Bub's Bad Dog pipes. Removal of these couldn't be easier.



Carlini arm installed

Opening up the transmission door was more of a trick. The goal is to tip the bike far enough to the left to keep transmission fluid from leaking out. This was accomplished by rolling the front wheel up on a five inch riser, then tipping the bike over on its side stand.

With the pipes off and the transmission door open, installation of the torque arm was just a matter of removing and replacing six bolts. Three bolts are removed from the transmission and three bolts from beneath the nose cone. The arm slides right into place and is installed with six replacement bolts. Re-install the transmission cover and exhaust pipes and you're good to go.

performance

The change in ride performance is immediately noticeable -- albeit a little hard to quantify. You find yourself describing how the bike felt without the torque arm in terms you would have never used before installing the arm. For example, power transmission is no longer "spongy." The bike no longer "porpoises" during quick bursts of acceleration.

Handling is definitely improved. Corners are now something you throw the bike into. You feel more in control. As mentioned, the change is hard to quantify. Suffice it to say, while the ride was never bad before, it is definitely better now.



Installed with pipes

As required by current aftermarket standards, the Carlini torque arm is fabricated from billet aluminum and comes slathered in flawless chrome. What does all this mean do for you? Do you need a torque arm? At \$289.00 you probably ought to make sure first. To decide, you need to ask yourself a couple of questions. Such as, "how much power am I planning on getting out of this Evo?" and "how aggressively will I be riding it?"

If you're happy with the stock performance of your sled, pass this by. Its benefits will not be noticed as much as the hole in your wallet. However, if you bought that scooter to build and ride, the Carlini torque arm should definitely be on your list.

Motorcycle Online Rating: ****

The arms are available for all Harley-Davidson Evolution big twins: FXRs, Dynas, Softails and Electra Glides.



where to get in

Carlini Design
Highway Art Corporation
17516 Von Karmen Avenue
Irvine, CA 92714
(800) 398-0222

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