

UNDER PRESSURE

Centerforce's new twin-disc clutch for 2010 Camaros

Text & Photos: Dan Sanchez

Late-model Camaro owners have discovered that the GM 6.2L V-8 responds extremely well to supercharging.

It's quickly becoming the most common—and easiest—method for adding lots of power to these vehicles, which can exceed 550 rwhp without any other modifications.

While it's easy to make big power, harnessing it can be a challenge. This is especially

true for Camaros equipped with the factory six-speed manual transmission. According to several supercharger manufacturers, the OEM clutch begins to slip in boosted applications around 580-600 lb-ft of torque. "Our clutch was slipping at 620 lb-ft of torque on a 680-rwhp dyno run," said Ken Crisley of Kenne Bell Superchargers. The company's R&D vehicle was a perfect example of the conditions brought about with the power generated by bolt-on superchargers. Crisley had to halt further testing of the new Camaro 2.8L twin-screw, water-cooled supercharger system until the clutch problem could be resolved.

In the past, the solution offered by clutch manufacturers was to use a racing clutch within a street-style pressure plate assembly. This provided enough clamping force for high-horsepower, late-model vehicles. But a high-friction, puck-style clutch chatters under low rpm engagement, making the drive unpleasant during normal street use. The same goes for twin-disc-style clutches that run off the center input shaft and have vibration problems; because twin-disc

QUICK NOTES

WHAT WAS INSTALLED

Centerforce's latest twin-disc setup

BOTTOM LINE

This is a must-have item for modified 2010 Camaros

COST (APPROX)

\$1,050 (\$400, Clutch PN DF593010 and \$650, Aluminum Flywheel PN 900142)

clutches also lack damping they don't engage smoothly and are difficult to drive on the street.

Utilizing new patent-pending technology, Centerforce recently redesigned its twin-disc clutch system as a solution for high-horsepower street cars. The company's new clutch for the 2010 Camaro provides enough clamping force to handle up to 1,200 lb-ft of torque, yet the clutch material is not as aggressive as those found on full-race-style clutches, making clutch engagement much more pleasant under normal driving conditions. The first clutch disc, closest to the engine, is driven off the transmission input shaft. The second clutch, however, is driven off six drive lugs that are riveted to the first disc. This technique provides full damping of both clutches and makes for extremely smooth operation while maximizing clamping force.

When Kenne Bell heard about the new Centerforce clutch, it provided an opportunity for both companies to further test the limits of this new clutch design with a powerful, supercharged engine. At the same time, it allowed us to follow along and take a closer look.

For this installation, both companies sought the help of Ricardo Topete at Rancho Cucamonga, California's GTR High Performance. Topete and his team began their business originally focusing on late-model Mustang performance, but in the past several years, they've earned an excellent reputation for installing, repairing, and R&D on other late-model performance cars such as Challengers, Chargers, and the 2010 Camaro.

While the Kenne Bell Camaro is undergoing further testing and is expected to reach the 1,000hp level, the Centerforce clutch remains a secure method to transfer lots of power to the rest of the drivetrain. What's also impressive is that the Centerforce twin-disc clutch assembly is nearly 10 pounds lighter than the factory clutch unit, reducing the engine's rotating mass and freeing up some extra horsepower. So, now that you can properly apply 600 hp or more to the pavement from your LS3 Camaro you may want to start stockpiling a few extra rear tires for the near future.



Supercharged 2010 Camaros like this one from Kenne Bell prove the 6.2L can make big horsepower numbers.



Ricardo Topete of GTR High Performance began by unbolting the exhaust clamps at the rear of the catalytic converter pipes.



Removing the two hangers over the mufflers allows the exhaust to come out in one piece.



The heat shield was removed to access the driveshaft.

UNDER PRESSURE



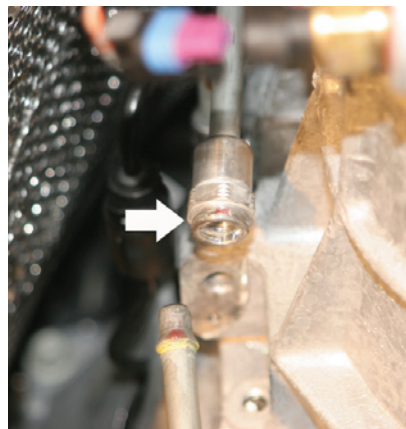
The driveshaft was marked (so it could go back into the same position) and then unbolted from the differential.



A center carrier bearing was also unbolted from the chassis.



Once the driveshaft was unbolted from the front transmission output shaft, it could be removed and set aside.



Coolant lines on each side of the trans attach to a fitting with a thin C-clip, which must be carefully removed.



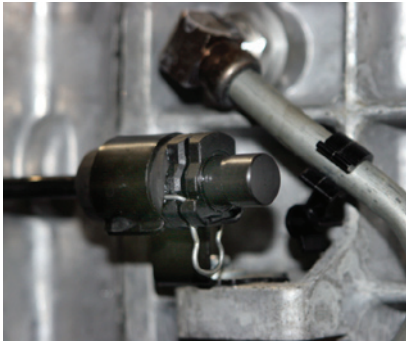
The starter motor must also be unbolted and set aside.



The coolant lines and wiring harness must be unplugged and removed from the transmission.



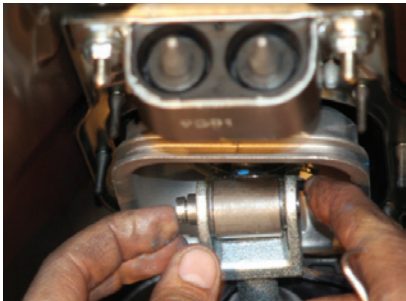
We used a transjack to support the transmission so the crossmember bolts could be removed.



We removed the clip holding the hydraulic clutch line into the fitting. Centerforce provides a plastic plug, shown here, that keeps the fluid from draining out.



The shifter has a bushing shaft held in place with a clip that must be removed before the shifter linkage can be freed from the transmission. Once the clip is removed, push out the bushing shaft and free the shift linkage from the transmission.



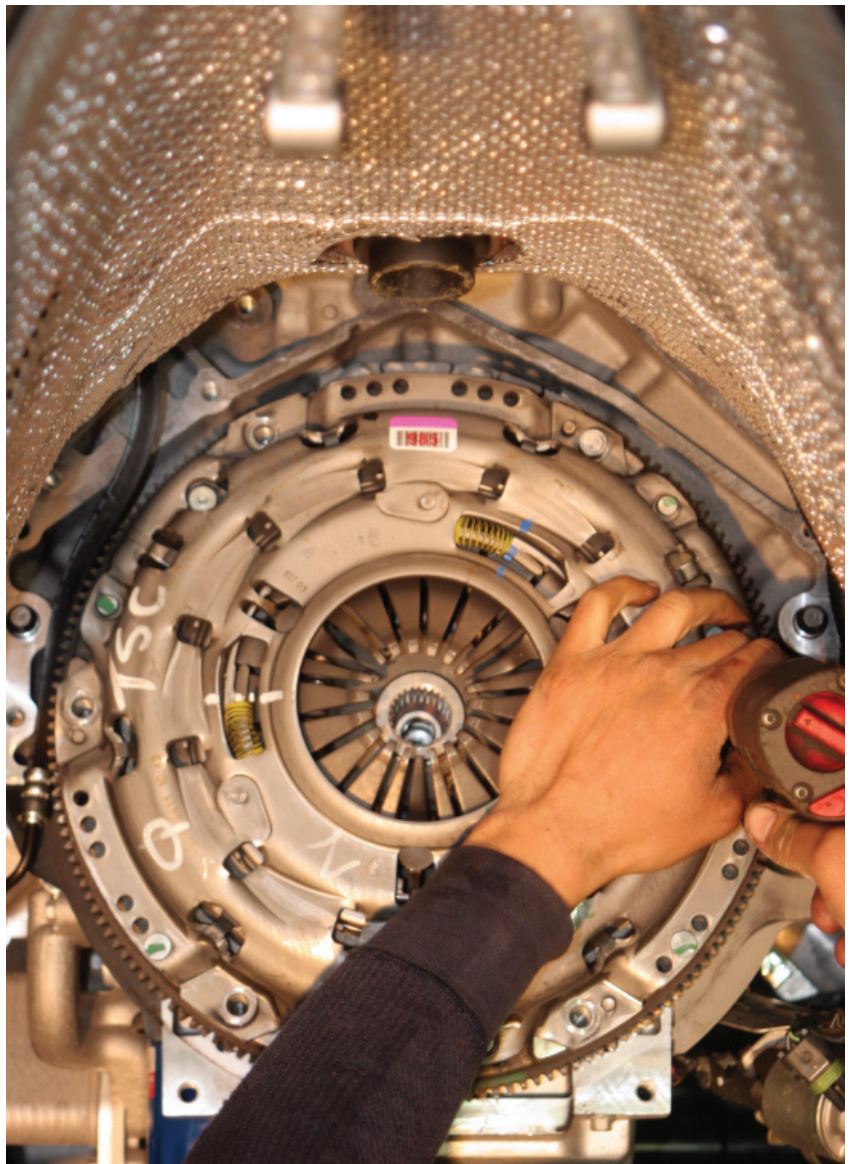
Here you can see the two shifter supports in front of the shift lever that also use the same clips as the shifter lever and attach to the transmission housing.



Topete also determined that unbolting the catalytic converters from the exhaust manifolds would provide added room to maneuver the transmission out from the trans tunnel. A couple of the bolts must be accessed from up top with a long extension.

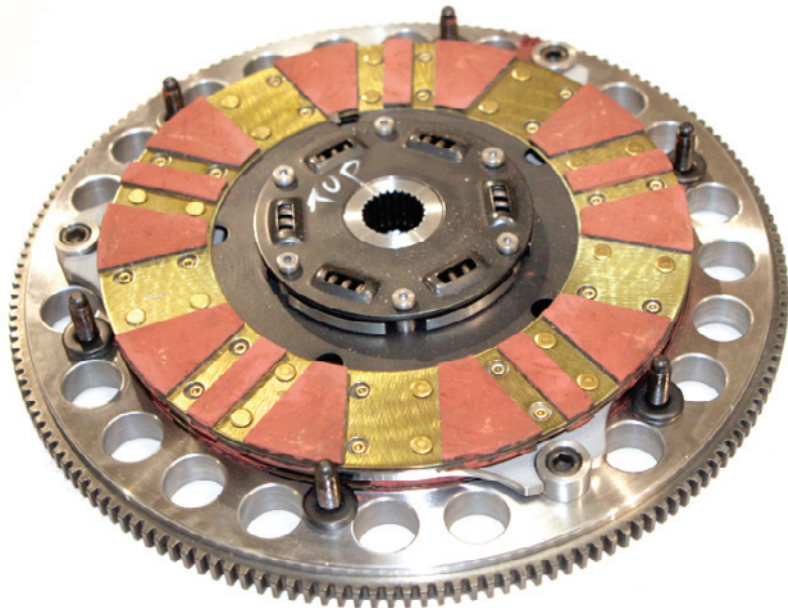


Once everything was cleared from the transmission, the bellhousing bolts were removed and the trans was pulled away from the engine.



Both the OEM clutch assembly and flywheel were removed from the engine.

UNDER PRESSURE



Centerforce's twin-disc assembly uses two clutch discs, a spacer, and an SFI-approved billet flywheel. The first clutch has six drive legs that spin the second clutch; this relieves extra pressure on the input shaft and prevents any spline damage. Our favorite part, it can hold up to 1,200 lb-ft of torque and while it can provide enough clamping force as a race clutch, it still operates smoothly for easy clutch engagement during normal street driving.



The Centerforce flywheel was bolted on first, using the correct torque sequence, until a final setting of 74 ft-lb. The wire was used to hold the clutch pack studs in position.



Both clutches and the spacer plate were inserted over the billet flywheel.



The Centerforce pressure plate was then installed and bolted loosely so the alignment tool could be used to set the clutch pack straight.



The new clutch was then bolted down, using the factory torque specification of 15 ft-lb.



Topete and his crew reinstalled the transmission, hooked up the wiring harness and linkage, and replaced the driveshaft and exhaust system. **CHP**

GET THE HOOKUP

CENTERFORCE
928.771.8422 • centerforce.com

GTR HIGH PERFORMANCE
909.987.4386 • gtrhipo.com

KENNE BELL SUPERCHARGERS
909.941.6646 • kennebell.net